FINAL SUPPLEMENTAL PROGRAMMATIC ENVIRONMENTAL IMPACT STATEMENT ARMY GROWTH AND FORCE STRUCTURE REALIGNMENT TO SUPPORT OPERATIONS IN THE PACIFIC THEATER

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Final Supplemental Programmatic Environmental Impact Statement

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Cooperating Agencies: None

Titles of Proposed Action: Army Growth and Force Structure Realignment to Support Operations in the Pacific Theater

Affected Jurisdictions:

Installation	Counties in the Region of Influence (ROI)
Donnelly Training Area	Fairbanks North Star Borough, Southeast Fairbanks Borough
Fort Richardson	Anchorage Borough
Fort Shafter	Honolulu County
Fort Wainwright Tanana Flats Training Area Yukon Training Area	Fairbanks North Star Borough, Southeast Fairbanks Borough, Yukon-Koyukuk Borough
Pohakuloa Training Area	Hawaii County
Schofield Barracks	Honolulu County

Document Designation: Final Supplemental Programmatic Environmental Impact Statement

Abstract:
The Transformation of the Army is designed to ensure that the Army remains an effective operational force in the 21st Century. The Army has identified the need to grow, realign and transform its existing force and increase its overall size to support military operations. The proposed Army growth and realignment will allow Pacific Command (PACOM) to meet the increased national security and defense requirements of the 21st century, maintain standard training and operational readiness levels, maintain capabilities to sustain operations for promoting global, regional, and national security and preserve a high quality of life for U.S. Army Soldiers and Families.

EXECUTIVE SUMMARY

Introduction

On 12 October, 1999, the Senior Leadership of the Army articulated a vision for the Transformation of the Army to ensure that it remained an effective operational force in the 21st Century. The Army's decision to transform began a dynamic 30-year process through which the Army is continuously assessing and calibrating its force structure and capabilities to face the evolving threats and mission requirements needed to support national security. The decision to transform the Army was described in the 2002 Record of Decision for the *Programmatic Environmental Impact Statement for Army Transformation*

As part of the overall Army transformation effort, the Army has transitioned to a modular force structure. Organizationally, this has meant a transition of the Army and its focus of operations away from the Division level (10,000 to 12,000 Soldiers) to an Army designed around smaller, standardized, self-contained, rapidly deployable Brigade Combat Teams (3,400 – 4,100 Soldiers). The implementation of modular force concepts has led to force structure changes at all Army echelons of operations. In January 2007, the Army completed assessments of how to align its forces in the continental United States (CONUS) to better implement transformation, Army modularity, and support growing mission requirements of the Army. Decisions made in the January 2008 *Record of Decision for Army Growth and Force Structure Realignment* did not include final decisions for stationing and force structure modification needed to support the mission requirements of the Pacific Theater. The Pacific Theater is an active operational theater with theater-specific mission requirements. These requirements, and alternatives for implementing growth and realignment of forces to support them, are discussed and evaluated in the subsequent chapters of this document. This document serves as a supplement to the 2007 Final Programmatic Environmental Impact Statement for Army Growth and Force Structure Realignment

In order to further Army Transformation, meet the increased national security and defense requirements of the 21st century, maintain training and operational readiness levels of the force, and preserve a high quality of life for U.S. Army Soldiers and Families, the Army has identified the need to modify its existing force structure and increase its overall size to support Pacific Theater operations while continuing to restructure its forces in accordance with modular Transformation decisions.

The Army's Proposed Action is to grow, realign, and transform Army forces to support Pacific Theater operations and to ensure the proper capabilities exist to sustain operations for promoting global, regional, and national security now and into the foreseeable future. The implementation of the Proposed Action is needed to better meet military operational needs, national and regional security requirements, and the needs of the Army's Soldiers and their Families to ease the burden of repeated deployments.

This analysis includes the evaluation of installations capable of supporting Pacific Theater operations and incorporates the Army's *Final Programmatic Environmental Impact Statement (PEIS) for Army Growth and Force Structure Realignment* (October, 2007) by reference. In addition the major training installations evaluated in the FPEIS, the Army is considering additional installations in the Pacific Theater which may receive 1,000 or more new Soldiers from 2008 through 2013 to support the Proposed Action discussed above. These installations

include Fort Richardson, Alaska; Fort Wainwright, Alaska; Schofield Barracks Military Reservation (SBMR) HI; and Fort Shafter, Hawai`i.

This analysis does not include analysis of the stationing of new Brigade Combat Teams (BCTs) to support Pacific Theater operations. As part of decisions related to the Army's 2008 Record of Decision for Army Growth and Force Structure Realignment, the Army made decisions to grow by 6 BCTs. All combat maneuver BCTs have been allocated to locations within the Continental US. Additional BCT stationing actions are not included as part of the Proposed Action and are not evaluated in this document as part of alternatives considered.

The Supplemental PEIS (SPEIS) evaluates different stationing scenarios, to include stationing of units at locations within CONUS. Stationing scenarios evaluated in the SPEIS include the stationing of 1,000 and 3,000 combat support Soldiers, a Combat Aviation Brigade (CAB), or a Fires Brigade at various stationing locations discussed within the document. The information from the stationing scenarios has been extrapolated to generate a conservative estimate of the environmental impacts of implementing specific alternatives. In this manner, senior Army leadership is informed of potential environmental impacts of stationing decisions and can balance environmental sustainment with operational readiness needs of the Army.

The Army's decision-maker will consider the environmental and public issues of concern disclosed in this SPEIS before making final force structure decisions to support the Proposed Action. After evaluating information presented in this SPEIS, the decision-maker will document the decision, selecting one of the alternatives for implementing the Proposed Action in a Record of Decision (ROD). By regulation, this document will be signed no earlier than 30 days from the publication of the Notice of Availability of the Final SPEIS. The ROD will clearly and definitively articulate the decision made and provide a supporting explanation. It will explain both the significant factors he relied on in making a final decision and why the final alternative best meets the purpose and need. The decision-maker will acknowledge the comparative environmental impacts and benefits resulting from his decision particularly if the alternative selected is not the environmentally preferred alternative. The ROD will be made available to the public when it is finalized.

ALTERNATIVES

Three action alternatives have been formulated to take into account the Army's needs for growth and force structure realignment to support Pacific Theater mission requirements. Common elements to these alternatives include the growth and force structure realignment of Army units from the fiscal year 2008 to 2013. All alternatives consider BRAC (Base Realignment and Closure) directed actions and those stationing actions that have occurred prior to the start of Fiscal Year 2008 as part of the baseline condition for analysis. Alternatives carried forward for analysis in this SPEIS include:

Alternative 1- Grow, transform, and realign forces to support operations in the Pacific Theater by implementing Army-wide modular force recommendations to modernize the force structure of existing units. Modularity-based recommendations as part of this alternative include adjustments in the number and type of existing CS (Combat Support), CSS (Combat Service Support), and Headquarters units stationed in the Pacific Theater. As part of this alternative, Army installations would experience unit gains through stationing and transfer of units from other installations, and losses through deactivations and transfers of existing units to other installations. This alternative would serve to implement modular force recommendations at PACOM installations that the Army is in the process of implementing across the organization.

This alternative includes the stationing of approximately 1050 new Soldiers in Hawaii and approximately 330 new Soldiers in Alaska.

Alternative 2 (Preferred Alternative for Hawaii)- In addition to those stationing actions in Alternative 1, the Army would station additional units needed to meet the specific mission requirements of the Pacific Theater. As part of Alternative 2, the Army would grow and realign its forces to support the mission requirements of the Pacific Theater. Critical Army units include a theater engineer command and supporting engineer units, a military police brigade and support units, and other high-demand CS units. An additional engineer brigade headquarters and engineer support units are required to support the theater's large disaster relief response requirement for construction engineers. In addition an engineer brigade headquarters will provide command and control functions for existing engineer battalions in Alaska and Hawai`i. As part of this alternative, the Army would station approximately 1,980 Soldiers in Hawaii and approximately 1,630 in Alaska. Alternative 2 is the Preferred Alternative for implementing the Proposed Action in Hawaii.

Alternative 3 (Preferred Alternative for Alaska)- Take actions to grow, transform, and realign Army forces to support Army modularity and Pacific Theater operations as discussed in Alternatives 1 and 2; in addition to these actions grow the Army to accommodate the stationing of a Maneuver Enhancement Brigade, a Fires Brigade, and a Combat Aviation Brigade to enhance PACOM operations and combat support capabilities in the Pacific Theater. Alternative 3 includes implementing the recommended stationing actions of all of the programs discussed above as part of Alternatives 1 in addition and the growth discussed in Alternative 2. In addition, the Army would also station three multi-functional support brigades to support operations in the Pacific Theater. These brigades would include a Fires Brigade (approximately 1,600 Soldiers), a Maneuver Enhancement Brigade (approximately 570 Soldiers), and a Combat Aviation Brigade (approximately 2,500-2,900 Soldiers). These units provide additional flexibility and depth to the available force pool and would provide the Pacific Theater with increased capabilities to respond to a wide array of contingencies. These units could be stationed in Hawai`i, Alaska, or other locations in CONUS that are capable of deploying forces to support Pacific Theater operations. Alternative 3 is the Preferred Alternative for implementing the Proposed Action in Alaska. As part of Alternative 3 the Army would station a new Maneuver Enhancement Brigade consisting of approximately 570 Soldiers at Fort Richardson, Alaska in addition to combat support Soldiers discussed in Alternative 1 and 2. The total proposed number of new Soldiers stationed in Alaska would be approximately 2,200. As part of this Alternative the Army would validate the stationing of a 254 Soldier Expeditionary Sustainment Command at Fort Lewis, Washington. Analysis from the PEIS for Army growth incorporated by reference into this document was used to support this decision.

No Action Alternative- The No Action Alternative is to take no stationing actions to support growth, realignment, and transformation of the Army to support operations in the Pacific. The No Action Alternative serves as a baseline condition for analysis. The No Action alternative includes those stationing decisions that have already been made to include stationing actions recommended by the BRAC Commission (BRAC 2005), as well as Army Global Defense Posture Realignment actions that took place prior to 2008.

The Army's Preferred Alternative- After considering all relevant factors and information available to date, to include public comments, the Army has selected its Preferred Alternative for the Final SPEIS balancing environmental considerations with operational requirements. To implement the Proposed Action the Army's Preferred Alternative is to implement Alternative 2 in

Hawaii and Alternative 3 in Alaska. This Preferred Alternative involves the stationing of approximately 1,980 new engineers, military police, combat support, logistics, and headquarters Soldiers in Hawaii and approximately 2,200 new Soldiers in Alaska. As part of this decision, the Army is validating the decision to divert a MEB (Maneuver Enhancement Brigade) considered for stationing in Hawaii to Fort Drum to reduce environmental impacts. The Army is also validating the stationing of a 254 Soldier Expeditionary Sustainment Command at Fort Lewis Washington as part of its Preferred Alternative. The Army feels that it can meet Theater mission requirements in PACOM by implementing these decisions and maintaining a balance between operational requirements and environmental sensitivities. The Army is not proposing to station an aviation brigade or a fires brigade as part of the Preferred Alternative for implementing the Proposed Action at this time.

SCREENING CRITERIA FOR STATIONING LOCATIONS

The Army initially included all of its installations as potential stationing locations to support growth, transformation, and realignment to support Pacific Theater operations. Installations that do not have access to adequate modernized range facilities and training land were excluded from analysis. Overseas installations and those installations that do not have permanent party infrastructure or services have also been screened from further consideration. A fuller discussion of screening criteria is provided in Chapter 3 of the SPEIS.

SPEIS METHODOLOGY

Chapter 4 of the SPEIS analyzes the potential impacts resulting from implementing various stationing scenarios to support the Proposed Action. There are six stationing scenarios the Army has assessed in the SPEIS that are designed to inform the decision-maker and provide him with flexibility in implementing alternatives. Stationing scenarios have been evaluated at a given installation if the Army has determined that the scenario might feasibly be implemented to support the Proposed Action. Stationing scenarios include the stationing of additional Combat Support (CS) units with approximately 1,000 Soldiers, Combat Service Support (CSS) units with approximately 1,000 Soldiers, Combat Support units having approximately 3,000 Soldiers, Combat Service Support units with approximately 3,000 Soldiers, a Fires Brigade having approximately 1,600 Soldiers, and a Combat Aviation Brigade (CAB) consisting of approximately 2,800 Soldiers. Combat Support units include Military Police (MP), Explosive Ordnance Disposal (EOD), Chemical Defense, and Engineer Soldiers. Combat Service Support units provide logistical capability and may be comprised of Transportation, Quartermaster, Headquarters, and Medical functions. The Fires Brigade and Combat Aviation Brigade scenarios are based on the Army Modular Force organization which offers self-sustaining unit capability, equipment, and manning.

All scenarios are not evaluated at all potential stationing locations, but take into account the capacity of the installation and the Army's force structure management needs. For example, the Army has determined that the stationing of more than 1,000 Soldiers at Fort Shafter, Hawaii, or of a Fires Brigade in Hawaii are not feasible scenarios that would be implemented to support the Proposed Action. Stationing scenarios evaluated in Chapter 4 are designed to provide decision-makers with awareness of potential environmental issues and impacts now and in the near future, and should not be interpreted as representing the Army's plan for supporting growth and realignment in the Pacific Theater.

SIGNIFICANT ENVIRONMENTAL AND SOCIO-ECONOMIC CONSEQUENCES

Tables ES-1 through ES-6 provides a summary of potentially significant environmental and socio-economic consequences that would be projected to occur for each of the installations that have been carried forward for analysis in the SPEIS. This analysis supplements analysis of environmental impacts connected with Army stationing that was provided in the Army's PEIS for Army Growth and Force Structure Realignment (October 2007). The Army has coordinated with installation staff at each potential stationing location to assess anticipated impacts from different unit stationing scenarios. Significant direct and indirect environmental and socio-economic impacts connected with various stationing scenarios are discussed below.

Summary of Potentially Significant Impacts

Scenarios 1 & 2
Stationing of an Additional 1,000 Combat Service Support (CSS) or Combat Support (CS) Soldiers. A majority of installation impacts analyzed within this SPEIS result from the accommodation of training and construction activities and are anticipated to be less than significant in nature. CSS units consist of transportation, maintenance and quartermaster battalions, companies and other attachments that provide storage, control, distribution and repair/maintenance of general military supplies and equipment. Surface transport of supplies and equipment and other logistics functions provided by these units is typically accomplished using light, medium and heavy tactical trucks. Combat Support Units consist of Engineer, Military Police (MP), Chemical Defense, and Explosive Ordnance Disposal (EOD) brigades, battalions, companies and attachments. The units are equipped with light, medium, and heavy tactical trucks and various types of earth moving equipment (ex. bulldozers and road graders). While CSS and CS units are capable of off-road maneuver, typically, training occurs on roads and hardened surfaces and live-fire training, typically, involves small arms training.

Potentially significant impacts to Air Quality, Cultural Resources, Noise, Facilities, and Land Use Conflict and Compatibility could occur as a result of implementing stationing scenarios 1 or 2 and are summarized below:

Air Quality. Significant impacts may occur at Fort Wainwright, Alaska (FWA). FWA is classified as a "major" facility because it is within the boundary of the former carbon monoxide (CO) non-attainment area. FWA is also classified as a Prevention of Significant Deterioration (PSD) Major Facility; and is currently classified as a major stationary source under Title I (Part D) and Title I (Part C) of the Clean Air Act (CAA); Section 112 air toxics program; and the Title V Operating Permit program. The use of boiler units and generators used in new facilities (as a result of stationing new units), and the use of transportable generators during training operations, may require FWA to apply for a major or minor air quality permit. If either of these stationing scenarios are selected the installation may need to undergo a conformity review and an air conformity determination may be required.

Cultural Resources. Significant impacts may occur at Schofield Barracks Military Reservation (SBMR) and Pohakuloa Training Area (PTA), Hawai'i. Archaeological sites are known to occur in the recently acquired South Range area. Construction supporting new facilities at South Range may disturb unknown/ undocumented archaeological sites. The likelihood of this will depend on the final scope, design, and siting of the projects. At PTA, live-fire and maneuver training will continue to pose a potential significant impact to undocumented cultural resources. Continued adherence to Section 106 and the NHPA (National Historic Preservation Act) will

minimize impacts to newly discovered sites; however, significant impacts to undocumented resources could potentially still occur.

Noise. Significant impacts from noise may be anticipated from stationing 1,000 Soldiers at SBMR or Fort Shafter, Hawai'i. At SBMR, noise levels from live-fire activities and ordnance detonations would contribute to already significant noise impacts from live-fire activities occurring at SBMR and the Oahu training sites. At Fort Shafter, construction activities in the cantonment area may exceed the 8-hour OSHA (Occupational Safety and Health Administration) noise exposure limits, potentially impacting nearby housing units and a child development center. The installation may require a noise permit form the Hawai'i Department of Health.

Facilities. There may be significant impacts at Fort Shafter due to limited available cantonment space and capacity to accommodate new construction. The installation does not currently have adequate vacant space to support the required facilities for a Combat Support or Combat Service Support unit without deconstructing/demolishing existing aging facilities. It is anticipated that construction to support growth may require the use of modular facilities until construction is complete. Flood control measures may also be required to proximity to waterbodies.

Land Use Conflict and Compatibility. There may be significant impacts at Fort Shafter. For instance, the land available for construction outside the main post is primarily mountainous with little topographic relief which poses a challenge to construction planning. In addition, few other parcels of land are available for construction. Those that are available are located within the main post at Shafter Flats.

Scenarios 3 & 4
Stationing of an Additional 3,000 Combat Service Support (CSS) or Combat Support (CS) Soldiers. A majority of installation impacts analyzed within this SPEIS result from the accommodation of training and construction activities and are anticipated to be less than significant in nature. CSS and CS weaponry and equipment are described in Scenarios 1&2 above.

Potentially significant impacts to Air Quality, Cultural Resources, Noise, Facilities, Traffic and Transportation, and Land Use Conflict and Compatibility could occur as a result of implementing stationing scenarios 3 or 4 and are summarized below:

Air Quality. At FWA, implementation of either of these stationing scenarios would increase the Soldier and Family population at FWA by approximately 50 percent. The use of individual boiler units and generators would contribute to the installation's overall air pollutant emissions, further degrading air quality.

Cultural Resources. Construction of new facilities at South Range could potentially damage or destroy undocumented resources. The likelihood of this will depend on the final scope, design, and siting of the projects. Further survey may be required prior to the design planning and construction phase. In addition, the increase in live-fire and maneuver training may further limit the access of Native Hawaiians to sites of traditional importance.

Noise. Incremental increases in live-fire training would continue to contribute to already significant noise issues at SBMR. Undesireable noise levels are currently being experienced at Soldier and Family housing and two elementary schools at or near the installation.

Facilities. Fort Richardson Alaska (FRA) may experience significant impacts due to a lack of vacant space in the existing cantonment area. The installation would need to consolidate units at an area away from the main cantonment area of approximately 200 acres in size. Construction would involve all new facilities including headquarters buildings, motorpools and maintenance, new utility (power, water, wastewater) distribution and collection lines, and telecommunication. Due to the amount of construction that would be required, additional coordination with commercial contractors, planners, and state and federal agencies may be needed for permitting and consultation.

Traffic and Transportation. FRA may experience significant impacts. There could be an expected shortfall of organizational and motorpool parking associated with this level of Soldier strength. On-post traffic patterns may need to be reconsidered as well as gate modifications to gate operations. Traffic conditions off-post could be exacerbated during the spring and summer when Anchorage and surrounding areas experience its greatest amount of tourism.

Scenarios 5

Stationing of 1,600 Soldiers associated with a Field Artillery (Fires) Brigade. Installations' impacts that result from training and construction are generally anticipated to be significant but mitigable to less than significant. The fires brigade uses mounted and towed artillery to provide close support and precision strikes. The Brigade employs artillery within the unit but also can control and direct the fires of other armed forces or coalition partners. A Fires Brigade with high mobility artillery rocket system and 1.55 howitzers consists of approximately 1,600 Soldiers, vehicles, and equipment.

Potentially significant impacts to Air Quality and Facilities could occur as a result of implementing stationing scenario 5 and are summarized below:

Air Quality. Under this stationing scenario, the Soldier and Family population would increase by approximately 25 percent at FWA. Given regional air quality conditions, implementation of this stationing scenario is anticipated to have significant impacts from stationary source emissions.

Facilities. Similar to scenarios 3 & 4, siting of new facilities at FRA are expected to involve new facilities and new infrastructure in an area away from the existing cantonment area.

Scenario 6

Stationing of approximately 2,800 Soldiers associated with a Combat Aviation Brigade (CAB). The impacts expected from stationing an additional Combat Aviation Brigade at Schofield Barracks range from minor to significant. Aviation Brigades typically consist of 80 - 100 helicopters that entail a variety of live-fire training and maneuver support training requirements. As part of this stationing scenario, equipment would operate out of Wheeler Army Airfield. Impacts would result from construction of new facilities and training activities.

Potentially significant impacts to Cultural Resources, Noise, Soil Resources, and Biological Resources could occur as a result of implementing stationing scenario 6 and are summarized below:

Cultural Resources. The expansion of the current aviation gunnery range (range 20) to accommodate live-fire training activities of the aviation brigade at PTA could potentially result in the inadvertent discovery and loss of unique cultural resources on the Big Island of Hawaii. This potential loss is regarded as a significant impact. In addition, on South Range, Construction of

new facilities may damage or destroy undocumented resources. The likelihood of this will depend on the final scope, design, and siting of the projects. Further survey may be required prior to the design planning and construction phase. In addition, the increase in live-fire and maneuver training may further limit the access of Native Hawaiians to sites of traditional importance.

Noise. The increase in noise from helicopter overflights may lead to significant impact to residential and civilian populations surrounding PTA. The Army would continue to work with the community to identify and isolate noise generating activities and will continue to review aircraft maneuver policies with regard to low altitude flights. In addition, noise may significantly impact sensitive species at PTA.

Soil Resources. Wind generated from helicopters can loosen vegetation and soils, leaving certain areas more susceptible to wind erosion. Conditions in many parts of PTA are relatively dry and wind and aviation training could lead to significant soil erosion. Although mitigation measures at many maneuver areas are conducted, the Army's ITAM (Integrated Training Area Management) program would not be able to implement mitigation measures for aviation maneuver in the impact area where the aviation gunnery range is located.

Biological Resources. The level of training activity associated with a Combat Aviation Brigade would increase in intensity at Pohakuloa Training Area (PTA). Because live-fire training using various types of ordnance would occur more frequently, the occurrence of wildfire may increase within the impact area of PTA. While the installation could take measures to mitigate the level of impact of wildfires, it remains a significant impact the Army would anticipate given the sensitivity of local plant populations and high levels of endemism encountered on the islands of Hawai`i. Wildfire events open up opportunities for colonization by invasive non-native vegetation in Hawai`i. The severity of impact relating to wildfire and probability of wildfire caused by CAB training at PTA could not be mitigated to less than significant.

No Action Alternative. Impacts expected although the stationing of addition Soldiers and units would not occur in support of growth, realignment, and transformation of the Army. The No Action Alternative serves as a baseline condition for analysis and includes those stationing decisions that have already been made by Headquarters, Department of the Army to include stationing actions recommended by the BRAC Commission (BRAC 2005), as well as Army Global Defense Posture Realignment actions that took place prior to 2008. The no action alternative takes into account recent Army stationing decisions for the 2/25th SBCT as well as other Army stationing activities. Impacts from these actions and their associated projects are ongoing and are reflected in the discussion of the No Action Alternative. These impacts will take place regardless of the stationing of additional Soldiers to support this proposed action.

Significant impacts to Cultural Resources and Noise could occur as a result of choosing the No Action Alternative; these impacts are summarized below:

Cultural Resources. At PTA many live-fire ranges have been surveyed for cultural resources, and SBMR existing cantonment areas and live-fire ranges have been surveyed for cultural and historic resources. Known sites have been avoided or mitigated at both locations. Live-fire and maneuver training will continue to pose a potential significant impact to undiscovered resources. Continued adherence to Section 106 and the NHPA will minimize impacts to newly discovered sites; however, significant impacts to undiscovered resources could potentially occur.

Noise. Much of the cantonment area at SBMR would remain impacted by live-fire activities. A large portion of the family and troop housing and two elementary schools on the Main Post are exposed to undesirable noise levels. Continued exposure of troop housing and family housing areas at SBMR to Zone III and Zone II noise conditions would be a significant and unavoidable impact under No Action.

VEC Impact Summary Tables

A consolidated table of significant impacts is summarized in tables ES-1 through ES-7 below. These tables provide an overview of anticipated significant impacts in connection with each stationing scenario at new installations analyzed in the SPEIS, and a summary of the significant impacts associated with the No Action Alternative. Less than significant impacts and impacts to major training installations, analyzed in the PEIS, are not captured in the Executive Summary tables below. Tables 4.0-1 through 4.0-7 in Chapter 4 of this SPEIS provide a comparison of all of the anticipated impacts from each of the six stationing scenarios and the No Action Alternative.

The symbols below indicate the intensity of impact on Valued Environmental Components (VEC). Tables (found in Chapter 4) and the environmental consequences or "analysis of impacts," also found in Chapter 4.

Description of VEC Impact Ratings

Impact Symbol	VEC Impact Intensity Rating
◯	No impact, minimal or minor impacts are anticipated
⊙	Less than Significant
⊘	Significant but Mitigable
⊗	Significant Adverse impacts
+	Beneficial Impact
N/A	Not Applicable

These ratings assess the composite intensity of impacts to the installation by individual VEC resulting from i) Garrison construction, ii) training infrastructure construction, iii) live-fire training, and iv) maneuver training associated with each of the stationing scenario.

While there are variations in the impacts from each of the unit stationing scenarios to the installations identified, generally, the broad comparison of these impacts demonstrate patterns of expected impacts from each of the stationing scenarios.

Table ES-1. Combat Service Support (CSS) Scenario Summary of Potential Effects (1,000 Soldiers)

VEC	Location					
	Schofield Barracks	Fort Shafter	Pohakuloa Training Area	Fort Richardson	Fort Wainwright	Donnelly Training Area
Air Quality					⊗	
Cultural Resources	⊗		⊗			
Noise	⊗	⊗				
Facilities		⊗				
Land Use Conflict / Compatibility		⊗				

Table ES-2. Combat Support (CS) Scenario Summary of Potential Effects (1,000 Soldiers)

VEC	Location					
	Schofield Barracks	Fort Shafter	Pohakuloa Training Area	Fort Richardson	Fort Wainwright	Donnelly Training Area
Air Quality					⊗	
Cultural Resources	⊗		⊗			
Noise	⊗	⊗				
Facilities		⊗				
Land Use Conflict / Compatibility		⊗				

Table ES-3. Combat Service Support (CSS) Scenario Summary of Potential Effects (3,000 Soldiers)

VEC	Location				
	Schofield Barracks	Pohakuloa Training Area	Fort Richardson	Fort Wainwright	Donnelly Training Area
Air Quality				⊗	
Cultural Resources	⊗	⊗			
Noise	⊗				
Facilities			⊗		
Traffic and Transportation			⊗		

Table ES-4. Combat Support (CS) Scenario Summary of Potential Effects (3,000 Soldiers)

VEC	Location				
	Schofield Barracks	Pohakuloa Training Area	Fort Richardson	Fort Wainwright	Donnelly Training Area
Air Quality				⊗	
Cultural Resources	⊗	⊗			
Noise	⊗				
Facilities			⊗		
Traffic and Transportation			⊗		

Table ES-5. Fires Brigade Scenario Summary of Potential Effects (1,600 Soldiers)

VEC	Location		
	Fort Richardson	Fort Wainwright	Donnelly Training Area
Air Quality		⊗	
Facilities	⊗		

Table ES-6. Combat Aviation Brigade (CAB) Scenario Summary of Potential Effects (2,800 Soldiers

VEC	Location	
	Schofield Barracks	Pohakuloa Training Area
Cultural Resources	⊗	⊗
Noise	⊗	⊗
Soil Resources		⊗
Biological Resources		⊗

Table ES-7. No Action Alternative

VEC	Location	
	Schofield Barracks	Pohakuloa Training Area
Cultural Resources	⊗	⊗
Noise	⊗	

Supplemental Programmatic Environmental Impact Statement
Army Growth and Force Structure Realignment
to Support Operations in the Pacific Theater

Table of Contents

List of Figures

List of Tables

Appendices

1.0 PURPOSE, NEED AND SCOPE

1.1 Introduction

This Supplemental Programmatic Environmental Impact Statement (SPEIS) conducts an analysis of alternatives for supporting the growth, realignment, and transformation of the Army to support operations in the Pacific Theater. The Army's purpose and need for taking action is to balance and better align its forces to address existing military skills and capabilities shortfalls to support operations of the Pacific Command (PACOM). The SPEIS will provide a top-tier perspective that will provide the decision-maker, regulatory agencies, and the public with information on the potential environmental and socioeconomic effects resulting from stationing new units, to include Soldiers, Families, and equipment, at locations that can support the needs of the PACOM. This SPEIS will allow the decision-maker to compare alternatives and assess environmental and socioeconomic impacts for implementing Army growth initiatives and enable him or her to make informed decisions when choosing locations at which to station Army units.

PACOM is a joint combatant command (containing all armed services) that reports directly to the Secretary of Defense and the President. With headquarters in Hawai'i, its area of responsibility includes over 50% of the earth's surface, stretching across the Pacific and from Antarctica to the Arctic Ocean. This area, known as the Pacific Theater, includes 39 countries. Among these are India, China, Japan, both Koreas, the Philippines, and Australia. The U.S. Army Pacific (USARPAC) is the Army component of PACOM and supports the same area of operations. USARPAC is headquartered in Hawai'i but includes Army elements in Alaska. USARPAC includes the 8th Theater Sustainment Command, also stationed in Hawai'i. In addition to supporting PACOM, USARPAC must also support other Combatant commands around the world. Currently, this includes support to Central Command operations in Iraq and Afghanistan.

The Army completed a Programmatic EIS (PEIS) for Army Growth and Force Structure Realignment in October 2007 and published its decisions in January 2008. That document considered the stationing of units at locations in the Continental United States exclusive of Alaska (CONUS) but did not consider the growth and realignment of forces needed to support the operations in the Pacific Theater. For this active operational theater, Army force management decisions must carefully weigh additional considerations, such as strategic deployment and rapid contingency mission response, in addition to the factors the Army considers when stationing its forces to support general force readiness and sustainment operations. This SPEIS evaluates the potential environmental impacts associated with alternative stationing scenarios designed to support operations in the Pacific Theater.

The Army is in a period of critical transition. On 12 October, 1999, the Secretary of the Army and the Army's Chief of Staff articulated a vision for the Transformation of the organization to ensure it remained an effective and relevant operational force in the 21st Century. The leadership of the Army recognized the emerging need to shift from a Cold War focus to meet new unconventional threats to national security. A decision was made to begin the 30 year process of transforming the Army that was described in the 2002 Record of Decision for the PEIS for Army Transformation. Since this decision, the Army has completed the initial phases of this Transformation effort and is continuing to implement those actions that are needed to field a force that is best configured to meet the evolving national security and defense requirements of the 21st century.

The Army continues to conduct detailed planning to effectively carry out transformation in a way that addresses capabilities' shortfalls of the cold war force and implements the guiding recommendations of the Quadrennial Defense Review (QDR). The Army's guiding document for the implementation of this plan is the Army Campaign Plan (ACP). The ACP directs the detailed planning, preparation, and execution of a full range of transformation tasks that are underway to ensure the synchronization of transformation activities across all facets of the organization. The ACP is an evolving document that changes and adapts to lesson's learned from the Army's most recent operational experience and the recommendations put forth in the QDR.

As part of the overall Army transformation effort, the Army has transitioned to a modular force structure. Organizationally this has meant a transition of the Army from large, powerful, fixed organizations constituted at the Division level (10,000 to 12,000 personnel) to an Army designed around smaller, standardized, self-contained, rapidly deployable Brigade Combat Teams (BCTs). The implementation of modular force concepts has led to force structure changes at all Army echelons, to include organizational changes all the way up to Theater Command level. The transformation of the Army's BCT's to a standardized structure is almost complete. The Army has completed assessments of how to align its Combat Support (CS), Combat Service Support (CSS), and higher Headquarters units to best support to its combat forces. Realignment of CS/CSS units is required to support PACOM's operational needs and is discussed and evaluated along with those programs that further implement modular forces concepts in the subsequent chapters of this document.

In order to further Army Transformation, meet the increased national security and defense requirements of the 21st century, maintain training and operational readiness levels of the force, and preserve a high quality of life for U.S. Army Soldiers and Families, the Army has identified the need to increase its overall size to support the operations of PACOM and other Army missions. In doing so, the Army will continue to restructure its forces in accordance with modular Transformation decisions. This increase in the numbers and configurations of units will enhance readiness in the Pacific Theater by allowing Soldiers more time to train and maintain their equipment, provide Soldiers and Families more time together at home station, and provide Commanders with greater capability to respond to increasing regional security challenges.

The Army's Proposed Action is to grow, realign, and transform its forces to support PACOM operations and to ensure the proper capabilities exist to sustain operations for promoting global, regional, and national security now and into the foreseeable future. The implementation of the Proposed Action is better needed to meet military operational needs, national and regional security requirements, and the needs of the Army's Soldiers and their Families to ease the burden of repeated deployments.

1.2 Need for the Proposed Action

This section of the document presents and discusses the Army's need for growth, continued transformation, and realignment of its current forces to support operations in the Pacific Theater and other Army missions. This discussion references several underlying source documents that must be discussed in order to place the full need and purpose for the Proposed Action in its proper context. Source documents referenced in this section include the National Security Strategy (NSS), the National Defense Strategy (NDS), the Quadrennial Defense Review (2006), and the ACP. The growth and realignment of Army forces must meet the requirements defined in these guiding national security and defense policy documents, which lay the framework for the Army mission and how the United States will utilize its military to deter conflict and shape the global security environment. In addition to discussing the Army's requirements to take

action, from an organizational perspective, this section also discusses the needs of individual units as well. The implementation of growth, transformation, and restructuring to support PACOM operations must be considered in the context of several major ongoing initiatives including Army modular Transformation; those moves directed by the Defense Base Closure and Realignment Act of 1990, implemented by Base Realignment and Closure commission recommendations of 2005 (BRAC 2005); and Global Defense Posture Realignment (GDPR).

1.2.1 Need for Growth, Transformation, and Realignment to Support PACOM Operations

The need for the Proposed Action consists of several elements. Across the Army, the organization is adding new units, reconfiguring existing units, and upgrading capabilities to best meet its operational and readiness needs. For USARPAC, with theater specific needs, the Army must tailor forces to accomplish the missions that it is most likely to encounter in its Area of Responsibility in the Pacific Theater.

The broader Army-wide component of need discussed in the previous paragraph was best summarized by the Chief of Staff of the Army's (CSA) 2007 assessment of the disposition of the Army that stated the following:

"The need for Army growth is driven by the fact that the current operational demand is greater than the Army's sustainable supply of forces. Because of shortages in people, equipment and time to train, the non-deployed force does not meet readiness goals. As a result, the Army lacks strategic depth to respond to new contingencies, and generating forces to meet demands, which results in short term stress and long term institutional risk. These are symptoms of a larger strategic problem: the Army's strategic requirements and resources are not in balance." [General Casey, Chief of Staff of the Army (Army Initiative Charter, April 2007).]

As a result of the imbalance between current mission requirements and available forces, the Army has defined the growth and restructuring to meet the greater demands of the current security environment as its top priority (CSA, 2007).

The need for the Proposed Action focuses on three primary areas. These areas of need include:

- **Supporting increased security and defense mission requirements**. The NSS and NDS provide a framework which directs Army mission requirements and contingency planning. The Army must be able to meet the nation's security and defense policy objectives as defined in these documents while continuing to implement recommendations for Army Transformation as defined in the QDR in 2001 and 2006. The ACP is the Army's guiding document for managing the force and carrying out recommendations put forth in the QDR.

- **Sustaining Force Readiness**. Sustaining the force entails ensuring that the Army consists of enough Soldiers to support both operational deployment requirements and home station training and equipment maintenance activities. Striking the proper balance of deployments with these activities is critical to ensure a professional, well-trained, and well-equipped force can consistently meet unit readiness standards and successfully accomplish the national security and defense missions of the nation.

- **Preserving Soldier and Family Quality of Life and the All Volunteer Force.** Keeping a long-term sustainable balance between the operational activities is required to support

U.S. Security and quality of life for Soldiers and their Families. A larger pool of available forces will allow the Army to set more sustainable ratios of home-station time versus time spent deployed to support mission requirements abroad. This balance reduces stresses placed on individual Soldiers and their Families and allows Soldiers to maintain a higher quality of life at home station. Taking care of Soldiers and their Families is a critical element of need and will help to ensure the Army is capable of maintaining an all-volunteer force by encouraging Soldier retention and attracting new recruits.

1.2.2 Supporting Increased Security and Defense Mission Requirements

The Army is established as a land-based military force, and its forces are to be organized, trained, and equipped to represent the nation's global security and defense interests around the world. The Army does this primarily through prompt intervention and sustained combat, peacekeeping, and support and stability operations in key regions of interest defined by national strategic policies and objectives. Key policy documents for national security and national defense include the NSS (March 2006), the NDS (March 2005), and the QDR (February 2006). As Commander in Chief of the Armed Forces, the President of the United States in conjunction with his security advisors, promulgate and define national security and defense policy from within the executive branch of government. Using these defense policy documents for strategic guidance, military commanders conduct contingency planning to ensure that their forces are able to respond to crises, shape the global security environment, and implement security and defense policies in their regions of interest. The Army is responsible for the implementation of national security and defense policy as outlined in these over-arching security and defense policy documents by the executive branch of the government.

1.2.2.1 National Security Strategy

The President of the United States establishes the nation's goals and objectives for promoting secure global conditions and for shaping of the global security environment. The NSS establishes the policy goals and objectives that begin to shape mission requirements for the Department of Defense (DoD) and Department of the Army (DA). NSS goals include:

1) Disrupting and destroying terrorist organizations with global reach.

2) Denying terrorist groups the support and sanctuary provided by rogue states.

3) Preventing and resolving regional conflicts.

4) Intervening in regional conflict to promote stability where necessary.

5) Assisting in post-conflict stabilization when necessary.

6) Preventing Nuclear Proliferation.

7) Preventing tyranny, oppression, and genocide.

These goals provide direction and guidance to inform DoD and DA Commanders and strategic planners to establish the NDS and plan for strategic mission requirements.

1.2.2.2 National Defense Strategy

The NDS outlines how DoD will support broader U.S. efforts to create conditions conducive to a secure international system as outlined in the President's NDS. The NDS strives to maintain international sovereignty, representative governance, peaceful resolution of regional disputes, and open and competitive markets. Specifically, the NDS and the National Military Strategy, a policy document that supports it, seek to ensure the U.S. focuses its efforts on four strategic objectives. These objectives are:

1) ***Secure the U.S. from Direct Attack.*** This military objective includes the dissuasion, deterrence, and defeat of organizations and states that seek to harm the U.S. and its citizens directly.

(2) ***Secure and Retain Strategic Access for Global Freedom of Action.*** Strategic access ensures the U.S. can access key regions of interest, access lines of communication and promote and influence the global security environment and the goals outlined in the NSS for itself and its allies.

(3) ***Strengthen Alliances and Partnerships.*** A secure international system requires collective action. The U.S. has an interest in broad-based and capable partnerships with like-minded states. This objective seeks to strengthen security relationships with traditional allies and friends, developing new international partnerships, while working to increase the capabilities of our partners to contend with common challenges.

(4) ***Establish Favorable Security Conditions.*** The objective directs the DoD counter aggression or coercion targeted at U.S. partners and interests. Further, where dangerous political instability, aggression, or extremism threatens fundamental security interests, the U.S. will act with others to strengthen peace. Specifically, the U.S. military will conduct planning to create favorable international conditions and broad, secure, and lasting peace.

1.2.2.3 PACOM Commitments to Support NSS and NDS

To support national security goals and objectives, PACOM must be prepared to handle contingencies involving a number of potential conflict and peace support / humanitarian assistance scenarios. PACOM must have the appropriate number and type of forces not only to support global operations such as the wars in Iraq and Afghanistan, but must also have the forces necessary to implement security policy across the Pacific Rim. Some of the strategic concerns and mission requirements in the region include but are not limited to:

- The U.S. commitment to the defense of Taiwan
- The U.S. commitment to Japan and South Korea in containment of North Korean aggression
- The U.S. commitment to deterring North Korean nuclear advancement
- The U.S. commitment to deterring sanctuary for terrorist organizations and preventing the safe harbor for terrorist organizations and growing insurgency in Indonesia, the Philippines, and other areas of growing unrest in Southeast Asia
- The U.S. commitment to allaying ethnic conflict in Indonesia
- The U.S. commitment to supporting democracy in Southeast Asia

- The U.S. commitment to peace support and humanitarian assistance missions in the region

1.2.2.4 The Quadrennial Defense Review (2001, 2006)

The QDR sets forth a specific series of recommendations for implementing the goals and objectives of the NSS and NDS. These recommendations are specific capabilities-based recommendations for each service of the DoD that take into account current capabilities and future projected military requirements that will be needed to implement the NSS, NDS, and provide for global security and the nation's strategic interests. The QDR is required by 10 USC 118, which directs the Secretary of Defense to assess defense strategy and force structure every four years on a 20-year planning horizon. Based on this assessment, the DoD reorients its capabilities better to meet national security demands. The QDR in 2001 prescribed recommendations for the Army to transform its forces to become more relevant to shaping the 21st Century global security environment. These recommendations provided a framework for Army units/organizations to become a more transportable, agile, maneuverable force with more firepower, technology, and logistical sustainability than the forces that existed. The DoD and DA, informed by experiences in Afghanistan and Iraq, revised and submitted the QDR to Congress in 2006. The recommendations continue to emphasize the need for Transformation and growth of U.S. ground forces. These recommendations put forth in the QDR follow two major DoD imperatives:

1) Continue to reorient the Department's capabilities and forces to be more agile in current international conflicts while preparing for broader asymmetric threats from unconventional enemies to hedge against uncertainty over the next 20 years.

2) Implement enterprise-wide changes to ensure that organization structures, processes, and procedures effectively support DoDs strategic direction.

Specific QDR decisions direct DA to accelerate the Transformation of joint ground forces capabilities. QDR decisions and directives that specifically relate to Army growth and restructure include:

1) Transform Army units and headquarters to modular designs.

2) Continue to standardize brigades through Army Modularity in all three Army components (Active, Reserve, and National Guard).

3) Incorporate technology improvements and Future Combat Systems (FCS) improvements through a spiraled development and fielding process to introduce new technologies as they develop.

4) Expand joint tactical air/ground operations and double the coverage capability of unmanned aerial vehicles to include the Predator and Global Hawk.

5) Further increase the capability, capacity, and numbers of special operations force personnel and increase active duty Special Forces battalions by one-third.

6) Improve intelligence, surveillance, and reconnaissance technologies, information sharing capabilities, and joint command and control.

7) Achieve Net-Centricity and information connectivity on the battlefield by improving tactical satellite communications, strengthening network capability, and increasing communications capability and bandwidth.

These decisions and directives establish the strategic national security and defense framework that influence and direct the Army's decision on growth and restructuring. Ultimately, the nation's top defense professionals, its senior military leadership, assess and balance defense policy to manage the growth and restructure of the Army according to these policies.

1.2.2.5 Army Transformation & Modularity

On 12 October 1999, the Secretary of the Army and the Army's Chief of Staff articulated a vision for Transformation of the Army to ensure it remained a ready and relevant land-power for the 21st Century. There was a recognized and emergent need to shift from a Cold War focus to meet new and diverse threats to national security. To accomplish this, the Army initiated a 30 year process of Transformation, proceeding in phases from the existing force (Initial Phase), to an interim force (Interim Capability Phase) and ultimately a future force (Objective Phase). This process will pervade and force change in every element of the Army including leadership development, training and doctrine, force structure and stationing, weaponry and installation infrastructure.

The ACP and the Army's strategy for implementing Transformation directives of the QDR provide a context for understanding why the Army is transforming and the ultimate need for Army growth and restructuring. The ACP serves as the Army's roadmap to implementing the goals and objectives put forth in the QDR and its overarching planning document that guides Army Transformation. The QDR and ACP direct the Army to transform to a highly expeditionary force, or one which is capable of supporting itself in a combat environment without depending on continual supply and logistics support. In addition, the QDR directed the Army to integrate with the U.S. Air Force, Navy, Marine Corps, and Coast Guard capabilities to provide greater inter-operability and communication to enhance defense capability. These recommendations build on previous Transformation actions taken by the Army to convert to standardized, self-sustaining, modular BCT configurations.

To implement decisions made in the QDR, senior Army leadership is responsible for developing and managing the Army's modular force structure. The process of Army force management is not a static process and force management decision-making is an evolving process that is based on changing global conditions and mission requirements. As mission requirements change, Army leadership has recognized the need to continually re-evaluate the size and unit composition of the modular force. This evaluation and determination to change the size or structure of the modular force will take mission requirements into account and will build previous decisions that direct the Army and its units in the Pacific to transform to a modular force.

Modularity. All combat units, higher headquarters units, and support units are transitioning to a modular force structure. Modular units will be similar in function and in their equipment and manning across the Army. The modular initiative allows for greater levels of planning and organizational efficiency in equipping and fielding of Army units organization-wide. The modular initiative allows the Army to evolve more quickly in response to operational needs and security challenges.

Army modularity is based around modular BCTs, which are the primary combat maneuver units of the Army. The three primary types of BCTs include the Infantry BCT, the Stryker BCT, and the Heavy BCT. In addition to the BCTs, which represent the Army's primary ground combat forces, there are 5 other types of support brigades that support Theater operations. At a minimum these supporting brigades consist of a modular standardized headquarters, which has manning and equipment requirements that are fixed. These 5 multifunctional support brigades include:

Fires Brigades. The Fires Brigade uses mounted and towed artillery to provide close support and precision strikes. The Brigade employs artillery within the unit but also can control and direct the fires of other armed forces or coalition partners. A Fires Brigade with high mobility artillery rocket system and 1.55 howitzers consists of approximately 1600 Soldiers, their vehicles, and equipment.

Aviation Brigades. There are several types of aviation brigades, each with a different function. Aviation Brigades include Combat Aviation Brigades, Medium and Heavy Lift Aviation Brigades and Multi-Functional Aviation Brigades. Aviation Brigades typically consist of 80 - 100 helicopters and approximately 2,000 to 3,000 Soldiers.

Battlefield Surveillance Brigades (BfSB). The BfSB provides reconnaissance, surveillance, target acquisition, and intelligence support to the Army's combat units. The BfSB builds a common operational picture across the Army and other joint or allied units to focus the efforts and facilitate mission accomplishment.

Maneuver Enhancement Brigades (MEB). The MEB enables, enhances, and provides freedom of maneuver and engineering support to the Army, joint, or multinational headquarters. The MEB augments maneuver and support brigades with functional assets to provide combat maneuverability and focused logistics across multiple areas of operation and can provide a headquarters to command and control an assigned area of operations including maneuver forces. An MEB headquarters unit consists of approximately 570 Soldiers.

Sustainment Brigades. The Sustainment Brigade consists of a modular headquarters unit of approximately 350 Soldiers and light, medium, and heavy tactical trucks. The primary mission of the unit is to provide a complete range of logistics support supplies and services to combat BCTs and supporting Brigades. Often this support is in the form of fuel, ammunition, parts, food, and contracting services, to highlight just a few of the many logistical requirements of the BCT.

Each of these Brigades is augmented by different military skill sets, for example, military intelligence, communications, command and control, or explosives ordnance. Each of these skill sets are combined in a precise manner within a BCT or support unit to provide the right skill sets to meet national security and defense requirements.

Combat Support Units. In addition to BCT's and support brigades, the Army also consists of units at various echelons that provide a variety of combat support functions. Combat Support Units consist of Engineer, Military Police (MP), Chemical defense, and Explosive Ordnance Disposal (EOD) brigades, battalions, companies, and attachments. Engineer units provide horizontal (such as roads and other surfaces) and vertical (structures) construction project planning and execution. The units are equipped with light, medium, and heavy tactical trucks and various types of earth moving equipment (ex. bulldozers and road graders). MP units provide tactical reconnaissance and movement control, law enforcement, and enemy prisoner of

war control. The units are primarily equipped with light trucks and several medium trucks. Chemical units provide chemical warfare detection capability and capabilities to decontaminate Army Soldiers and equipment if they are attacked by enemy chemical munitions. EOD units identify, disarm, and destroy explosives and explosive devices, and are equipped with light and medium tactical trucks. Most combat support units range in size from 50 to 600 Soldiers.

Changes to Combat Support Units as Part of Army Modularity. Several changes to combat support units are being implemented across the Army to improve operations and fill critical capability gaps. Changes needed to implement Army modularity to support operations in the Pacific theater are listed below:

Modularity-based Force Structure Changes to Engineer Units:

Engineer units are being added across the Army to provide additional construction, combat and engineering support capabilities. Engineer companies allow the Army to build roads and support Army logistical and sustainment functions. Army engineers also construct key deployment infrastructure to include temporary air-fields. Combat engineers have been added to the Army's force structure as part of modularity to assist in route clearance, demolitions and other missions. Special engineering functions, such as power supply units, have been consolidated and reorganized for greater efficiency. Engineering functions have been identified as shortfalls across the Army.

Modularity-based Force Structure Changes to Military Police Units:

In 2007, the Army approved a clustered stationing concept for MP combat support companies and battalions. Under this concept, MP companies will be stationed near each other. This will make it possible for them to provide continuous support to Army mission requirements while also supporting local law enforcement. Under the cluster concept, there would always be an MP company to provide local law enforcement support while other MP units are deployed.

Modularity-based Force Structure Changes to Explosive Ordnance Units:

As part of Army modularity, the Army is increasing personnel in EOD units to a total strength of 44 Soldiers. This increase is needed to address emerging threats the Army is encountering related to the use of improvised explosive devices. EOD units are needed to address critical capabilities shortfalls across the Army.

Modularity-based Force Structure Changes to Chemical Units:

Chemical companies Army-wide are receiving from 2-6 additional personnel as part of modular force adjustments. These adjustments address critical capabilities' shortfalls in chemical, biological, radiological, nuclear, and high yield explosive defense.

Modularity-based Force Structure Changes to Unmanned Aerial Surveillance Units:

The Army is stationing additional Unmanned Aerial Surveillance (UAS) units to support the operations of its BCT's. This 126-person unit operates unmanned aerial surveillance aircraft. These units provide Army BCT's with additional capability to conduct reconnaissance and surveillance missions. UAS units allow the Army to conduct reconnaissance missions in order to provide intelligence and early warning of enemy intent, and have been identified as a critical

shortfall across the Army. UAS units can be used to augment BCT capabilities or support theater operations as required.

Combat Service Support Units. Combat Service Support Units consist of transportation, maintenance, and quartermaster battalions, companies, and other attachments that provide storage, control, distribution and repair/maintenance of general military supplies and equipment. Surface transport of supplies and equipment and other logistics functions provided by these units is typically accomplished using light, medium and heavy tactical trucks. Most Combat Service Support units range in size from 50 to 600 Soldiers.

Changes to Combat Service Support Units as Part of Army Modularity. Several changes to Combat Service Support units are also being implemented across the Army to improve transportation, logistics, and medical operations and fill critical capability gaps. Changes needed to implement Army modularity to support PACOM operations are listed below.

Modularity-based Force Structure Changes to Theater Logistics Support:

Theater Sustainment Command: As part of Army modularity, every Theater Army Headquarters will include a Theater Sustainment Command (TSC) (*The Modular Force* FMI 3-0.1). The TSC is the Theater's single senior logistical command. As a part of modularity, the TSC consists of 154 active component Soldiers.

Transitional Theater Opening Element: Each TSC is accompanied by a Transitional Theater Opening element. The mission of this unit is to support theater contingency operations by establishing link-up with the Theater headquarters sustainment command to improve logistics delivery and sustainment capability while supporting contingency operations. The Transitional Theater Opening element consists of 54 Soldiers.

Theater District Element: The Theater District Element is a modular Theater level augmentation needed to support and command and control theater logistics/sustainment brigades.

Signal Command (Theater): Theater signal forces have undergone considerable restructuring as part of Army modularity. Each theater is allocated a signal command which includes a theater network capability module (TNC-M). The theater's Signal Command is the senior signal organization in theater and is responsible for enabling combatant commander and theater communications.

Movement Control Teams: Theater transportation assets have been upgraded as a part of Army modularity to include movement control teams. These teams assist in the execution of deployment and post-deployment logistics operations.

Forward Surgical Teams: As part of modularity, the Army has increased the number of surgical specialists that are available to deploy to support theater operations. 6 Soldiers have been included as an upgrade to the Army's surgical capabilities to support Theater deployments.

Warrior in Transition Units: In June 2007, the Army made decisions to make modular improvements to its casualty assistance programs. The Army's programs are designed to assist Soldiers by providing support services to severely disabled Soldiers and their Families. The Warrior in Transition program attends to the needs of Soldiers who requires medical treatment

and evaluation. The program includes Soldiers with complex medical needs requiring six months or more of treatment. Medical and administrative staffing for the Warrior in Transition program requires 164 Soldiers.

Modular Changes to Brigade Combat Teams.

Drivers and Augmentees to IBCTs: As part of Army-wide modularity adjustments new positions were added to Army BCT's. For example, each BCT is now authorized a Deputy Commander. Through Grow the Army we were able to assign a dedicated driver to the Deputy Commander. This allows the Deputy Commander to assist the BCT Commander in exercising command and control of the subordinate units of the BCT. In addition IBCT modularity adjustments include military intelligence company personnel to provide additional analysis and integration, MP gunners, and Battalion S2 staff enhancements. These modular adjustments to Army IBCT's (Infantry Brigade Combat Team) total 16 additional personnel per IBCT across the Army.

Drivers and Augmentees to SBCTs: SBCT's (Stryker Brigade Combat Team) across the Army receive a total of 82 additional personnel. These consist of a Deputy Commander and driver, 24 personnel for Headquarters Enhancement, a 42-person MP platoon, and a 14-person computer automation cell.

SBCT's also are receiving a 103-person maintenance unit. When the SBCT was originally fielded, maintenance for the vehicles were provided by contracted labor. As part of modular force decisions these maintenance functions will now be provided by Soldiers organic to the SBCT. This ensures the SBCT is able to deploy overseas with the necessary maintenance personnel.

1.2.2.6 Power Projection and Strategic Deployment within the Pacific Rim

The United States is a nation with key national security interests in the Pacific. The policies put forth in the NSS, NDS, QDR, and ACP provide directives and explicit guidance for the Army to improve its capacity to project power rapidly to prevent, deter, or defeat the actions of those who would do the nation harm while maintaining stability across the Pacific Rim. Effective deterrence requires that U.S. defense forces can credibly act to halt those activities that threaten U.S. national security. Rapid power projection to respond to the wide range of potential contingencies present in an increasingly complex global security environment is a foundational capability needed to support national security. The Army remains committed to its strategic goals of having the capability to deploy its forces anywhere in the Pacific theater within a few days of notification. This requires advance planning to respond to contingencies and detailed planning based on deployment facilities availability, logistics, and available transportation. PACOM force requirements are driven by its requirements to support the NSS and NDS. These requirements guide the Army in selecting stationing locations that can support PACOM operations.

As an active operational theater with ongoing active and contingency missions, the stationing of units supporting the requirements of PACOM must be conducted with an added emphasis on strategic deployment requirements. Units within PACOM are often on-call to respond to specific missions. These missions require that the proper numbers and types of units are collocated with the right transportation assets and deployment facilities to respond effectively to contingencies in the Pacific Rim.

1.2.3 Sustaining Force Readiness

The Army has always focused on maintaining an operationally-ready force that can respond to emerging threats and potential contingencies that threaten national security. Maintaining operational readiness means providing Soldiers and leaders with dedicated time to train and rehearse on core mission essential tasks, fully employ the capabilities of their equipment in a training environment, and maintain their vehicles, weapons, and other essential combat systems. The Army plan includes a readiness model to manage the force and ensure the ability to support demands for Army forces. This Army readiness model follows a process for Army Force Generation (ARFORGEN). The ARFORGEN process ensures that individual units receive adequate time to prepare for deployment through training and maintenance activities and that manning, equipping and resourcing can be synchronized with unit deployments. The ARFORGEN force readiness model brings units to a full state of readiness in terms of manning, equipment and training before they are scheduled to deploy. The ARFORGEN process is designed to reduce Soldier uncertainty with regards to deployments and provide combatant commanders of the U.S. Army with a consistent level of ready forces to execute operations abroad. In providing Commander's with "ready" trained, manned and equipped units the ARFORGEN model assumes that active duty units will support one operational deployment in a three year period. Reserve Forces would be anticipated to support one deployment every five to six years.

The ARFORGEN process which were implemented across the Army in February of 2006 categorizes Army units in three readiness states as depicted in Figure 1.2-1. These readiness states are:

- **Reset/Retrain:** Units recover from their previous deployment, reconstitute, repair and replace equipment and assign and train new personnel as required.

- **Ready:** Units conduct mission preparation and rehearse more complex, higher level group training tasks involving greater levels of planning and coordination. Units rehearse with other operational Headquarters for potential upcoming missions. These units are eligible to fill operational surge requirements, if necessary.

- **Available/Deployed:** Units in the available category of the ARFORGEN process are used as necessary to support operational and contingency requirements.

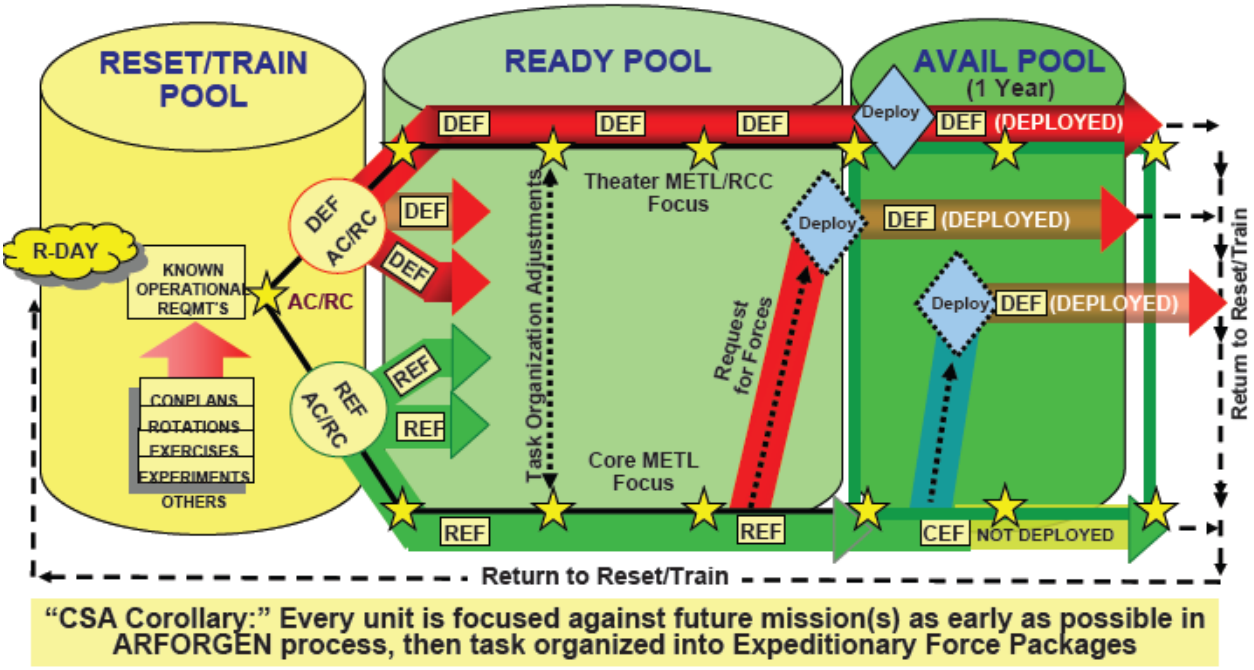

Figure 1.2-1. ARFORGEN Process

On-going missions and evolving threats from state and non-state sponsored sources of terrorism have markedly increased demand for ready and available Army forces to participate in the full spectrum of combat and peace support operations. Since 2003, the Army has been unable to implement optimal deployment cycling for Active or Reserve component Soldiers across the Pacific Theater. Reserve component forces have also been spending more time deployed than maintaining readiness as prescribed by the ARFORGEN process.

To provide forces needed for global operations in the US Central Command (CENTCOM), PACOM and the US Army Pacific (USARPAC) have been forced to shorten timeframes for preparation and readiness activities. This compression of ARFORGEN cycling has allowed PACOM to meet near-term force requirements but has carried forward institutional risk as the Army continues to conduct global operations at an accelerated pace. The continued compression of ARFORGEN cycles can lead to a degradation of force readiness if the high operations tempo and increased frequency of deployment continues across multiple deployment cycles. USARPAC does not currently have the requisite number of troops to implement optimal deployment cycling as prescribed by ARFORGEN. In addition, there is currently a shortfall of the number and types of troops on-hand to respond to regional security and contingency missions of the Pacific. In February 2007, the Army revised deployment policies to compress further ARFORGEN cycling to meet surge requirements of Operation Iraqi Freedom. Current deployment policies allow for 15 months of deployment time with 12 months at home station to conduct readiness activities. These deployment policies remain in effect, though they are currently under review by the Secretary of Defense and senior Army leadership.

1.2.4 Preserving Soldier and Family Quality of Life

Preserving Soldier and Family quality of life and the all-volunteer force are two of the Army's highest priorities and concepts that are inseparably linked. The Army strives to maintain the highest possible quality of life for those who serve by establishing deployment predictability and balancing the timeframes for which Soldiers are deployed away from home station against mission requirements.

Meeting the stationing needs of Army units means ensuring that the Soldiers and their Family members have access to quality schools, medical facilities, housing, services, and ample access to recreation opportunities. In a typical Army unit, approximately 50-55% of Soldiers are married. A 4,000-person Brigade, for example, may be accompanied by more than 2000 spouses and 1,500 children. Not only are Army installations used for military training, but are also the communities in which Families live. The Army is absolutely committed to providing the highest quality of life that can be attained for the Soldiers and their Families, who have endured multiple deployments supporting the wars in Iraq and Afghanistan. Stationing locations considered for the stationing of new units must already have or be able to accomodate housing and living space, schools, medical facilities, and support the recreational opportunities for the Soldiers and Families of the new Army units.

Unit Level Requirements

1.2.5 Training Infrastructure

The mission of Army units is ultimately to support the full spectrum of potential operations from waging the nation's wars to supporting peace and stability. While at home station, it is critical that Army units retain or develop those skills necessary to deploy and execute their mission. Effective training, carried out to a high doctrinal standard, is the cornerstone of operational success. High quality training, which prepares Soldiers for what will be encountered in the operational environment, is essential to ensuring the success of the nation's strategic defense objectives, national security, and also the safety of those who serve.

A critical element of need for the Proposed Action is the selection of stationing locations where units can attain high levels of training proficiency to prepare for deployment. Training and qualifying Soldiers and units typically requires three types of training facilities in the field: individual and crew served weapons qualification ranges, live-fire range complexes that allow units to conduct live-fire training simultaneously as one team, and maneuver areas for units to rehearse and train on the full complement of mission essential tasks required by a units' training doctrine. In addition to live training, the Army also augments its leader development and unit training strategies with virtual and battle simulations. Army units must be prepared to execute a full array of combat, stability, and peace support operations.

The level of combat readiness of Army units is directly related to the availability and capability of its supporting training infrastructure. As part of Army transformation, the Army has undergone a radical process to modernize and transform its training ranges to replicate operational conditions more closely. Unit range requirements and standard designs are described in Army Training Circular 25-8 *Army Training Ranges*, which serves as the definitive source document for Army training range requirements. Locations selected for the stationing of new Army units must accommodate the construction of range requirements for the unit so that the unit can adequately train to meet doctrinal training readiness standards.

In addition to adequate firing ranges, Army units require access to maneuver space to conduct collective, or group training and exercise their equipment in an integrated fashion. Units must

be able to execute a full range of combat and peace support operations to ensure mission success. At all levels, units must have adequate maneuver training land to conduct and rehearse training operations to certify themselves as a deployable unit. Army Training Circular 25-1 *Training Land* serves as the definitive source document for requirements for maneuver land training.

1.2.6 Readiness / Garrison Operations Facilities

When at home station, Soldiers require adequate Garrison facilities to conduct routine operations and maintenance in order to sustain their equipment. Garrison operations ensure a unit is administratively prepared and functionally equipped to support deployment operations. Stationing of an Army unit requires dedicated administrative office space for its Soldiers, motor pools, vehicle maintenance facilities, weapons armories, and many other administrative facilities to ensure operational readiness. The Army Corps of Engineers (USACE) has designed and implemented a program of standard facilities that are required to support Army modular forces. Stationing sites selected for the stationing of new units must be able to accommodate new unit Garrison operations through existing facilities or the construction of additional support facilities. Given that there are a minimum of vacant facilities available across PACOM installations, and indeed the Army, most actions will require the construction of new facilities.

1.2.7 Summary of Need

The Army's need for growth, transformation and realignment to support Pacific Theater operations and other commitments is multi-faceted. The need for action stems from the need to support increased national and regional security and defense mission requirements, the continuing need to adjust force structure as part of Army transformation, the need to sustain force readiness, and the need to preserve Soldier and Family quality of life. The Proposed Action will address those issues being faced by the Army as it continues to meet national security and defense requirements now and in the future.

1.3 Purpose of the Proposed Action

The purpose of the Proposed Action is to ensure that Army forces of the appropriate sustainable size are available to support operations of PACOM and other Army commitments and are capable of meeting the current and future projected demands and requirements of national security and defense in the region and elsewhere in the world. Implementing the Proposed Action will enable USARPAC to achieve a sustainable balance between global and regional mission requirements and force readiness levels, continue to implement Army transformation and modularity, improve home station readiness preparation, and maintain a high quality of life for Soldiers and Families.

1.4 Ongoing Army Initiatives (BRAC, Modularity and GDPR)

Initiatives to grow and realign the forces to support Pacific Theater and worldwide operations must be considered in the context of several major on-going Transformation and Stationing initiatives. These initiatives include Army modular Transformation to standardized unit organizations and those moves directed by the BRAC Commission recommendations and GDPR. Each of these initiatives is discussed in greater detail below.

1.4.1 BRAC 2005

The BRAC 2005 realignment and closures were designed to provide the necessary infrastructure to support Army Transformation, including GDPR, the ACP, and conversion to a modular force structure. Through the current 2005 BRAC actions, the Army is transitioning from a force capable of countering Cold War-era threats to one that is responsive to a broad range of contingency threats that represent a range of security threats facing the nation today.

BRAC is inextricably tied to Transformation and Army growth, affecting 74 Army installations by directing the closure of 13 active facilities, the realignment of 53 active facilities, and the closure of 211 National Guard and 176 Reserve facilities. BRAC 2005 actions serve as the baseline for which Army growth and restructure stationing decisions will be determined. Objectives of BRAC include optimizing military value, advancing the Army Modular Force (AMF) conversion, accommodating the re-stationing of overseas units, enabling the Transformation of both the active and reserve components, adjusting the force structure, and furthering the Army's ability to conduct joint operations. Congress directed the closure of specific Army installations and also directed the realignment of Army units from one home installation to another. The Army staff and Secretariat have a mandatory duty to implement these actions and they are thus considered part of the existing baseline.

1.4.2 Global Defense Posture Realignment

The U.S.'s global defense posture is characterized by the size, locations, types, and roles of forward military forces. Transformation and the QDR directives provide guidance to restructure the military for rapid deployment from within the U.S. while reducing the presence and reliance of U.S. forces on foreign nations. As part of the overall Transformation effort, the Army is in the process of relocating 44,500 Soldiers to its U.S. installations between 2004 and 2011 and downsizing the number and footprint of facilities on non-US soil to support the expeditionary vision contained within the QDR. Past GDPR actions are considered part of the existing baseline condition for analysis.

1.4.3 Army Modular Force (AMF)

As discussed in Section 1.2.2.5, Army modularity is a critical element of Army force structure that allows the Army to quickly and effectively adapt its forces to respond to emergent threats and contemporary operating conditions. Army modularity is a dynamic Army-wide process that continually assesses and makes adjustments to Army force requirements.

1.5 Scope of the Analysis

This SPEIS has been developed in accordance with NEPA, the regulations issued by the Council on Environmental Quality (CEQ) CFR (Code of Federal Regulations) Parts 1505 – 1508 and the Army's implementing procedures published in Title 32 CFR Part 651, *Environmental Analysis of Army Actions.* The SPEIS addresses the proposed growth and adjustment of the composition and stationing of Army forces to support operations in the Pacific Theater of Operations. As part of the Proposed Action, Army forces may be stationed at installations in Pacific Theater or at locations in the continental United States. The SPEIS will provide the decision-maker important information regarding environmental impacts associated with the proposed action and alternatives before he makes a final stationing decision. The scope of the SPEIS will encompass activities to support Army Growth and the ACP projected to take place from 2008 through 2013. This document incorporates and supplements analysis from the Final Programmatic EIS for Army Growth and Force Structure realignment (2007). Information from that document may be used by the decision-maker to support decisions to station units at any of

the seventeen installations the Army examined in 2007 to support decisions made to implement the Proposed Action. As conditions change this document may be supplemented.

This analysis does not include BRAC, otherwise known as base realignments and closures, which are part of the baseline for the analysis. This analysis includes the evaluation of installations capable of supporting operations in the Pacific Theater and incorporates the Army's Programmatic Environmental Impact Statement for Army Growth and Force Structure Realignment (January, 2008) by reference. Installation locations carried forward for analysis in this SPEIS are those sites that may receive more than 1,000 new Soldiers from 2008 through 2013 as part of the initiatives discussed above. The 1,000-Soldier threshold was chosen because it represents a level of growth at a majority of installations at which significant impacts could occur and should be considered at the programmatic level. Additional installation-specific analysis will be conducted as necessary and, if appropriate, may use analysis included in this SPEIS.

This analysis does not include analysis of the stationing of new BCT's. Recently, as part of decisions related to Army growth and force structure realignment (Record of Decision, 2008) the Army made decisions to grow by 6 BCTs and station 2 existing BCTs in locations within CONUS. The Army does not feel that it needs additional BCTs stationed in locations capable of supporting operations in the Pacific Theater at this time. Additional BCT stationing actions are not considered in this document as part of alternatives considered.

This SPEIS assesses the environmental capacity of Army installations and their ability to accommodate additional stationing of units to support operations in the Pacific Theater. This SPEIS is intended to inform senior Army Leadership. As the programmatic decision made at the Army Headquarters-level is implemented, follow-on NEPA documentation may be prepared to evaluate additional site-specific environmental impacts as well as identify any potential means for mitigating those impacts. The comparison of training activities, current environmental and socioeconomic climates, and proposed stationing activities will provide decision-maker with the appropriate tools and information to make an informed decision.

This analysis examines installations within their current boundaries, and does not consider possible expansion of land holdings. Additionally, there are no installation expansion actions that are included in the scope of this analysis for the growth, realignment, and transformation of units required to support operations in the Pacific Theater.

The scope of the affected environment will include a geographically designated area presented in Table 1.5-1.

Table 1.5-1. Geographic Scope of Valued Environmental Components (VEC)

VEC	Geographic Scope of Resource
Air Quality	Metropolitan area, air shed, global atmosphere
Air Space	Metropolitan area
Cultural	Historic properties or districts/prehistoric areas
Noise	Metropolitan area
Soil Erosion	Cantonment and range areas
Biological Resources	Habitat, ecosystem; including migratory birds – breeding grounds, wintering areas, migratory routes, total range Threatened and Endangered Species (T&E) Species and Vegetation
Wetlands	Watershed-based area

VEC	Geographic Scope of Resource
Water Resources	Streams, river basin, estuaries; watershed-based
Socioeconomics	Community, metropolitan area, county or state (U.S. Census)
Energy	Community, county, region, or state
Land Use	Community, county, region, or state
Hazardous Waste	Metropolitan area
Traffic and Transportation	Metropolitan area, county, or region
Facilities	Metropolitan area

Proposed impacts and cumulative effects are documented in the SPEIS. Where applicable, detailed follow-on analyses will occur at the site-specific installation level as needed to implement actions associated with Army growth and realignment. These additional analyses would be conducted in accordance with 32 CFR Part 651 (*Environmental Analysis of Army Actions*).

The analysis of impacts as presented in this SPEIS is broken down into four major activity groups which define the categories of action needed to support installation level stationing actions. These activity groups are:

- ***Garrison Construction.*** This activity group involves all types of construction activities including construction and/or modification of buildings and Garrison infrastructure. The construction activity group includes new construction, repair and maintenance of existing facilities, and demolition of buildings and facilities.

- ***Training Infrastructure Construction.*** This activity group involves training infrastructure construction activities needed to support unit training activities. This includes construction of firing ranges, simulations facilities, and training support infrastructure. The training infrastructure construction activity group includes new construction, repair and maintenance of existing facilities, and demolition of buildings and facilities.

- ***Live-Fire Training.*** This activity group involves achieving and maintaining readiness to perform assigned missions through weapons qualification and coordinated live-fire activities. Live-fire tasks include the use of live ammunition, blanks, and training ammunition to simulate a realistic training environment. Army doctrine for individual and collective (unit) training is based on mission-essential task lists. These lists identify all types of training activities that are need by individuals and units to be ready to perform their missions.

- ***Maneuver Training.*** Units conduct maneuver training in accordance with Army doctrine for individual and collective (unit) training based on mission-essential task lists. Maneuver training allows units to effectively coordinate and integrate force capabilities in a simulated operational environment. This activity group includes the management of millions of maneuver acres in the Army's inventory.

Stationing and growth decisions would occur through various actions, any of which, depending on the circumstances, could result in adverse effects to the environment.

The programmatic approach is designed to allow for early planning, coordination and flexibility throughout the implementation of Army growth and force restructuring. The SPEIS lays the foundation for subsequent analyses and decision making and is designed to leverage multi-year

analyses to assist in making stationing decisions. Additional installation-specific analyses may be conducted and will use, as appropriate, analysis included in this SPEIS. At the site-specific level, analysis will be conducted to address changes and environmental effects of implementing stationing.

1.6 Public Involvement

Under NEPA, the public is afforded the opportunity to participate in the process at various stages of the project. Public participation provides open communication between the Army and interested parties, ultimately resulting in better decision-making. Through CEQ (40 CFR Parts 1500-1508) and Army regulations (32 CFR Part 651), the Army has provided the following notifications and opportunities for involvement by the public:

- Notice of Intent (NOI) to prepare a SPEIS, published in the Federal Register (*FR*) on March 13, announced the Army's intent to prepare this SPEIS and desire to receive public comment. In addition, the NOI was published in multiple local newspapers in locations throughout the Pacific Theater.
- Public scoping comments were received from 13 March through 16 April; Public scoping comments were considered in the formulation of the draft SPEIS.
- The draft SPEIS was placed on a publicly accessible website (www.aec.army.mil) and hard copies of the document were also placed at publicly accessible locations and libraries in areas surrounding installations potentially affected by the implementation of Army Alternatives.
- Parties who expressed interest in past Army stationing actions, such as the 2/25th SBCT stationing, were mailed individual letters to ensure that they were aware of the Army's proposed action and alternatives and could provide feedback and input.
- Announcement of availability of the draft SPEIS was published in the Federal Register and announced in local papers of installations potentially affected by the implementation of Army alternatives.
- The public had 45 days to submit comments on the draft SPEIS following publication of its announcement in the Federal Register on 16 May, 2008.

The Army received scoping comments from the public expressing concern over a number of issues that the public has concerns about or would like more information with regards to this Supplemental EIS process. The major concerns and issues expressed during the scoping process that were determined to be within the scope of this EIS are as follows:

  - The State of Hawai'i Department of Education is concerned about increases in student populations related to implementation of the Proposed Action and would like to review the Draft SPEIS
  - Concerns over available facilities and lack of space in Hawai'i
  - Impacts to additional traffic and congestion in Hawai'i and increased noise
  - The Aircraft Owners and Pilots Association (AOPA) requests that the SPEIS include discussion of airspace and airspace impacts. AOPA requests that a similar rating methodology to the PEIS be used in the Supplement to the PEIS when determining Airspace impacts

- AOPA requests that any installation requiring additional Special Use Airspace (SUA) be dropped from further consideration
- Economic and social impacts to Hawai'i from additional stationing of Soldiers and dependents
- Impacts to cultural resources in Hawai'i
- Impacts to natural resources in Hawai'i and increased detrimental impacts to Hawai'i's threatened and endangered species
- Contamination of soil, air, water; depleted uranium issues
- Need to assess cumulative impacts at all sites that may be affected by Army stationing
- Need to ensure that this action is considered along with the considerable number of on-going military projects in Hawai'i to include growth of the US Marine Corps at Kane'ohe Bay.
- Changes in Land Use as a result of implementation of the Proposed Action

The comments and concerns of the public and agencies were used to determine the focus of analysis. A summary of scoping comments received during the scoping process is included in the project record. Comments on the Draft SPEIS are summarized and included as Appendix D of this document.

1.7 Army Decision Making Process

Stationing scenarios evaluated in the SPEIS include the stationing of 1,000 and 3,000 combat support Soldiers, a Combat Aviation Brigade (CAB), or a Fires Brigade at various stationing locations discussed within the document. The information from the stationing scenarios has been extrapolated to generate a conservative estimate of the environmental impacts of implementing specific alternatives. For example, as part of the the Preferred Alternative approximately 1,800 new Soldiers would be stationed at Fort Richardson, AK. Using the 3,000 person combat support unit stationing scenario the Army can extrapolate potential environmental impacts. In this manner, senior Army leadership is informed of potential environmental impacts of stationing decisions and can balance environmental sustainment with operational readiness needs of the Army. This approach also allows the Army to remain flexible to future stationing needs while ensuring that Senior Army force managers are aware of potential environmental impacts.

The Army's decision-maker will consider the environmental and public issues of concern disclosed in this SPEIS. In addition, he will consider several non-environmental factors critical to a final force structure decision as discussed below. After thoroughly evaluating this information, the decision-maker will document the decision, selecting one of the alternatives in the Record of Decision (ROD), which will be signed no earlier than 30 days from the publication of the Notice of Availability of the Final SPEIS. The ROD will clearly and definitively articulate the decision made and provide a supporting explanation. It will explain both the significant factors he relied on in making a final decision and why the final alternative best meets the purpose and need. He will acknowledge the comparative environmental impacts and benefits

resulting from his decision particularly if the alternative selected is not the environmentally preferred alternative. The ROD will be made available to the public when it is finalized.

1.7.1 Decision to be Made

After completing a deliberative and thorough decision-making process the Army will sign a ROD, selecting for implementation one of the alternatives described in Section 3.0. The Army decision-maker may decide to select a combination of alternatives presented in this document to meet USARPAC's force structure needs. It is important to understand that the decision-maker has limited flexibility in choosing a stationing location under Alternative 1. This alternative involves the continued implementation of Army-wide modularity and force management programs at the Theater level and below. Under Alternative 1, existing units are being augmented with additional Soldiers or changes are being made in accordance with Army-wide decisions that require designated support units to be collocated with existing units where they are currently stationed.

The Army does have flexibility and discretion to station multi-functional support brigades and other combat support units as part of decisions to be made. These stationing decisions are not contingent on previous unit stationing actions. Multi-functional support brigades are requested by the Theater Command to support capabilities shortfalls and theater mission requirements. The Headquarters, Department of the Army (HQDA) decision-maker may chose to station additional multi-functional support brigades at the 4 installations evaluated in this document, or may chose to station these units at any of the major training installations evaluated in the Final PEIS for Army Growth and Force Structure Realignment (October, 2007). The decision-maker has some discretion to evaluate Army-wide mission requirements and the factors presented in this EIS and to choose the number, type, and final stationing location for multi-functional support brigades needed to support PACOM mission requirements. As previously discussed, the decision-maker is not considering the stationing of additional BCTs to support PACOM operations at this time. Additional BCT stationing actions are not considered in this document and are not part of decisions to be made through this decision-making process.

Senior Army leadership will take several factors into account when making the final force structure and stationing decision. The SPEIS provides information on significant environmental impacts and issues of public concern regarding the physical and natural environment. In addition, the Army decision-maker will give consideration to non-environmental factors including existing and emerging national defense needs; global security situations; the mission needs of Combatant Commanders; the professional judgment of senior military leaders; the capacity of installations to support additional units and the quality of life of Soldiers and their Families. These factors are captured in the description of need and purpose for the Proposed Action (Chapter 1.0) and the description of the Proposed Action (Chapter 2.0)

Methodology to Support Supplemental Programmatic Decision

It is important to understand the relationship in the decision making process among the three action alternatives and scenarios analyzed within the SPEIS. The Army developed a full range of reasonable alternatives for consideration, comparison, and evaluation that is consistent with NEPA, the regulations published by the Council of Environmental Quality, and the Army's implementing NEPA procedures (Title 32 CFR Part 651). The Army considered the alternative to be reasonable if it was capable of meeting the Purpose and Need for the Proposed Action to configure and station the force to meet defense and national security requirements. This SPEIS broadly states the purpose for stationing units to support PACOM operations and explains how

the Army developed the three distinct alternatives. The three action alternatives will provide the decision-maker with courses of action that would result in different stationing scenarios at installations capable of supporting operations in the Pacific Theater.

The SPEIS evaluates five different potential stationing scenarios for each location evaluated in the document with the exception of Fort Shafter for which only two scenarios are evaluated. Each of these scenarios is designed to evaluate the environmental capacity of an installation and its ability to accommodate potential stationing actions (anywhere from 1,000 to 3,000 additional Soldiers) to support the Proposed Action. Each of the Alternatives evaluated in the SPEIS provides the unit stationing actions that may occur in order to implement the alternative. The units discussed within the Alternatives section approximately correspond with one of the installation stationing scenarios evaluated in this SPEIS or the PEIS for Army Growth and Force Structure Realignment which is incorporated by reference. The decision-maker will be able to compare environmental impacts for implementing alternatives when comparing the stationing actions of the alternative to the stationing scenario that it most closely approximates.

The Army units considered in this SPEIS have unique requirements for live-fire ranges; maneuver land, equipment, and vehicle maintenance facilities; Family housing, support facilities, and deployment requirements. This SPEIS compares the locations to determine which locations best meet these requirements. Section 4 of this SPEIS identifies the primary activities that will be taken by the Army to support the proposed action. These include: facilities construction and use; range construction; maneuver training; and live-fire training. It also identifies the Valued Environmental Components (VECs) at these locations and predicts the probable intensity of environmental impact to each VEC at the particular installation.

Using this approach the decision-maker can compare and contrast the differing environmental impacts associated with selecting the different types and sizes of units for stationing to support Pacific theater operations at installations in the Pacific (in this document) and at CONUS locations (in the PEIS). When the decision-maker makes his final choice on the right force structure he will be fully informed on the environmental consequences likely to result from his decision. As the units are stationed at locations identified in the ROD, the Army may prepare additional NEPA documentation to consider the detailed site-specific impacts.

2.0 DESCRIPTION OF THE PROPOSED ACTION

2.1 Introduction

This chapter provides a description of the Proposed Action and those supporting actions the Army would undertake to implement the Proposed Action. The Proposed Action addresses the need to grow and realign the Army better to support the operations of the Pacific Command (PACOM). The Pacific Theater area of responsibility includes areas throughout the Pacific Rim, Eastern Asia, and Australia. To implement the Proposed Action the Army would add a variety of new units and realign existing units to enhance the configuration of its available forces to support PACOM operations and implement Army modular forces decisions. The units considered for stationing as part of the Proposed Action include Combat Support (CS) and Combat Service Support (CSS) units and multi-functional support brigades. Four primary activities are required to support unit stationing. These activities include Garrison construction, training infrastructure construction, live-fire training, and maneuver training. This chapter describes the Proposed Action and site-specific activities that would be associated with unit stationing actions.

2.2 Proposed Action

The Proposed Action is to increase the Army's end-strength and realign the Army's force structure from 2008 through 2013 to a size and composition that will meet Pacific Theater security and defense requirements; structure the force in accordance with Army Transformation and modularity; sustain unit equipment and training readiness; and preserve Soldier and Family quality of life. To fully implement the Proposed Action, units must be stationed at locations that are able to accommodate unit training, Garrison and maintenance activities, and preserve Soldier and Family quality of life. In addition, final stationing locations must be able to support the strategic deployment and mobilization requirements of the Pacific Command in support of regional defense and security objectives.

The Proposed Action involves the stationing of units in a manner that supports the Army Campaign Plan (ACP), Army modularity, and global and theater force requirements. The SPEIS will address the environmental and socioeconomic effects of the proposed activities beginning in 2008 and extending through 2013.

2.3 Actions Required to Implement the Proposed Action

Alternatives to grow the Army will ultimately involve four activities that must be integrated and synchronized by the Army to support new unit stationing actions and realignments. The activities are separated out in this section and discussed in detail to facilitate an understanding of the primary activities that are projected to result in effects to the human environment and lead to direct, indirect, and cumulative effects. Essential activity groups required to implement the Proposed Action include Garrison construction, training facilities and range construction, live-fire training, and maneuver training. A brief description of each activity is provided in the following sections.

2.3.1 Garrison Construction

This activity group includes the construction of administrative offices, housing and child care facilities, vehicle parking and maintenance, equipment storage, recreational facilities, roads, and

other infrastructure required to meet the administrative and readiness requirements of Army units while supporting a high quality of life for Soldiers and Families.

The Army plans and programs for standard sets of facilities that are needed to support modular Army units. Each unit has a distinct facilities requirement for conducting Garrison administrative and maintenance operations. Critical facilities required by Army units would include office space for brigade, battalion and company Headquarters units, barracks space for single enlisted Soldiers, Family housing, dining facilities, maintenance shops, parking for vehicles, and storage space. The exact number of buildings and square footage/yardage of facilities space depends on the specific type of unit, number of Soldiers in the unit, and its equipment storage and maintenance requirements. Table 2.1 below lists facilities requirements for different Army units. Table 2.1 provides a generalized estimate for 1,000 and 3,000 Soldier stationing scenarios which are not unit specific and therefore do not allow exact determinations to be made. For these scenarios, estimates of Garrison facilities requirements are based on standard Army planning factors for Army Brigades. Exact facilities requirements have been provided for the modular Fires Brigade and Medium Combat Aviation Brigade from the Army's standard facility allowances database. Upon receiving decisions for final unit stationing, installations will be able to more accurately determine additional facilities requirements. The installation may undertake additional environmental analysis of the potential impacts associated with such stationing decisions. Facilities construction requirements depend on the availability of existing facilities at the installation and the availability of funding to execute construction projects. If existing facilities are available at the installation to support unit stationing, then those facilities will not need to be constructed.

Table 2.1. Estimate of Standard Garrison Construction Facility AllowancesError! Bookmark not defined.

Garrison Facilities	1,000 Support Unit Soldiers	3,000 Support Unit Soldiers	1,600 Fires BDE Soldiers	2,800 AVN BDE Soldiers
Vehicle Fuel Storage (gallons)	151,660	454,980	227,090	700,000+
Brigade Offices (sf)	0	39,495	20,734	17,656
Battalion Offices (sf)	22,211	66,633	41,223	63,305
Company Offices (sf)	104,849	314,547	159,100	302,623
Organization Classroom (sf)	4,116	12,348	13,755	22,925
Ammunition Storage (sf)	572	1,736	1,500+	2,000+
Unit Storage Buildings (sf)	41,600	124,800	36,295	34,050
Family Housing (on/off post availability) (sf)	819,643	2,458,929	1,229,464	2,049,107
Barracks Space (sf)	147,760	443,280	278,196	346,602
Military Vehicle Parking (sf)	385,056	1,155,168	1,035,117	1,476,810
Vehicle Maintenance (sf)	25,186	75,558	80,234	84,365
Aircraft Maintenance Hangar	0	0	0	295,370

In addition to Garrison operations and maintenance facilities for Army units, the Soldiers and their Families may also require select specialized facilities such as medical clinics or hospitals, child care centers, recreational or other facilities. The exact requirements for these facilities would be based on the installation's existing facilities capacity and number and type of new units they would receive. Exact construction requirements for unit stationing actions would be determined at the installation depending on these factors.

2.3.2 Training Facilities and Range Construction

This activity group includes the construction of training ranges and facilities needed to maintain the training readiness of combat support units. Army Training Circular TC 25-8 *Training Ranges* describes the standard designs and requirements of the Army's Sustainable Range Program for training modular Army units to standard.

In order to meet the needs of the Proposed Action, the permanent stationing locations must be able to train units to meet training readiness standards. To accomplish this, stationing locations must either have existing ranges or be able to accommodate the construction of new ranges required by additional units stationed as part of the Proposed Action. Range requirements will vary greatly with the capacity of existing ranges at installations, the extent of range modernization the installation has undergone, and the number and types of units Proposed for stationing at a given installation. In general, combat support and combat service support units do not increase an installations requirement for Combined Arms Live Fire Exercise (CALFEX) ranges. Units would support CALFEX exercises of combat units but would not contribute to increased CALFEX training requirements. Support units must conduct semi-annual individual and crew served weapons qualifications and qualify all vehicle mounted weapons systems. The installation must have adequate capacity to support weapons qualifications of units to be stationed as part of the implementation of the Proposed Action. This may involve construction of new ranges. A brief description of required qualification ranges is provided below:

Qualification Training Range (QTR): This range is multi-functional and can meet the weapons qualifications requirements for multiple weapons systems to include pistols, rifles, machine guns and other crew fired weapons systems. This range combines the capabilities of the Modified Record Fire Range, Sniper Field Fire Range, Combat Pistol Qualification Course, MK-19 Range and the Multipurpose Machine Gun Range.

25 Meter Zero Range: This range is used to train Soldiers in basic marksmanship, teaching Soldiers techniques to engage stationary targets and sighting adjustment techniques. It can support M16 or M4 rifle firing as well as that of crew served machine guns.

Modified Record Fire Range (MRF): This range is used to train support unit Soldiers in basic marksmanship tasks, teaching Soldiers to quickly aim and engage stationary infantry targets.

Combat Pistol Qualification Course (CPQC): This combat pistol range is used to train Soldiers to identify, engage, and defeat an array of targets using the 9mm, .38 caliber, or .45 caliber pistol.

Multipurpose Machine Gun Range (MPMG): This range is designed to train Soldiers to engage stationary infantry targets, moving infantry targets emplacements, and stationary armor targets with the full range of Army machine guns to include the M249, M60, M240, and .50 caliber machine guns.

Sniper Field Fire Range / Known Distance (KD) Range: This range is used to train Soldiers to identify and engage stationary and moving targets with a sniper rifle.

Grenade Launcher Range: This range is used to train Soldiers on targeting and the use of grenade launcher systems against stationary infantry and vehicular targets.

Mark-19 Range: This range is used to train Soldiers on the operation and use of the Mark-19 40 mm grenade machine gun.

Hand Grenade Qualification Course: This range is used to train Soldiers on techniques for employing hand grenades in close combat.

Convoy Live Fire Range: This range is teaches Soldiers and units how to respond to an ambush situation and defend a convoy from attack.

Urban Assault Course: This range trains Soldiers and units on tasks necessary in urban and built-up areas.

Light Demolition Range: This range trains Soldiers in the employment of demolitions and explosive charges, which is required for Engineer and Explosive Ordnance Detachment units.

**Engineer Qualification Range: The range trains engineer Soldiers on a variety of tasks, including heavy equipment operations, construction, and bridging.

**Field Artillery Indirect Range: This range is used specifically to train field artillery crews on the skills necessary to apply fire mission data, engage and hit stationary targets in tactical array.

**Aviation Gunnery Range (Digital): This range is used specifically with aviation units to train crews on the skills necessary to identify, engage, and hit ground targets.

** Identifies ranges for specific support units.

TC-25-8 defines the training range infrastructure required to ensure that units can adequately prepare for operational deployment. Access to the proper training range infrastructure is a critical element of need for the Proposed Action.

2.3.3 Live-fire Training

Live-fire training is an essential component of Army training and of the implementation of the Proposed Action. To be operationally effective, Soldiers must have the skills and experience necessary to operate and maintain their weapons. Live-fire involves munitions, explosives, and non-explosive training rounds designed to meet Soldiers' training needs to prepare them for combat and peace support operations. Soldiers must "train as they fight" in order to ensure their safety in combat situations. At a minimum, all Soldiers must qualify on individual and crew/vehicle weapons at least twice per year. In addition, platoons, companies, and battalions must conduct collective live-fire training exercises on firing ranges to ensure they have rehearsed and coordinated battle procedures and are prepared to deploy to support wartime operations. Various weapons systems use different types of munitions. Where possible, some weapons systems use inert training rounds as a substitute for the firing of live rounds.

Live-fire training requirements for Combat Support (CS) and Combat Service Support Soldiers (CSS) have recently been increased to incorporate training tasks which address current operational threats to Soldiers and ensure that all Soldiers have the opportunity to gain maximum proficiency with their weapons. In addition to conducting individual and small unit training tasks on the Qualification Training Range, CS and CSS Soldiers now routinely train on the Convoy Live-Fire Range to prepare to defend against ambush attacks. On this range vehicle crews train to react to ambushes, explosive devices, casualty treatment and medical

evacuation tasks. CS and CSS units may train on other types of ranges based on the Commander's assessment of unit training requirements and mission essential tasks. DA PAM 350-38 identifies that urban operations training for CS/CSS units may be required depending on the Commander's assessment of his units training needs. CS and CSS units must train on Convoy Live-fire ranges and qualify with their individual and crew-served weapons at a minimum, however.

In addition to individual and crew served weapons qualifications, Fires Brigades must also conduct indirect fires training. Fires Brigade (artillery) training includes forward observation of targets and communication of target grid coordinates from artillery forward observers. Fires Brigades include 1.55 mm howitzer artillery pieces as well as Multiple Launch Rocket Systems (MLRS) which much practice target acquisition and firing of training ordnance.

Live-fire training requirements for a combat aviation brigade includes limited individual weapons qualification activities. Most pilots and crew members must qualify with service pistols. Maintenance crews qualify with pistols, rifles and machine guns. Qualification requirements include door-gunnery qualifications with mounted machine guns for select crew members. In addition, attack helicopter crews must engage armored targetry arrays with helicopter weapons systems.

2.3.4 Maneuver Training

Maneuver training is a critical component of the unit training plan that trains units how to synchronize the execution of tasks on the battlefield prior to actual deployment. Maneuver training builds on all of the individual skills that Soldiers possess and tests each echelon of command. Maneuver training may be augmented with live-fire training exercises to consolidate training requirements and ensure that Soldiers are training realistically and to proficiency standards. Platoons, companies, and battalions conduct maneuvers to ensure unit proficiency at each successive level of Command. Army Training Circular 25-1 *Training Land* (Department of the Army 2004) is the Army's definitive source for defining maneuver training land requirements.

Army units must conduct "combined-arms" training to ensure that all of the units' capabilities can be integrated and synchronized to execute missions under stressful operational conditions. During combined-arms maneuver training events, CS and CSS units work with combat maneuver units to conduct combat and peace support operations. CS/CSS units, which are being considered for stationing as part of the Proposed Action, will conduct routine small unit maneuvers and will deploy in support of BCTs to conduct integrated maneuver training events. This involves multiple weeks of field deployment to local training areas at the installation and the utilization of other maneuver training resources.

Each platoon and company must train up to 5 weeks per year to meet maneuver training requirements. In addition, each battalion must conduct semi-annual maneuvers lasting approximately 4 to 6 weeks per year to certify its subordinate units and each brigade must conduct maneuvers every 12 to 18 months and in advance of operational deployments, as required.

The maneuver training requirements of a fires brigade are similar to that of CS units. Fires units will deploy in support of integrated "combined-arms" maneuver and live fire training events. Each platoon will conduct up to 5 weeks of platoon and company training per year as small units with a larger maneuver rotation (typically 3 weeks) held semi-annually.

Aviation units would support 4 to 6 weeks of integrated maneuver training each year at designated maneuver areas. In addition, pilots would maintain flight-status by conducting routine flight operations on a monthly basis.

2.4 Descriptions of Units and Activities

2.4.1 CSS Logistics (Sustainment) Units

Introduction. Sustainment units are responsible for the transport of fuel, munitions, parts, food, medical supplies, and battlefield casualties during training and operational scenarios. In addition, these units maintain vehicles, recover destroyed or damaged vehicles, and provide medical care to injured Soldiers. CSS units consist primarily of transportation, quartermaster, and medical units and functions. CSS units utilize a wide variety of vehicles, based in part on the types of units they are supporting and the missions they need to accomplish. Wheeled vehicles are capable of on-road and off-road maneuver, but will more often travel on-road. The number of Soldiers in each unit varies with the function and mission of specific units.

Transportation Units.

Mission. The mission of the Transportation component is to transport, distribute and issue general military supplies and equipment, to include: ammunition; fortification and construction material; water, subsistence, and water purification equipment; petroleum products; repair parts and end items; and medical supplies.

Soldiers. Units typically consist of company sized detachments of 100 - 200 Soldiers.

Primary Equipment. HMMWVs and other light trucks, cargo trucks with 5 ton and larger capacity, fuel trucks (5000 gallon), and Heavy Equipment Transport (HETs) trucks for transporting armored combat vehicles.

Training. Live-fire training consists of individual weapons and crew-served weapons practice and qualification. Individual and crew served weapons training occurs on fixed ranges with firing points and targets contained within a marked area and boundaries. Soldiers and crews train and qualify on these weapons twice annually. Soldiers will also conduct convoy live fire training and urban operations on an as needed basis.

Maneuver training consists of individual training and collective training at the platoon and company levels. The primary training events are loading, transporting and unloading cargo. Unit movements and logistical sites will be on roads, trails and maneuver areas. Force protection training (ex. convoy defense, position perimeter defense) is integrated into all training missions. Units will conduct multi-day small unit (platoon and company) training exercises as often as 5 times per year at each echelon of training, and will support combat maneuver elements and battalion and brigade training. Training impacts will also vary according to the size and weight of unit equipment and the types of activities the unit must engage in as part of its doctrinal operations.

Quartermaster Units

Mission. The mission of the Quartermaster component is to receive, store, and issue general military supplies and equipment, to include: fortification and construction material; water, subsistence, repair parts, and medical supplies.

Soldiers. Units typically consist of platoon to company sized detachments of 30 - 120 Soldiers.

Primary Equipment. HMMWVs and cargo trucks with 5 ton capacity.

Training. Live-fire training consists of individual weapons and crew-served weapons practice and qualification. Individual and crew served weapons training occurs on fixed ranges with firing points and targets contained within a marked area and boundaries. Soldiers and crews train and qualify on these weapons twice annually.

Maneuver training consists of individual training and collective training at the platoon and company levels. Quartermaster units will deploy on multi-day training events up to 5 times per year at platoon and company echelons. These units will support combat maneuver unit training events when at home station. The primary training events are unloading, storing, and loading cargo. Training impacts will also vary according to the size and weight of the truck and cargo.

Medical Units

Mission. The mission of the Medical Component is to provide health care support at Army installations and during training and operational deployments.

Soldiers. Varies with type of medical unit and function.

Primary Equipment. HMMWVs, some configured as medical evacuation vehicles, and cargo trucks with 5-ton capacity.

Training. Live-fire training consists of individual weapons and crew-served weapons practice and qualification. Individual and crew served weapons training occurs on fixed ranges with firing points and targets contained within a marked area and boundaries. Soldiers and crews train and qualify on these weapons twice annually.

Maneuver training consists of individual training and collective training at the platoon and company levels. The primary training events are moving to or relocating medical operations, establishing unit medical operations, performing Combat Health Support, and defending the unit location. Unit movements and logistical sites will be on roads, trails and maneuver areas. Force protection training (ex. convoy defense, position perimeter defense) is integrated into all training missions. Units will support multi-day training exercises and provide attachment support for integrated training exercises on an as needed basis. Typically medical squads, platoons, or companies will deploy on multi-day training events up to 5 times per year at each unit echelon. These units will support combat maneuver elements and battalion and brigade training when at home station. Small units will train at the squad and platoon level to retain their training proficiency.

2.4.2 Headquarters Units

Introduction. Headquarters units are responsible for the command and control of units in Garrison and during training and operational deployments. Headquarters units collect information, conduct plans and staffing, and disseminate guidance to subordinate units. These

units are typically collocated with combat maneuver units during maneuver rotations. Headquarters units utilize an array of light trucks, HMMWVs, 5-ton medium trucks, and armored wheeled vehicles during training. The number of Soldiers in each unit also varies by the echelon of the headquarters element and its mission.

Mission. The mission of the Headquarters units includes collecting information, conducting planning and staffing, disseminating guidance to subordinate units, and overseeing operations.

Soldiers. Units' size varies with the mission and function of the headquarters but may range from 50-400 depending on the span of operational control and number of subordinate units.

Primary Equipment. HMMWVs and other light trucks, cargo trucks with 5 ton and larger capacity, and M577 tracked personnel carriers.

Training. Live-fire training consists of individual weapons and crew-served weapons practice and qualification. Individual and crew served weapons training occurs on fixed ranges with firing points and targets contained within a marked area and boundaries. Soldiers and crews train and qualify on these weapons twice annually. Soldiers will also conduct convoy live fire training and urban operations on an as needed basis. Weapons qualifications usually involve pistol, rifle and limited crew served weapons qualification with heavy machine guns (.50 caliber).

Maneuver training consists of maneuvering on trails and in maneuver areas, establishing Tactical Operations Centers (TOCs) at select locations and establishing communications infrastructure to monitor events and control battlefield operations. Headquarters units will typically support between 4-6 maneuver rotations annually. Each of these rotations could involve 2-3 week deployments in support of joint training exercises, brigade training events, and battle command simulation exercises for command headquarters units. These simulation exercises test commanders and the proficiency of headquarters units using computer simulated scenarios. Exercises take place in a replicated tactical scenario and involve minimal training maneuvers of vehicles in a tactical setting.

2.4.3 Combat Support (CS) Units

Introduction. Combat support units work directly with combat maneuver units to provide additional skill sets and capabilities to accomplish combat and peace support operations. The role of combat support units spans a wide array of mission functions. Primary functions of combat support units include providing engineering support, military police functions, chemical response capability, explosive ordnance detection and disposal, and other support missions. CS units consist primarily of engineers, military police, and chemical and explosive ordnance units. CS units utilize a wide variety of vehicles, based on the units' mission and support role. Equipment includes tracked or wheeled vehicles depending on the units' mission. Combat support units will engage in on and off-road maneuver in support of combat maneuver units.

Engineer Units

Mission. The mission of engineer units is highly variable and diverse. In combat, engineer units may support the movement of combat maneuver units through bridging, minefield clearance, demolitions, and other functions. Construction engineers plan, prepare and provide project survey and design plans, conduct construction and repair of roads and buildings and provide a variety of support to military and civil construction efforts.

Soldiers. Engineer units typically consist of companies totaling between 100-180 Soldiers.

Primary Equipment. HMMWVs and other light trucks, cargo trucks with 5- ton or greater cargo capacity; construction equipment such as bucket loaders, bulldozers, road graders, cranes and concrete mixers. Combat engineers utilize a variety of armored personnel carriers, small excavators, bridge-laying vehicles, and tracked earth-movers. Route clearance units utilize v-hulled armor-plated vehicles as part of the units authorized equipment.

Training. Live-fire training consists of individual weapons and crew-served weapons practice and qualification. Individual and crew served weapons training occurs on fixed ranges with firing points and targets contained within a marked area and boundaries. Soldiers and crews train and qualify on these weapons twice annually. In addition, combat engineers must maintain proficiency with use of demolitions charges.

Maneuver training consists of individual equipment training and collective training at the platoon and company levels. Maneuver training events vary with the mission of the engineer unit. Engineers in combat support roles maneuver on trails and off-road with their vehicles supporting the maneuver requirements of combat units. Construction engineers move to and from constructions sites, occupying construction sites and conducting the specific horizontal (roads and trails), vertical (buildings and structures), and concrete projects. Construction engineer units also move from position to position and set up their construction operations in each one. Unit movements and positions will be on roads, trails and maneuver areas. Force protection training (ex. convoy defense, position perimeter defense) is integrated into all training missions. Units will conduct small unit (platoon and company) multi-day training maneuvers as often as 5 times per year at each echelon of training, and these units will support combat maneuver elements and battalion and brigade training. Training impacts will also vary according to the size and weight of unit equipment and the types of activities the unit must engage in as part of its doctrinal operations.

Military Police (MP) Units

Mission. The mission of the MP Component is to provide force protection, law enforcement and prisoner detention in combat operations across the battlefield operating space.

Soldiers. MP units typically operate as company-sized units totaling between 100- 200 Soldiers which are attached to other Army units.

Primary Equipment. HMMWVs, Armored Security Vehicles (ASVs), and cargo trucks with 5 ton capacity.

Training. Live-fire training consists of individual weapons and crew-served weapons practice and qualification. Individual and crew served weapons training occurs on fixed ranges with firing points and targets contained within a marked area and boundaries. Soldiers and crews train and qualify on these weapons twice annually. Select MP units are also required to engage in collective training on multi-purpose training ranges to practice engaging targets and coordinating fires from mounted weapons platforms while engaged in maneuver activities.

Maneuver training consists of individual training and collective training at the platoon and company levels. The primary training events are mounted and dismounted security operations, patrolling, movement control in forward operating areas, and prisoner detention, protection, and transport. Unit movements and positions will be on roads, trails and maneuver areas. Force

protection training (ex. convoy defense, position perimeter defense) is integrated into all training missions. Units will conduct multi-day platoon and company level maneuvers as often as 5 times annually at each training echelon, and participate in collective unit maneuver rotations in support of combat maneuver units. A majority of maneuver training would occur on trails, roads, and other built up areas.

EOD Units

Mission. The mission of the EOD component is to identify, disarm, render safe, destroy and dispose of explosive devices and ordnance in combat and Garrison operations.

Soldiers. EOD units are assigned as detachments, platoons or company sized units ranging from 20 - 200 Soldiers.

Primary Equipment. HMMWVs (sometimes armored) and cargo trucks with 5-ton capacity.

Training. Live-fire training consists of individual weapons and crew-served weapons. Individual and crew served weapons training occurs on fixed ranges with firing points and targets contained within a marked area and boundaries. Soldiers and crews train and qualify on these weapons twice annually. EOD training also consists of identifying and rendering safe mines, explosive devices, and ordnance. These include inert and live explosive devices. EOD units utilize demolitions ranges and impact areas to conduct demolitions training.

EOD units conduct small unit maneuvers typically at the crew and platoon level. Training events include the movement to sites with suspected ordnance and the detection and disarmament of suspected devices. Unit movements would be primarily on roads, trails and built up areas. Force protection training (ex. convoy defense, position perimeter defense) is integrated into all training missions. EOD units conduct multi-day small unit maneuver operations up to 5 times per year at platoon and company levels, and will support combat maneuver unit training events in addition to squad proficiency training.

Chemical Corps Units

Mission. The mission of chemical units is to protect U.S. forces and their allies from chemical, nuclear, or biological attack. Chemical Corps units provide equipment and training on protection from attack by non-conventional weapons through the use of detection and decontamination equipment.

Soldiers. Chemical units are assigned as detachments, platoons or company sized units ranging from 20 - 120 Soldiers.

Primary Equipment. HMMWVs and other light trucks, cargo trucks with 5 ton capacity, trucks for decontamination, tracked vehicles.

Training. Training consists of individual weapons and crew-served weapons. Individual and crew served weapons training occurs on fixed ranges with firing points and targets contained within a marked area and boundaries. Soldiers and crews train and qualify on these weapons twice annually. Chemical training also consists of identifying and neutralizing chemical, nuclear and biological threats and decontaminating units hit with chemical agents. Chemical units also assist in delivery and planning for use of obscurants to facilitate combat operations.

Chemical units conduct small unit maneuvers typically at the crew and platoon level. Training events include the movement to sites of suspected chemical contamination and the establishment of unit decontamination sites. Unit movements would be primarily on roads, trails and built-up areas. Force protection training (ex. convoy defense, position perimeter defense) is integrated into all training missions.

2.4.4 Multi-functional Combat Support Brigades

Fires Brigade.

Mission. The mission of the Fires Brigade is to plan, prepare, provide and assess indirect ordnance fire requirements in close support of and precision strike artillery or ordnance weapons fire for maneuver forces.

Soldiers. A Fires Brigade with a High Mobility Artillery Rocket System battalion and 1.55 howitzer artillery pieces consists of approximately 1,600 Soldiers.

Primary Equipment. HMMWVs and cargo trucks with 5 ton or greater cargo capacity; towed or self propelled 105mm and 155mm howitzers, High Mobility Artillery Rocket Systems (HIMARS); and small Unmanned Aerial Systems (UAS). Each battalion contains between 18-24 cannons or rocket systems, and each brigade will have 2 or more battalions, based on task organization.

Training. Live-fire training consists of individual weapons, crew-served weapons and artillery cannon and rocket systems (practice and qualification). Individual and crew served weapons training occurs on fixed ranges with firing points and targets contained within a marked area and boundaries. Soldiers and crews train and qualify on these weapons twice annually. Cannons and rocket systems fire into restricted access dudded impact areas from multiple temporary firing points on ranges and in maneuver areas. Units will conduct live-fire training as often as 6 times annually.

Maneuver training is collective training at the battery, battalion and brigade levels. The primary training events are movement to and from firing positions, occupying firing positions, and firing cannons and rockets from these firing positions. This training is supported by command and control units, target acquisition units, signal units and logistical (supply, ammunition, maintenance and medical) units. These units also move from position to position and set up their operations in each training scenario. Unit movements and positions will be on roads, trails and maneuver areas. Force protection training (ex. convoy defense, position perimeter defense) is integrated into all training missions. Fires Brigade training can be supported by Unmanned Aerial Vehicles (UAV), which are flown to identify and relay information on artillery targets. All the maneuver training described here is executed in conjunction with live-fire training or in a “dry-fire” method, as often as 12 times annually. Fires Brigade units would conduct multi-day small unit maneuver operations up to 5 times per year at platoon and company levels, and would support training rotations of battalion and BCT units 2-3 times per year in addition to squad proficiency training.

Combat Aviation Brigade.

Mission. The mission of the Combat Aviation Brigade is to plan, prepare, and provide aviation close combat attack, reconnaissance, security, assault, lift, MEDEVAC (Medical Evacuation) and general support for maneuver forces.

Soldiers. The Combat Aviation Brigade consists of between 2500 - 2900 Soldiers.

Primary Equipment. The unit helicopters include: AH-64 (Apache and Cobra) Attack Helicopters, AH-60 (Blackhawk) Multi – purpose and CH-47 (Chinook) Multi – purpose. HMMWVs and cargo trucks with 5-ton and larger capacity.

Training. Live-fire training consists of individual weapons, crew-served weapons and helicopter cannon, rocket and machine-gun practice and qualification. Individual, crew served and helicopter weapons training occurs on fixed ranges with firing points and targets contained within a marked area and boundaries. Soldiers and crews train and qualify on these weapons twice annually. Cannons and rocket systems fire into restricted access dudded impact areas from multiple temporary firing points on ranges and in maneuver areas. Units will conduct live-fire training as often as 3 times annually.

Maneuver training is collective training at the company, battalion and brigade levels. The primary training events are establishing operational and logistical sites, performing a wide range of combat support flight missions, and conducting aerial gunnery. Aviation support units also move from position to position and set up their rearming, refueling and repair operations. Unit movements and positions will be on roads, trails and maneuver areas. Force protection training (ex. convoy defense, position perimeter defense) is integrated into all training missions. Aviation units would support 4 to 6 weeks of integrated maneuver training each year at designated maneuver areas. Aviation unit pilots would also maintain individual flight certification and support small-unit and joint operations as required.

Maneuver Enhancement Brigade (MEB).

Mission. The mission of the MEB is to enable and enhance the freedom of maneuver of a supported Army, joint, or multinational headquarters. The MEB augments maneuver capabilities to ensure the freedom of movement and security of Army combat maneuver forces and logistical operations. The MEB is a command and control Headquarters that can be tailored to mission requirements to provide specific maneuver, protection and logistics support roles. For the purposes of environmental analysis, the activities of the MEB are the same activities that would be engaged in by engineer, MP, signal, headquarters and other combat support units. The stationing of an MEB is therefore considered a stationing of additional CS Soldiers as the projected impacts anticipated to be the same.

Soldiers. An MEB consists of approximately 570 Soldiers.

Primary Equipment. HMMWV's and cargo trucks with 5 ton or greater cargo capacity; Armored personnel carriers, logistics trucks, armored security vehicles, and up-armored HMMWV's.

Training. Live-fire training consists of individual weapons and crew-served weapons qualification. Individual and crew served weapons training occurs on fixed ranges with firing points and targets contained within a marked area and boundaries. Soldiers and crews train and qualify on these weapons twice annually.

Primarily a headquarters unit, MEB maneuver training consists of maneuvering on trails and in maneuver areas, establishing Tactical Operations Centers (TOCs) at select locations and establishing communications infrastructure to monitor events and control battlefield operations. The MEB will typically support between 4-6 maneuver rotations annually. Each of these

rotations could involve 2-3 week deployments in support of joint training exercises, brigade training events, and battle command simulation exercises for command headquarters units. These simulation exercises test commanders and the proficiency in providing command and control functions to subordinate MEB units using computer simulated scenarios. Exercises take place in a replicated tactical scenario and may or may not involve the training maneuvers of vehicles in a tactical setting.

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3.0 ALTERNATIVES AND SCREENING CRITERIA

3.1 Introduction

This chapter discusses the several different alternatives the Army is considering for implementing the Proposed Action. The Purpose and Need described in Chapter 1 set forth a rational context in which to analyze the viability of alternatives. The Purpose and Need define necessary elements of the Proposed Action and allows for consideration of a broad range of alternatives for potential growth and realignment of the Army's forces to support the operations of the PACOM and other Army missions. This chapter will provide a discussion of the alternative selection criteria that the Army is using to assess whether an alternative is "reasonable" and will be carried forward for evaluation in the draft EIS. The screening criteria were developed based on the Purpose and Need for the Proposed Action set forth in Chapter 1.0. In addition, this chapter will discuss criteria used to select candidate installations for stationing actions to support Army Growth and realignment of the force.

Three alternatives and the "no action" alternative have been formulated to support the implementation of the Proposed Action. These alternatives correspond to the analysis of multiple statining scenarios which have been used by the Army to assist in the formulation of the Preferred Alternative. Installations have been included in the SPEIS if they are viable stationing locations capable of supporting 1,000 or more additional Combat Support/Combat Service Support (CS/CSS) Soldiers and they are capable of supporting Pacific theater mission requirements.

This SPEIS evaluates different stationing scenarios, to include stationing of units at locations within the CONUS. Environmental analysis of these installations was conducted as part of the Army's Programmatic EIS in 2007, which is incorporated by reference. Environmental analysis of this supplement to the PEIS will focus on installations and training areas in Hawai'i and Alaska, though decisions may include CONUS installations as well.

3.2 Assumptions Applied To Army Screening Criteria

3.2.1 Regional Security Mission Requirements

To support regional security goals and objectives, PACOM and USARPAC must be prepared to handle contingencies involving a number of potential conflict, counter terrorism, humanitarian aid, and peace support scenarios. Commanders must have the ability to deploy the appropriate number and type of forces to support global operations such as the wars in Iraq and Afghanistan as well as various contingency operations across the PACOM area of operations. New and realigned forces must be capable of deploying from their selected stationing location to support PACOM mission requirements.

3.2.2 Military Construction (MILCON) Limitations

Reasonable alternatives must include Army installations that have existing facilities to support the stationing of new Army units or have sufficient space and/or support infrastructure to allow construction of needed facilities in a timely manner. This includes facilities for training Army units as discussed previously and providing an acceptable quality of life for both Soldiers and their Families.

Facilities for training, Garrison operations, and Soldier and Family quality of life are critical for supporting the operations of new units that would be stationed at installations as part of the Proposed Action. A lack of adequate facilities to house, train, administer, and maintain equipment would not meet the Army's needs for the Proposed Action. If facilities do not currently exist at the installation to accommodate new units, facilities construction would be required. It would take several years to construct new facilities and have them available for use by new units.

3.3 Programmatic Alternatives Carried Forward for Analysis

In addition to the No-Action alternative, three action alternatives have been formulated that take into account the need for Army growth and force realignment from 2008 to 2013. All alternatives assume BRAC recommendations and those Global Defense Posture Realignment (GDPR) recommendations that have either already occurred prior to Fiscal Year 2008 as part of the baseline condition for analysis. The Army has determined that the alternatives below meet the screening criteria and are therefore reasonable. Alternatives in the SPEIS could include stationing of additional Combat Support (CS) or Combat Service Support (CSS) units, headquarters units, or new multi-functional support brigades. Stationing of new Brigade Combat Teams to support Pacific theater operations is not part of the Proposed Action. In addition to the major training installations the Army considered in its 2007 Final Programmatic Environmental Impact Statement (PEIS), the Army has considered 4 additional locations that can reasonably support the Proposed Action. Analyses of environmental impacts from the 2007 PEIS are incorporated by reference to support the Army's decision-making process. The focus of analysis in Chapter 4 of this SPEIS is therefore on the four new sites that the Army has determined to be viable stationing locations capable of meeting the needs of the Proposed Action. New sites (not in the 2007 PEIS) capable of supporting the stationing of new units to support Pacific theater operations include Fort Richardson, Alaska; Fort Wainwright, Alaska; Schofield Barracks Military Reservation (SBMR), Hawai'i; and Fort Shafter, Hawai'i. The total number of Soldiers listed under each alternative reflects the approximate number of all Soldiers who would be stationed there. Alternatives carried forward for full analysis are:

3.3.1 Alternative 1- Grow, transform, and realign forces to support operations in the Pacific by implementing Army-wide modular force recommendations to modularize force structure of existing units.

Alternative 1 would implement the Army-wide modular force recommendations discussed in Chapter 1 to continue the implementation of Army transformation and adapt existing USARPAC units best to organize them to counter current emergent threats and accomplish future operations. Modularity-based recommendations as part of this alternative include adjustments in the number and type of existing CS, CSS, and Headquarters units stationed in the Pacific Theater.

As part of this alternative, Army installations would experience unit gains through stationing and transfer of units from other installations, and losses through deactivations and transfers of existing units to other installations.

A summary of stationing actions supporting the Proposed Action that would occur as part of the implementation of Army-wide modularity and GDPR recommendations (Alternative 1) are included in Table 3-1 below. Table 3-1 shows the total number of Soldiers the Army would add or lose at installations as part of Alternative 1. As discussed in the 2007 Final PEIS, every Army

installation is experiencing unit reconfiguration, unit gains through stationing, and losses through deactivations as part of conversion to the modular force. These actions are required to implement Army Transformation and are occurring relatively uniformly at every installation depending on the number and type of units they support. As most of these changes involve augmentations to existing units, these units must be stationed at the location of the unit they are augmenting or the unit they must support.

TABLE 3.1 *Modular Force Changes to Existing Army Units (Alternative 1)*

FT RICHARDSON

UNIT NAME	**SOLDIER AUTHORIZATION**
4/25th IBCT Modular Force Changes	16
716th Explosive Ordnance Det.	21
95th Chemical Company	2
Aerial Support Detachment	4
486 Transportation Detachment	21
Medical Forward Surgical Team	10
23rd Engineer Company	100
84th Engineer Support Company (Airborne)	124
Combat Sustainment Support Battalion (CSSB)	78
Realignment of C 84th EN CO	-143
TOTAL	**233**

FT WAINWRIGHT

UNIT NAME	**SOLDIER AUTHORIZATION**
1/25th SBCT Modular Force Changes (Drivers & Deputy Cmd.)	16
1/25th MP Platoon Augmentation	42
65th Explosive Ordnance Company	44
Deactivation of 20th PA	-8
TOTAL	**94**

TABLE 3.1 *Modular Force Changes to Existing Army Units (Alternative 1 Continued)*

SCHOFIELD BARRACKS	
UNIT NAME	**SOLDIER AUTHORIZATION**
74th Ordnance	44
Headquarters 30th Ordnance	36
71st Chemical Company	6
Theater District Element	26
Transition Theater Opening Elem.	54
500th Military Intelligence (select units)	130
706th Ordnance	44
BCTs (1/25 & 2/25th) Additional Authorizations	99
34th Engineer Clearance	100
95th Engineer Company (Clearance)	191
249th Engineer Company (Prime Power Augmentation)	54
Medical Forward Surgical Team	6
TOTAL	**790**
FORT SHAFTER	
500th Military Intelligence Brigade Headquarters	**65**
Forward Support Team (FEST A)	**2**
Signal Command - Theater	36
8th Sustainment CMD HQ (HHC)	154
TOTAL	**257**

The implementation of Alternative 1 includes construction of cantonment facilities, training infrastructure construction, and the execution of live-fire and maneuver training needed to support unit changes and realignments as part of Army modularity. Chapter 4 discusses actions that the Army would undertake at each location in more detail.

The specific force structure changes and initiatives associated with these units are:

4/25th IBCT Modular Force Changes, 1/25th SBCT Modular Force Changes (Drivers & Deputy Cmd.), 1/25th MP Platoon Augmentation: Modular Changes to Brigade Combat Teams. These are changes to Brigade Combat Teams already in Alaska.

95th Chemical Company: Modular Force Structure Changes to existing Chemical units

Aerial Support Detachment: Army-wide structure change

486th Transportation Detachment: This is a Movement Control Team, required for to support existing theater-level transportation units in Alaska.

Medical Forward Surgical Teams (Fort Richardson and Schofield Barracks): Modular Forward Surgical Team initiative

23rd Engineer Company, 84th Engineer Support Company (Airborne): These are Sapper and Forced Entry Packages being sent to Airborne Brigade Combat Teams, including the one in Fort Richardson.

Combat Sustainment Support Battalion (CSSB): This is an Army-wide structural change to provide command and control for units already at Fort Richardson. This unit is the higher headquarters for support elements that are not part of the BCTs.

65th Explosive Ordnance Company, 716th Explosive Ordnance Det, 74th Ordnance, 706th Ordnance: Structural changes to explosive ordnance unit already assigned to Fort Richardson, Fort Wainwright, and Schofield Barracks.

Headquarters 30th Ordnance: These Soldiers augment a current unit.

Theater District Element, Transition Theater Opening Element: These are modular components of a Theater Support Command. They are augmentations to the 8th Theater Support Command, already in Hawai'i.

25th Light / Med Truck Company: This unit was supposed to be disbanded. It will now remain in Hawai'i. Its capabilities are still required.

71st Chemical Company: These companies are getting 6 additional crew members throughout the Army. This is an addition to a unit already in Hawai'i.

34th Engineer Clearance, 95th Engineer Company (Clearance): These are Sapper and obstacle clearance companies being added to all Combat Engineer Battalions in the Army; they are augmentations to an existing Battalion in Hawai'i.

249th Engineer Company (Prime Power Augmentation): This unit consolidates separate prime power (generator) detachments to provide central control and organization. The nucleus of this unit was already in Hawai'i.

8th Sustainment CMD HQ (HHC): This unit provides command and control for support units.

Signal Command Theater: This units' mission is long-range communications management and operations, and is needed to provide signal coverage over a large theater of operations.

3.3.2 Alternative 2 (Preferred Alternative for Implementation within US Army Garrison Hawaii)- In addition to those stationing actions in Alternative 1 that are part of the Army-wide modular force changes, the Army would station additional units needed to meet the specific mission requirements of the Pacific Theater.

As discussed in Field Manual Interim 3-0.1 *Modular Force*, every Army Theater command has

modular core components that exist at theater commands across the Army. In addition to these core components, theater commanders request additional unit capabilities depending on their mission requirements. As part of Alternative 2, the Army would grow and realign its forces to support the mission requirements of the Pacific Theater. Critical Army units requested by PACOM or USARPAC include a theater engineer command and supporting engineer units, a military police brigade and support units, and other high-demand CS units. PACOM has requested that the Army station an additional Engineer Brigade Headquarters and engineer support units to support its operations because of the theater's large disaster relief response requirement for construction engineers. In addition an engineer brigade headquarters is needed to provide command and control functions for existing engineer battalions in Alaska and Hawai'i. The theater does not currently have a higher headquarters to coordinate and manage engineering operations and this fills a vital need in a theater where engineering operations are critical. Alternative 2 includes implementing Army-wide modularity programs discussed above as part of Alternative 1. Table 3-2 shows new units, in addition to those discussed above under Alternative 1 that would be added to Army installations to support operations of the Pacific Theater. These units must be collocated with Theater, Army Services Component Command (ASCC), or brigade elements to facilitate unit administrative functions, unit cohesion, training integration, and command and control functions.

TABLE 3.2 Army Growth and Realignment to Support Theater Mission Requirements (Alternative 2)

FT RICHARDSON

UNIT NAME	**SOLDIER AUTHORIZATION**
6th Engineer Battalion Headquarters (Construction Effects)	175
56th Verticle Construction Engineer Company (6th Engineer BN)	162
Horizontal Construction Engineer Company (6th Engineer BN)	161
525th Engineer Concrete Section (6th Engineer Battalion)	12
240th Engineer Survey Team (6th Engineer Battalion)	14
545th Military Police Company	170
Ordnance Company (Ammunition Handling)	47
74th Signal Company	41
558th Quartermaster Company	117
793rd MP Battallion Headquarters Company (HHD)	73
TOTAL	**972**

FT WAINWRIGHT

472nd MP CO	170
559th Horizontal Engineer Company (6th Engineer Battalion)	161
TOTAL	**331**

TABLE 3.2 Army Growth and Realignment to Support Theater Mission Requirements (Alternative 2)

SCHOFIELD BARRACKS (ALTERNATIVE 2 GROWTH)

UNIT NAME	**SOLDIER AUTHORIZATION**
130th Engineer Brigade	124
Construction Management Team (130th Engineer BDE)	9
15th Engineer Detachment	6
69th Engineer Company (Combat)	100
307th Signal Battalion	118
558th Military Police Company	170
Military Police Detachment (19th Criminal Investigation Division)	42
Warrior Unmanned Aerial Surveillance Unit	126
Wounded Warrior Transition Unit	164
Army Material Command	33
TOTAL	**892**

FORT SHAFTER	TOTAL
402nd Army Field Support Battalion (AMC)	**37**

SUMMARY OF TOTAL SOLDIER NUMBERS TO BE STATIONED UNDER ALTERNATIVES 2 (inclusive of Alternative 1):

FORT RICHARDSON:	1,205 ADDITIONAL SOLDIERS
FORT WAINWRIGHT:	425 ADDITIONAL SOLDIERS
SCHOFIELD BARRACKS:	1,682 ADDITIONAL SOLDIERS
FORT SHAFTER:	294 ADDITIONAL SOLDIERS

The implementation of Alternative 2 is the Army's Preferred Alternative for implementing the Proposed Action within US Army Garrison Hawaii. This action includes construction of cantonment facilities on previously disturbed agricultural lands at Schofield Barracks. Implementation of the preferred altenative does not include the construction of additional live-fire training infrastructure. Combat support units will be able to meet individual and crew served weapons qualification requirements on ranges on Schofield Barracks, primarily on qualification ranges 1 and 2. The units listed above will conduct live-fire and maneuver training as needed to ensure they are trained and ready to support theater mission requirements. Chapter 4 discusses actions that the Army would undertake at each location in Hawaii more detail.

The reasons for stationing these units in their respective locations as part of Alternative 2 is as follows:

Fort Richardson Engineer Battalion and subordinate units. These units are specially tailored to provide support in the Pacific Theater and are needed to support the Stryker Brigade Combat Team already in Alaska. One subordinate unit is designated for Fort Wainwright in order to provide dispersion of assets and training support to units stationed there.

Aerial Support Platoon: This unit provides the PACOM Commander a long-range unmanned aircraft systems (UAS) capability.

545th MP Company: This unit is part of the Army's Military Police clustered stationing concept. It needs to go to Fort Richardson to both train for its combat mission and to support local law enforcement when other units are deployed.

472d MP Company: This unit is going to Fort Wainwright for the same reasons the 545th is going to Fort Richardson. Splitting these units between Forts Richardson and Wainwright supports local law enforcement efforts

130th Engineer Brigade: This Command and Control element is needed in Hawai'i to manage theater assets. Included in this unit is a construction management team. This unit provides construction and reconstruction services at every Army Engineer Brigade. The 15th Engineer Detachment and the 69th Engineer Company provide clearance and other engineering capabilities required for the Brigade's mission.

558th MP Company. This unit is also part of the Army's clustered stationing concept for Military Police units. This stationing action will give Hawai'i the total of four MP Companies necessary to achieve the clustered stationing goal.

19th Criminal Investigation Division: This unit is needed in Hawai'i to increase the capacity of law enforcement personnel to investigate serious crimes.

Warrior Unmanned Aerial Surveillance Unit: This unit control unmanned aircraft and provides the theater a critical intelligence-gathering capability. A large percentage of Soldier training is conducted in a flight simulator.

402nd Army Forward Support Battalion and Army Material Command Units: The Army Material Command is being realigned to provide the logistics links from the tactical unit level to the Army's strategic industrial base. These logistics support elements do contracting, logistics support, maintenance of forward support equipment.

Wounded Warrior Transition Unit: This unit will provide critical support to disabled Soldiers and their Families. It is needed in Hawai'i because of the number of wounded Soldiers who are being treated and returned to civilian life there.

Army Field Support Battalion (AFSB): This unit has no tactical equipment, and supports contracting and logistics functions of the Army Material Command for units that deploy overseas.

3.3.3 Alternative 3 (Preferred Alternative for US Army Garrison Alaska)- Take actions to grow, transform, and realign Army forces to support Army modularity and Pacific Theater operations as discussed in Alternatives 1 and 2; in addition to these actions grow the Army to accommodate the stationing of a Maneuver Enhancement Brigade, a Fires

Brigade, or a Combat Aviation Brigade to enhance PACOM operations and combat support capabilities in the Pacific Theater.

Alternative 3 includes implementing the recommended stationing actions of all of the programs discussed above as part of Alternatives 1 and 2. In addition, the Army could also station up to three multi-functional support brigades to support operations in the Pacific Theater. These brigades would include a Fires Brigade (approximately 1,600 Soldiers), a Maneuver Enhancement Brigade (approximately 570 Soldiers), and a Combat Aviation Brigade (approximately 2,800 Soldiers). These units provide additional flexibility and depth to PACOM's available force pool and would provide PACOM with increased capabilities to respond to a wide array of contingencies. These units could be stationed in Hawai'i, Alaska, or other locations in CONUS that are capable of deploying forces to support PACOM operations. Table 3.3 below summarizes the growth.

Table 3.3: Stationing of a Fires Brigade and Combat Aviation Brigade to Support Operations in the Pacific (ALTERNATIVE 3)

Under Alternatives 1 and 2:

FORT RICHARDSON:	1,205 ADDITIONAL SOLDIERS
FORT WAINWRIGHT:	425 ADDITIONAL SOLDIERS
SCHOFIELD BARRACKS:	1,682 ADDITIONAL SOLDIERS
FORT SHAFTER:	294 ADDITIONAL SOLDIERS

Alternative 3:

*FIRES BRIGADE (LOCATION TBD):	1,607 ADDITIONAL SOLDIERS
*AVIATION BRIGADE (LOCATION TBD):	2,753 ADDITIONAL SOLDIERS
*MANEUVER ENHANCEMENT BRIGADE:	567 ADDITIONAL SOLDIERS

The implementation of Alternative 3 is the Army's Preferred Alternative for implementing the Proposed Action within US Army Garrison Alaska. The Army's Preferred Alternative includes all growth and realignment actions in Alaska outlined as part of Alternatives 1 and 2, but also includes the stationing of a Maneuver Enhancement Brigade headquarters at Fort Richardson. This action includes construction of both cantonment facilities and range projects in Alaska. The total proposed number of new Soldiers stationed in Alaska would be approximately 2,200. As part of this alternative the Army validates previous decisions to station a 254 Soldier expeditionary sustainment command at Fort Lewis, WA, and the decision to divert the stationing of an additional MEB from Schofield Barracks, HI to Fort Drum, NY. Chapter 4 discusses actions that the Army would undertake at each location in Alaska more detail.

3.3.4 No Action Alternative - The No Action Alternative is to take no stationing actions to support the growth, realignment, and transformation of the Army to support operations in the Pacific

The No Action Alternative serves as a baseline condition for analysis and includes those stationing decisions that have already been made by Headquarters, Department of the Army to include stationing actions recommended by the BRAC Commission (BRAC 2005), as well as Army Global Defense Posture Realignment actions that took place prior to 2008. The No Action Alternative is not a viable means for meeting the current and future strategic security and defense requirements of the nation. It does not meet the Purpose and Need for the Proposed Action and therefore is not a feasible alternative.

3.4 Screening Criteria Used To Identify a Range Of Potential Installation Stationing Locations

The Army used criteria of need defined in Chapter 1, in conjunction with other external limiting factors to narrow the field of installations to those capable of supporting the requirements of new unit stationing actions required by Army growth. This chapter describes the Army's decision-making process for selecting and analyzing viable stationing locations that could meet the Purpose and Need for the stationing of Army Growth units. The screening criteria include: supporting the NSS, NDS, and ACP, supporting strategic requirements of the Pacific Theater, possessing the capability to provide the necessary training infrastructure for new units, and the ability to provide quality of life and Garrison support infrastructure. These screening criteria were applied to the full range of reasonable potential stationing locations capable of supporting Army growth. Specific criteria in this analysis used to screen the above alternatives include:

1. **Support National Security and Defense policy, decisions made within the Quadrennial Defense Review (QDR), and support Army Transformation:** Alternatives carried forward for analysis must promote, support, or be consistent with National Security and Defense policy, Army mission requirements, and the requirements of the QDR and Army Transformation. Alternatives must allow the Army effectively to support National Security and Defense Policy as well as Army Transformation and implementation of modular forces initiatives (which support transformation). These documents lay out policy decisions that realign a majority of Army forces back to US installations from foreign countries.

2. **Capability to Deploy to meet Strategic Requirements of PACOM Support Operations in the Pacific Theater:** PACOM is an active theater of operations. The PACOM Commander must conduct planning and prepare to support a broad range of operations across the full spectrum of actions the Army could be required to support in the Pacific Theater. Theater security requirements include operational planning for wartime, counter-terrorist, peace support, and stability operations. PACOM must conduct planning based on the National Security Strategy and National Defense and Military Strategies and must have forces on hand that can respond in a timely fashion to support its requirements. To support these requirements, forces must be stationed in locations that are in a geographic location that is in proximity to the Pacific Theater, or stationing locations must have deployment facilities such as access to C-17 capable airfields and other logistics capability to support operational deployment needs in the

Pacific Theater. Installation stationing locations must be capable of supporting the strategic requirements and contingency plans of PACOM.

3. **Training.** Potential stationing locations must have access to maneuver training areas and the training range capacity required to meet unit doctrinal training standards. Sites considered must have sufficient land for training and maneuver areas for existing and realigned units, and constructing, upgrading, and operating live-fire and qualification ranges as required. Quality and quantity of training land, ranges, and existing training facilities are all considered. Alternatives that are not capable of supporting the training readiness requirements of units to be stationed as part of the Proposed Action have not been carried forward in this document. This document does not consider installations for unit stationing to support the Proposed Action if units will not have access to modernized training ranges (i.e. if they are not a tier 1 or 2 training installation (See Appendix I). The Department of the Army categorizes its training installations and tier 1 and 2 installations have received higher prioritization for training infrastructure modernization. If new ranges are required the installation or its designated training sites must have the space to construct them to maintain its required training proficiency. Unit stationing locations must allow units to train effectively with their higher/lower echelon headquarters, if integrated execution of tactical tasks is required for doctrinal training proficiency. For example, if Army-wide force management decisions recommend that an additional explosive ordnance detachment be integrated into an explosive ordnance company already stationed at an existing installation, these units must be stationed at the same installation if the unit is to achieve mission proficiency.

4. **Quality of Life and Garrison Support Infrastructure.** The current capability for the installation to support Soldiers, Families, and civilians (e.g., Soldier/Family medical clinics, maintenance facilities, administrative office space, child and youth development centers, and school systems) is considered. The presence of adequate housing or the ability to construct housing to support Soldiers and their Families must be available on or off-post to support new units stationed at the installation as part of Army growth. Installations without adequate housing/facilities capacity in the surrounding community or buildable space to accommodate the Garrison requirements of additional units have not been carried forward for analysis if there is not existing capacity to support unit stationing at the installation.

3.5 Application of Screening Criteria to Potential Installation Stationing Locations

The Army initially included all of its installations as potential stationing locations to support growth, transformation, and realignment to support PACOM operations. Stationing of units at overseas locations has not been carried forward as a viable alternative in accordance with national security policy and GDPR recommendations. Additionally, facilities that do not have adequate modernized range facilities or access to training land have been screened from analysis. Installations that are reserve component installations and do not have permanent party infrastructure or services have also been screened from further consideration. Finally, installations that do not have access to air or sea deployment facilities to support PACOM mission requirements have also been screened from analysis. The Army considered the following stationing locations as viable, active duty, Tier 1 and 2 training installations with deployment capability to support Pacific theater missions. The following installations are the only Army installations that meet the minimum screening criteria for stationing of units under the Proposed Action:

- Fort Irwin, CA
- Fort Polk, LA
- Fort Bragg, NC
- Fort Lewis and Yakima Training Center, WA
- Fort Hood, TX
- Fort Benning, GA
- Fort Bliss, TX
- Fort Drum, NY
- Fort Campbell, KY
- Fort Stewart and Hunter Army Airfield, GA
- Fort Carson and Pinon Canyon Maneuver Site, CO
- USAG Hawai'i (SBMR and Fort Shafter)
- USAG Alaska (Fort Richardson and Fort Wainwright)
- Fort Riley, KS
- Fort Knox, KY
- White Sands Missile Range, NM

Chapter 4 of this document will analyze the potential impacts resulting from implementing the Proposed Action as part of Alternatives 1, 2, and 3. Chapter 4 analyzes various stationing scenarios at installations in Hawai'i and Alaska that are capable of supporting the needs of the Proposed Action. In conjunction with the 2007 analyses assessed in the PEIS, this analysis will assist Army decision-makers in incorporating an assessment of relative environmental impacts resultant from implementing the Proposed Action into the final stationing decision.

3.6 Alternatives Considered but Eliminated from Further Analysis

Permanently Station Significant Numbers of New Units at locations in other Countries: As part of this alternative, significant numbers of new units would be stationed at overseas locations at US Army bases in allied countries such as Japan or Korea. This alternative would allow the Army to take advantage of additional overseas infrastructure capacity, but it would not adhere to national defense policy or decisions and recommendations put forward in the QDR. Despite the short term construction cost saving to be gained through such an alternative, the Army is engaged in the process of GDPR to bring units back from overseas locations. This process is aligned with Department of Defense strategies to project power abroad from within

the United States where Soldiers have increased levels of force protection and access to training resources. While there may be minor adjustments to force structure outside the US and its territories, these installations will not receive significant numbers of new Soldiers.

Permanently Station New Units at Locations which do not have Deployment Capability to Support PACOM: This alternative would involve stationing units at locations that do not have deployment facilities to ensure that units are able to support the strategic and operational needs of PACOM. The PACOM area of responsibility covers an extremely large amount of space. To effectively respond to contingencies, units must be stationed at locations with adequate deployment facilities (C-17 deployment capability) to allow PACOM effectively to employ units to meet national security requirements. Units without C-17 air deployment capability have been screened from further analysis.

Station Active Duty Units at Reserve Component Sites: As part of this Alternative, units would be stationed at Reserve component installations to support the Proposed Action. While Reserve component facilities typically possess some of the range infrastructure required to support an Active Duty BCT, the installations' primary mission is to focus on training National Guard and Reserve Component Soldiers to prepare them for deployment to support on-going missions. These installations do not have full time staff or Garrison support infrastructure capable of accommodating full time Active component units to be assigned as part of the GTA process. The lack of services and infrastructure for permanent party Soldiers makes this alternative infeasible. Reserve Component installations have therefore been determined to be incapable of meeting the Purpose and Need of the Proposed Action.

Station All Required Units Somewhere Other than Alaska or Hawai'i: Under this scenario, all Soldiers would be stationed at CONUS locations and would deploy from CONUS to support operations in the Pacific Theater. This would not meet the purpose and need for the Proposed Action because it would not allow units to train as they fight as integrated combined-arms teams. It would prevent units from forming the habitual supporting relationships necessary to execute mission essential tasks. Additionally, units requiring augmentation would not receive the additional Soldiers they need to effectively perform their mission.

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4.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

Introduction

The following section provides information which discusses the affected environment and environmental and socioeconomic impacts (environmental consequences) of the proposed action. Subsections of this chapter divide analyses for potential unit stationing scenarios by installation location. As part of the proposed action (growth and realignment to support operations in the Pacific Theater), units may be stationed at locations in the Continental United States (CONUS), as well. An analysis for stationing of additional units in CONUS to support this action has been completed as part of the Programmatic Environmental Impact Statement (PEIS) that was published in October, 2007. This document is incorporated by reference. The special focus of the analysis presented in this document is on the installations in the Pacific Theater to which the Army may assign 1,000 or more Soldiers. The baseline for the proposed action is considered the installation's baseline condition in Fiscal Year 2008 (FY08) prior to the implementation of growth and realignment to support operations in the Pacific Theater. The baseline condition includes Congressionally-mandated Base Realignment and Closure (BRAC) 2005 and modularity decisions.

Methodology

This Supplemental Programmatic EIS presents a top-tier perspective of stationing actions affecting the U.S. Army Pacific that provides decision-makers, regulatory agencies, and the public with information on the potential environmental and socioeconomic effects resulting from the implementation of Army growth and realignment through different types of unit stationing scenarios. This information will allow the decision-maker to review the proposed alternatives and potential environmental and socioeconomic impacts for implementing Army growth required to support operations in the Pacific Theater, enabling them to make informed decisions when determining final stationing locations.

In addition to locations carried forward in the PEIS, the Army has determined that 4 installations are capable of supporting the proposed action of growing and realigning forces to support operations in the Pacific Theater. These locations are Fort Shafter, HI; Schofield Barracks, HI; Fort Wainwright, AK; and Fort Richardson, AK. The designated training areas utilized by U.S. Army Garrison Alaska (USAG Alaska) and U.S. Army Garrison Hawai`i (USAG-HI) are also carried forward in this chapter for analysis. The Army has and continues to assess its force structure needs to support operations in the Pacific Theater. This document and its analysis of impacts will assist Army force managers in making final stationing decisions. The Army has reviewed its force structure needs for supporting the proposed action and has developed 6 potential stationing scenarios for installations analyzed in this document. Because of ongoing planning and budgeting the exact design and structure of proposed growth and realignment to support operations in the Pacific is yet to be determined. The six unit stationing scenarios were developed to best capture the essence of stationing scenarios and inform Army leadership of their potential impacts. Stationing scenarios include Combat Support (CS) units with approximately 1,000 Soldiers, Combat Service Support (CSS) units with approximately 1,000 Soldiers, Combat Support units having approximately 3,000 Soldiers, Combat Service Support units with approximately 3,000 Soldiers, a Fires Brigade having approximately 1,600 Soldiers, and a Combat Aviation Brigade (CAB) containing approximately 2,800 Soldiers. The Combat Support scenarios would include smaller units of Military Police (MP), Explosive Ordnance Disposal (EOD), and Engineer components. Combat Service Support units provide logistical capability and may be comprised of Transportation, Quartermaster, Headquarters, and Medical functions. The Fires Brigade and Combat Aviation Brigade scenarios are based on the Army

Modular Force organization which offers self-sustaining unit capability, equipment, and manning.

Each scenario is not evaluated at all potential stationing locations, but do take into account the capacity of the installation and the Army's force structure management needs. For example, only two scenarios are evaluated at Fort Shafter, HI which looks at impacts of stationing up to 1,000 additional Soldiers of CS or CSS units. In addition, the Army has determined that the stationing of a Fires Brigade in Hawai`i is not a scenario that would be analyzed at this time. These scenarios are designed to provide decision-makers with awareness of potential environmental issues and impacts now and in the near future, and should not be interpreted as representing the Army's plan for supporting growth and realignment in the Pacific Theater.

Stationing scenarios evaluated in the SPEIS include the stationing of 1,000 and 3,000 combat support Soldiers, a Combat Aviation Brigade (CAB), or a Fires Brigade at various stationing locations discussed within the document. The information from the stationing scenarios has been extrapolated to generate a conservative estimate of the environmental impacts of implementing specific alternatives. For example, as part of the the Preferred Alternative approximately 1,800 new Soldiers would be stationed at Fort Richardson, AK. Using the 3,000 person combat support unit stationing scenario the Army can extrapolate potential environmental impacts. In this manner, senior Army leadership is informed of potential environmental impacts of stationing decisions and can balance environmental sustainment with operational readiness needs of the Army.

This Supplemental PEIS (SPEIS) adopts an analytic methodology similar to that used in the PEIS for Army Growth and Force Structure Realignment (October 2007). The PEIS for Army Growth identified several types of activities referred to as "activity groups" that were likely to result in impacts to the environment, the Garrison as a whole, and to the communities surrounding the Army installation. These activity groups served as the evaluation elements for use as a planning and decision making tool and were applied for environmental impact analysis process for the six unit stationing scenarios. Those four activity groups include Garrison construction, training infrastructure construction, live-fire training, and maneuver training. That methodology has been adapted for use by this SPEIS. Activity groups were coupled with the requirements of each of the six unit stationing scenarios and applied to Valued Environmental Components (VECs) for each of the four Army installations and their designated training areas[1]. As part of this supplemental analysis, the Army has reviewed recently completed NEPA documentation and worked with installation staff at each location to determine the requirements for supporting units stationing scenarios. The Army has worked with environmental professionals at its installations to conduct impact assessments based on the information provided by facilities planners and Army training staff. VEC ratings, rated "minimal" to "Significant Adverse," are based on currently available information and the assessment of professional training, facilities master planners and environmental staff. A description of determining the basic significance of effects is found in the following pages. The significance of potential direct, indirect, and cumulative effects is generally determined by evaluating the action and alternatives as it relates to the individual VEC. Because the decision-maker has the flexibility to choose a variety of combinations of units, the determination of significance is best understood at the site-specific level of analysis, when the installation would have the most information available to them regarding specific Soldier unit numbers, facility requirements, and training requirements.

[1] Not all of the training areas associated with these installations may be impacted, therefore only those training areas where training is likeliest to occur have been evaluated for potential environmental impacts.

Significance of Effects

In 40 CFR 1508.27 (CEQ regulations), the regulations specify that in determining the significance of effects, consideration must be give to both "context" and "intensity".

Context refers to the significance of an effect to society as a whole (human and national), to an affected region, to affected interests, or to just the locality.

Intensity refers to the magnitude or severity of the effect, whether it is beneficial or adverse.

The ***significance*** of potential direct, indirect, and cumulative effects is determined by evaluating the action, alternatives, and proposed mitigation measures as it relates to the individual VEC. The evaluation of significance is typically based on the assumption that the full effect of the proposed condition would occur all at once. More likely, the effects would be less than the maximum predicted and would occur incrementally rather than all at once. Actual effects might be less severe than those predicted.

Legal requirements should be considered in determining significance. Actions that are likely to result in violation of regulatory standards are usually considered to have significant effects.

Air Quality

Two independent legal requirements govern consideration of air quality effects: (1) NEPA and (2) the general conformity provision of Clean Air Act (CAA) Section 176(c), including EPA's (Environmental Protection Agency) implementation, the General Conformity Rule. Depending on the action and the air quality conformity attainment status of the installation (or other affected property), an installation might have to complete a separate conformity analysis in addition to the NEPA analysis. Applicability of the two requirements must be considered separately. Exemption from one requirement does not automatically exempt the action from the other requirement, nor does fulfillment of one requirement constitute fulfillment of the other.

Some example air quality environmental effects include:

- Changes in the type or amount of air emissions due to changes in the operation of current air pollution sources or the addition of sources
- Changes in air emissions due to construction activities (vehicular emissions and fugitive dust).
- Changes in local/regional ambient air quality due to changes in emissions.
- Potential exposure to asbestos during building demolition/renovation (if asbestos has not been removed prior to demolition/renovation)
- Changes in public opinion (favorable or adverse) due to projected changes in air quality, especially for incinerator projects
- Effects on compliance status due to construction or modification of emission sources.
- Effects on the timely attainment or maintenance of the National Ambient Air Quality Standards (NAAQS) or any air quality standard or milestone contained in the State Implementation Plan (SIP) or Federal Implementation Plan (FIP)
- Downwind effects, particularly any that might disproportionately affect low-income or minority populations.

NOTE: Consider fugitive dust emissions. Determine if the action increases the levels of fugitive dust in a manner that exceeds limits of particulate matter (PM) in nonattainment areas or result in other potential adverse effects.

SIGNIFICANCE
An alternative could have a significant air quality effect if it would result in substantially higher air pollutant emissions or cause air quality standards to be exceeded.

Examples of significance criteria for air quality include:
- Source-specific emission limits
- Permitting and licensing requirements
- NAAQS
- State or local ambient air quality standards
- *De minimus* emissions levels outlined in the General Conformity Rule
- SIPs/FIPs
- Exposure of sensitive populations to pollutants
- Any other applicable regulations or standards

Air Space
The Federal Aviation Administration (FAA) manages all airspace within the U.S. and the U.S. territories. Airspace is defined in vertical and horizontal dimensions and also by time. The FAA recognizes the military's need to conduct certain flight operations and training within airspace that is separated from that used by commercial and general aviation. Airspace is a finite resource and must be managed to achieve equitable allocation among commercial, general aviation, and military needs.

The FAA has established various airspace designations to protect aircraft while operating near and between airports and while operating within airspace identified for defense-related purposes. Flight rules and air traffic control procedures govern safe operations within each type of designated airspace. Most military operations are conducted within designated airspace and follow specific procedures to maximize flight safety for both military and civil aircraft.

Controlled airspace is a generic term for the different types of airspace (Classes A, B, C, D, E, and G airspace) and defined dimensions within which air traffic control service is provided to instrument flight rules flights and visual flight rules flights in accordance with the airspace classification.

Army Airfield Air Installation Compatible Use Zones (AICUZ), Clear Zones, and Accident Potential Zones (APZ) represent components to be considered with respect to air space and land use compatibility. AICUZ identifies noise levels specifically associated with aircraft operations. Clear Zones and APZ are based on areas having statistically higher potential for aircraft accidents and are often areas that typically are subjected to high levels of aircraft noise. Such areas should remain undeveloped for safety purposes.

SIGNIFICANCE
Analysis of airspace management and use involves considering many factors, including types, locations, and frequencies of aerial operations; the presence or absence of already designated (controlled) airspace; and the amount of air traffic using or transitioning through a given area. Proposed actions that are consistent with controlled airspace designations should typically be found not to present impacts on safety. Proposals for actions potentially inconsistent with airspace designations or that may pose a threat to the safety of other aircraft or persons or property require careful consideration, which often involves coordination with FAA officials. Where safety is a concern, the proponent should consult with the military representative at the FAA's regional field office.

Cultural Resources

Impact assessment for cultural resources focuses on those properties which are listed in or are considered eligible for the National Register of Historic Places or are National Historic Landmarks, as well as resources that are considered sensitive by Native American groups. Based on statutory requirements, cultural resources for NEPA analyses should be considered to include:

- Historic properties, as defined in the National Historic Preservation Act (NHPA) (Section 106 compliance),
- Cultural items, as defined in the Native American Graves Protection and Repatriation Act (NAGPRA);
- Archeological resources, as defined in the Archeological Resources Protection Act (ARPA);
- Historic and prehistoric resources, as defined in the Antiquities Act;
- Sites that are scientifically significant, as defined by the Archeological and Historic Data Preservation Act (AHPA);
- Sacred sites, as defined in Executive Order 13007, to which access is provided under the American Indian Religious Freedom Act (AIRFA); and
- Collections, as defined in 36 CFR Part 79, Curation of Federally-Owned and Administered Collections

Impacts to cultural resources should include the following types of information:

- Statement of eligibility of archeological or historic structures in the project area that are on or potentially eligible for the National Register
- If historic properties are in the Area of Potential Effect (APE), follow criteria in 36 CFR 800.9(a) to determine of the potential effect on these properties. Effects may include, but are not limited to:

  - Destruction of historic buildings, structures, or landscapes
  - Construction in historic districts
  - Repair or alteration of historic buildings and structures
  - Construction in areas with archeological sites
  - Transfer of ownership to non-federal entities
  - Decreased maintenance resulting in deterioration of historic buildings and structures
  - Changes of mission training in range areas that could result in damage to surface or buried archeological sites

- Determination of effect for the proposed action should be made in consultation with the installation's Cultural Resources Specialist and the State Historic Preservation Office (SHPO).
- Actions or mitigation measures that were completed or will be necessary to bring the facility into compliance with NHPA.

SIGNIFICANCE

An alternative could have a significant effect on cultural resources if it would:

- result in unauthorized artifact collecting or vandalism of identified important sites;
- modify or demolish an historic building or environmental setting; or

- promote neglect, resulting in resource deterioration or destruction, audio or visual intrusion, or decreased access to Native American resources.

Noise

In preparing NEPA analysis of proposed actions, it is important to quantify noise levels (when data are available) and to describe the noise environment in qualitative terms. Environmental noise analyses include a description of the installation's existing and proposed noise environment resulting from all sources, including weapon firing, detonation of explosives, aircraft, vehicles, and other noise-producing equipment (e.g., generators, heating ventilation/air conditioning equipment).

In general, the military noise environment consists of three types of noise:

- Transportation noise from aircraft and vehicle activities,
- High-amplitude noise from armor and artillery firing and demolition operations, and
- Noise from firing at small arms ranges.

Noise may be intermittent or continuous, steady, or impulsive. Human response to noise is extremely diverse and varies according to the type of noise source, the sensitivity and expectations of the receptor, the time of day, and the distance between the source and the receptor. The decibel (dB) is the accepted unit of measurement for noise level. The A-scale decibel (dBA) is an adjusted dB that corresponds to the range of normal human hearing.

A tool that assists in the analysis for noise-producing activities is the Operational Noise Management Program (ONMP) (see Chapter 7 of AR 200-1). The goals of ONMP are to protect the human health and welfare of people on an off post affected by Army-produced nose and to reduce community annoyance from environmental noise. The program seeks to achieve compliance with applicable noise regulations in a manner consistent with an installation's mission.

As a part of the ONMP, noise contour maps are prepared. The maps delineate up to three different noise zones, which are based on the expected percentage of the population that would be highly annoyed by environmental noise. The associated noise levels for each zone are shown below.

Noise Zone	Population Highly Annoyed	Transportation Noise (ADNL)	Impulsive Noise (CDNL)	Small Arms Noise (unweighted)
Zone I	< 15%	< 65 dBA	< 62 dBC	< 87 dBP
Zone II	15% - 39%	65-75 dBA	65-70 dBC	87-104 dBP
Zone III	> 39%	> 75 dBA	> 70 dBC	> 104 dBP

DNL – Day-night level (accepted unit for quantifying human annoyance to general environmental noise). The time-weighted energy average sound level, over a 24-hour period, with a 10-decibel (dB) penalty added to the nighttime levels (between 2200 and 0700 hours).
ADNL – A-weighted day-night level (from sources such as vehicles and aircraft and from continuous sources such as generators)

CDNL - C-weighted day-night level (high energy blast noise and other low-frequency sounds capable of inducing vibrations in buildings or other structures (e.g., armor, artillery, and demolition activities))
dBP – decibels, unweighted

In general, noise-sensitive land uses, such as housing, schools, and medical facilities, are compatible with the noise environment in Zone I, normally incompatible in Zone II, and incompatible in Zone III.

Examples of Army projects that may require supplemental noise assessments include adding or expanding a firing range, airfield, industrial operation, or maneuver area. The need for additional noise assessment may arise:

- Where the noise environment is determined by a few infrequent noises at very high levels (e.g., blasts with C-weighted sound exposure levels in excess of 110 dB).
- If single-even noise levels from a proposed action are greater than the existing levels by 10 dB or more.
- In areas where the ADNL is between 60 and 65 dB and the proposed action is projected to increase the DNL by 3 dB or more.
- In areas where the ADNL is above 65 dB and the proposed action is projected to increase the DNL by 1.5 dB or more

SIGNIFICANCE
An alternative could have a significant noise affect if it generated new sources of substantial noise, increased the intensity or duration of noise levels to sensitive receptors, or resulted in exposure of more people to high levels of noise.

Soil Erosion

In preparing NEPA analysis of proposed actions, it is important to quantify soil erosion thresholds of significance. Soil erosion could result from a variety of military activities.

In general, military activities which can lead to significant soil erosion are:

- Ground and Aviation Maneuver Training Activities
- Live-fire Activities
- Construction
- Surface excavation as part of training

Soils. Soils refer to the upper layer of unconsolidated material on the surface of the earth that is capable of supporting plant life. The National Cooperative Soil Survey is responsible for developing and implementing standards for describing, classifying, mapping, writing, and publishing information about the soils of a specific area and for presenting this information in soil surveys.

Any new construction will disturb soils through ground-breaking excavation, removal of vegetation, and leveling and grading of the surface. The exposed soil would be exposed to erosion that could lead to deposition of sediment in nearby water bodies if proper management measures are not implemented. If topsoil is removed, the ground should be covered or

stabilized with vegetation to prevent wind or water erosion. The soil must be replaced as the top ground cover; otherwise, there will be no material to support vegetation, creating a barren surface and the potential for severe erosion.

Certain soils have characteristics that could make them unsuitable for construction. A high acidic level can lead to corrosion of underground pipes and storage tanks. Soil exhibiting high plasticity may also be unsuitable for supporting structures such as buildings, parking lots, and roads because of their high shrink/swell potential.

The construction of new buildings, roads, and parking lots also increases the amount of impervious surface in the vicinity of the project site, and the effect may be an increase in storm water runoff, resulting in erosions and associated sedimentation. In addition, increased sediment loads in runoff can affect the water quality of nearby water bodies.

Assessing the proposed project's potential impacts on geology and soils and the impacts of geology and soils (including prime farmland soils) on the proposed project requires consideration of a broad spectrum of possible effects and relies on the accuracy of the data ad the specificity relative to the project site. Having detailed, site-specific geologic and soil information for a construction project is not only recommended, but may be required by state or local regulations.

Impact analyses for geology and soils should accomplish the following objectives:

- Indicate where subsurface geology is not suitable for a foundation for buildings, parking lots, and other structures due to possible subsidence, seismic activity, or high shrink/swell potential
- If the area is seismically active, indicate the Seismic Zone building code rating that would need to be met to reduce the potential for harm to human life
- Indicate areas where soils would be disturbed, especially areas with severe erosion potential, and what management measures would be applied to control or reduce erosion. (For military training this is estimated by Army Training and Testing Area Carrying Capacity Models and increases in Maneuver Impact Miles)

Consider two types of effects – effects of the project on the geology and soils of the site, and effects of the geology of the site on the project.

Effects of the proposed project on geology and soils could include:

- Erosion. Any construction activity that alters the microtopography through gradation, leveling, and excavation leaves the soil exposed and subject to wind and water erosion by removing vegetative cover. An increase in the suspended dust due to trucks and other construction vehicles driving over the exposed ground surface also can be expected.
- Sediment deposition. Soil disturbance can contribute to sedimentation in adjacent water bodies through erosion and dust suspension. Sedimentation can smother vegetation, alter the flow of water, and ultimately decrease water quality.
- Increase in impervious surfaces. Construction of new buildings and the parking lots and roads that service them increases the acreage of impervious surfaces. This leads to increased storm water runoff and may affect water quality.
- Loss of mineral resources. Building of new housing units over mineral deposits would result in the loss of access to those resources, and therefore a possible economic loss to the Region of Influence (ROI).

Effects of geology and soils on the proposed project could include:

- Subsidence. Ground subsidence due to caves, sinkholes, and other karstic features or underground mines could result in severe structural damage.
- Seismic activity. Earthquake activity could result in structural damage and harm to human life.
- Shrink/Swell. Soils with high shrink/swell potential could result in damage to the foundation of buildings, as well as to roads and parking lots.

SIGNIFICANCE

If the proposed action would result in an extensive loss of prime farmland acreage relative to the total amount of prime farmland in the region, a significant impact may result. Avoidance of development on prime farmland represents the best mitigation approach.

If an alternative would result in an increased geologic hazard or a change in the availability of a geologic resource, it could have a significant effect on the environment. Such geologic and soil hazards would include, but are not limited to, seismic vibration, land subsidence, and slope instability.

If a proposed project were to be built in an area where the geologic or soil conditions exhibit such severe engineering limitations that significant adverse impacts to structural integrity could arise, the situation could potentially lead to the preparation of an EIS. Such limitations could include the presence of soils with a high shrink/swell potential and the potential for ground subsidence.

Biological Resources

The description of biological resources should emphasize those biological resources which are anticipated to be affected by the action under consideration or that have particular significance on local, regional, or nation level. Issues specifically addressed under the topic of biological resources include vegetation, fish and wildlife, sensitive species, sensitive habitats, and wetlands.

The following statutes impose specific regulatory requirements pertaining to the treatment of biological resources on federal property.

- AR 200-3 (Natural Resources-Land, Forest and Wildlife Management)
- Endangered Species Act
- Migratory Bird Treaty Act
- Sikes Act
- Fish and Wildlife Coordination Act of 1980
- Bald and Golden Eagle Protection Act
- Magnuson-Stevens Fisheries Management and Conservation Act
- Marine Mammal Protection Act

Section 7 of the Endangered Species Act requires federal agencies to coordinate with the U.S. Fish and Wildlife Service or the National Marine Fisheries Service to ensure that any proposed action that the agency authorizes, funds, or carries out is not likely to result in adverse impacts on threatened or endangered species or critical habitats. NMFS has jurisdiction over marine fish, anadromous fish, sea turtles, and marine mammals. Consultation, conference, and biological assessment procedures under Section 7 should be integrated with NEPA procedures to the maximum extent feasible. It is strongly recommended that the Section 7 process be

completed and the results incorporated into the final NEPA document before release of a FNSI (Finding of No Significant Action) or ROD.

Evaluating potential impacts on biological resources involves two aspect-assessing impacts on resources affected by the proposed action and identifying the circumstances and environmental conditions under which the impacts would be significant. Because of the lack of quantitative models applicable to this process, much of the assessment is qualitative in nature and relies primarily on the expertise and judgment of the assessor(s). Arguably, the element most critical to the analysis is the dialogue between the Army and federal and state consultation agencies. The agencies provide information on sensitive species and habitats located on the installation or in the vicinity of the project site and can inform the Army, early in the NEPA process, as to whether the proposed action is consistent with the requirements of the Endangered Species Act.

For each alternative, the environmental impact analysis section for biological resources should present the following information:

- The vegetation, fish and wildlife, sensitive species, and sensitive habitats that would be permanently lost as a result of the proposed action.
- The biological resources that would be temporarily lost and when and how those resources would be restored.
- Disturbances to biological resources, terrestrial wildlife species in particular, that would occur during and/or following implementation of the proposed action.
- The outcome of the information consultation process between the Army and the U.S. Fish and Wildlife Service/National Marine Fisheries Service
- The outcome of informal consultation process between the Army and state natural resource agencies
- Mitigation measures to offset the loss of vulnerable biological resources, including how and when those measures would be accomplished.

In the case of an adverse effect, the requirement can often be avoided by mitigation proposals to alter the location or timing of the project. However, the mitigations proposals must be suggested or approved by the U. S. Fish and Wildlife Service/National Marine Fisheries Service and/or appropriate state agency.

SIGNIFICANCE

The effect of an alternative on biological resources and ecosystems could be significant if it would disrupt or remove any endangered or threatened species or its habitat, its migration corridors, or its breeding areas. The loss of a substantial number of individuals of any plant or animal (sensitive or non-sensitive species) that could affect the abundance or diversity of that species beyond normal variability could also be considered significant. The measurable degradation of sensitive habitats, particularly wetlands, could be significant.

Wetlands

Wetlands are defined by EPA and USACE as areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Areas meeting this definition are delineated based on parameters of vegetation, soils, and hydrology.

Section 404 of the Clean Water Act is widely accepted as the most significant federal program affecting the protection of wetlands. This programs regulates both the discharge of dredged

and fill materials into waters of the United States and the conversion of wetlands to uplands for farming or forestry. Another federal mandate regulating wetlands is Executive Order 11990, Protection of Wetlands, which requires federal agencies not only to minimize the destruction of wetlands, but also to initiate action to enhance their natural values.

If the presence of a wetland is suspected in the area, and the wetland will likely be affected by the proposed action, the proponent must have the wetland boundaries delineated before undertaking any action. Delineations can be performed by certified or otherwise qualified persons who must submit their results to USACE for approval.

A wetland area subject to permanent loss from fill should be precisely quantified by conducting field delineation, survey, and mapping of all potentially effected waters of the United States, including wetlands. A qualitative consideration of other categories of wetland related impacts is usually sufficient. Analytical models are available to generate quantitative estimates of changes in wetland hydrology and changes in wetland function. Typical categories of wetland impacts from Army activities include:

- Filling
- Flooding
- Draining
- Sedimentation
- Water quality degradation
- Increased noise and human activity

NOTE: Of the categories listed above, only filling is directly subject to permitting requirements under federal law. However, all potential impacts on wetlands must be considered under NEPA, not just impacts requiring permits.

SIGNIFICANCE

Net loss of wetland areas or functions as a result of implementation of an Army proposal may be deemed a significant impact. Because wetland area is more readily quantified than wetland function, and because the success of restored or created wetlands is uncertain, most mitigation proposals call for restoring or creating more wetland area than lost. Sample mitigation measures include:

- Use of detention basins, oil/water separators, and other storm water management structures
- Used of vegetated buffers, silt fences, straw mulches, and other erosion control practices during construction
- Restoration of wetlands disturbed by the project
- Restoration of other wetlands
- Creation of other wetlands
- Enhancement of other wetlands
- Purchase and protection of other wetlands
- Monetary compensation.

Water Resources

Water resources can be divided between surface and ground water sources.

SURFACE WATER. Surface water is often used to describe various bodies of water residing or flowing into basins, channels, and other various natural and artificial landforms found on the

earth's surface. Examples of surface waters include rivers, streams, lakes, reservoirs, ponds, and estuaries. Surface water resources have many beneficial uses including drinking water supply, primary contact recreations (e.g., swimming), and aquatic life support.

Acceptable or unacceptable water quality in surface waters is usually judged using water quality standards established by states or other relevant jurisdictions. Most standards assign a beneficial use to a water body (i.e., water quality classification) and then set minimum numeric and narrative criteria needed to support that use.

Any action involving surface disturbance in the watershed (e.g., establishment of new facilities complexes, expansion of existing complexes, or installation of new utilities serving those complexes) may have direct impacts on hydrology or water quality of surface water. Demolition and replacement of existing Army facilities, even when the developed area is not expanded, could also potentially result in temporary or permanent changes in surface water conditions.

A region of influence for surface waters would typically include the sites for construction of other activities for each alternative plus adjacent lands where surface waters could be influenced by drainage patterns and point and non-point pollution. Professional judgment is necessary to estimate the extent of adjacent lands that must be considered.

The federal Clean Water Act of 1977 (33 USC 1251, et. seq.) is the primary law regulating water pollution in surface waters. Other relevant laws and regulations are listed below:

- AR 200-1, Environmental Protection and Enhancement
- AR 420-49, Utility Services
- Safe Drinking Water Act (SDWA)
- Marine Protection, Research, and Sanctuaries Act
- Estuary Protection Act

Assessing potential impacts on surface waters relies heavily on the specialized expertise and judgment of the assessor. Construction activities can produce many different kinds of non-point source pollutants that, if allowed to migrate into surface waters, can cause harmful consequences and lower water quality. Best management practices are used to prevent, or at least control, the pollution of runoff water that moves diffusely into surface water bodies.

Typical categories of water resource impacts from Army activities include the following:

- ***Sedimentation.*** Surface disturbances can lead to increased erosion and the movement of sediment to surface waters. Sedimentation builds up the streambed, increases turbidity, and covers up habitat important for fish spawning and aquatic insect life.

- Water quality degradation. Demolition and construction activities often require the use of toxic or hazardous material such as petroleum products, pesticides, herbicides, and sealants. If allowed to migrate to water bodies as non-point source pollution, these materials can lower water quality and harm plant and animal life.

- Flooding. Surface disturbances can alter drainage patterns and render soils more impervious. These conditions can increase both the volume and intensity of runoff, which in turn increases flooding and causes erosion of stream channels and banks.

SIGNIFICANCE

Violations of water quality standards are normally deemed significant impacts.
If an alternative would result in a reduction in the quantity or quality of water resources for existing or potential future uses, it could have a significant effect. Based on existing water rights, a significant effect would occur if the demand exceeded the capacity of the potable water system. An alternative also could have a significant effect on water resources if it would cause substantial flooding or erosion, if it would subject people or property to flooding or erosion, or if it would adversely affect a significant water body, such as a stream or lake.

In most cases storm water management practices are used to mitigate the effects of construction sites (and other kinds of activities, as well) on surface water resources. While these practices vary in purpose and design, their general objectives include:

- Minimizing the amount of disturbed soil
- Preventing runoff from off-site across the site
- Slowing down the runoff flowing across the site
- Removing sediment from on-site runoff before it leaves the site.

Examples of practices used to meet these objectives include the installation of silt fencing, sediment basins, hay bales, and gradient terraces.

GROUNDWATER. Groundwater occurs in an aquifer, a water-bearing bed, or a stratum of earth, gravel, or porous stone.

Any action involving surface disturbance, such as the establishment of new facilities, may have direct impacts on the hydrology or water quality of groundwater. A region of influence for groundwater would typically include construction sites or other activity locations for each alternative, plus adjacent lands where recharge and discharge of groundwater occurs.

The Safe Drinking Water Act (40 USC 100, et. seq.) directs EPA to develop national drinking water regulations for public water systems and directs states to establish programs that protect areas around wellheads. The 1996 amendments establish a strong emphasis on source water protection and enhanced water system management.

Construction activities can produce many different kinds of non-point source pollutants, which, if allowed to migrate to groundwater, can cause harmful consequences and lower water quality. Best management practices are designed to prevent, or at least control, the pollution of runoff water.

Typical categories of groundwater impacts from Army activities include:

- Groundwater quality degradation. Demolition and construction activities often require the use of toxic or hazardous materials such as petroleum products, pesticides, herbicides, and sealants. If allowed to migrate to groundwater, they can lower water quality.
- Decreased aquifer recharge. Surface disturbances can alter drainage patterns and render soils more impervious. These conditions can increase surface runoff at the expense of groundwater recharge. These conditions could lower the water table and alter discharge sites.

SIGNIFICANCE

Violations of water quality standards are normally deemed significant impacts. In most cases, storm water management practices are used to mitigate the effects of construction sites (and other kinds of activities, as well) on surface water resources.

Examples of practices used to meet these objectives include careful handling of hazardous materials, marking and specialized protection of groundwater recharge areas, and the installation of runoff devices and structures as silt fencing, sediment basins, hay bales, and gradient terraces.

Facilities

Principal elements of facilities include:

- Water systems – systems that provide water for potable use, industrial applications (including fire suppression), and agricultural irrigation. Concerns related to water systems typically pertain to availability and quality of water supplies, treatment processes, distribution, and consumption rates.
- Wastewater systems – systems that may treat sanitary sewer, industrial, or both kinds of wastes. Concerns typically pertain to the age of the system (either its collection system and infiltration/inflow problems or the treatment plant itself), the capacity of a treatment plan (usually expressed in millions of gallons per day). and a treatment plant's record of violations or NPDES (National Pollutant Discharge Elimination System) permit effluent exceedances.
- Storm Water Systems – systems that convey precipitation away from developed sites to appropriate receiving surface waters. Failure to appropriately size storm water systems to hold or delay conveyance of the largest predicted precipitation event often leads to downstream flooding and the environmental and economic damages associated with flooding. As a general rule, a higher density of development, such as that found in the cantonment areas of Army installations, requires a greater degree of storm water management because of the higher proportion of impervious surfaces in such developed areas.
- Solid Waste Management – systems that involve concerns about the availability of landfills to support a population's residential, commercial, and industrial needs. Alternative means of waste disposal may involve waste-to-energy programs or incineration.
- Communications Systems – systems consisting primarily of radio and telecommunications equipment.

SIGNIFICANCE

Where facilities are inadequate, the proponent may initially find a significant impact. In this case, further inquiry may be appropriate, such as concerning the possible necessity of new capital investment. In other cases, a proponent may establish that effects to facilities may be temporary. This often happens where a proposal will involves a surge of personnel within a limited geographic area, imposing abnormal strain on facilities systems. In many instances, these types of surge issues can be adequately addressed in planning, which mitigates the impacts of the proposal.

SIGNIFICANCE

An alternative could have a significant effect on facilities if it would increase demand over capacity, requiring a substantial system expansion, or if it would result in substantial system deterioration over the current condition.

Energy Demand/Energy Generation

Types of energy include electrical power, natural gas, fuel oil, and steam. Army installations use all of these forms of energy. Concerns regarding energy can extend to selection of type, conservation measures, availability, costs, or consumption rates.

SIGNIFICANCE
As with facilities, the capacity and the condition of the energy system prior to and the result of the proposal upon implementation will determine the level of significance. An alternative could have a significant effect on energy demand/generation if it would increase demand over capacity, requiring a substantial system expansion, or if it would result in substantial system deterioration over the current condition.

Land Use Conflict/Compatibility
Land use refers to human use of the land for economic production; for residential, religious, recreational, or other purposes; and for natural resource protection. Land uses are regulated by management plans, policies, zoning ordnances, and regulations that determine the types of uses allowable. These schema also serve to protect specially designed or environmentally sensitive uses.

SIGNIFICANCE
Army actions sometimes have the potential to change the land use of a site, particularly if facilities are constructed in areas where facilities did not previously exist or if new types of activities are introduced to an area. Such changes in land use can raise a number of issues and concerns, such as whether facilities or activities will be compatible with adjoining land uses on and off the installation. Specific concerns include noise and visual intrusion, exposure to health and safety hazards, increased traffic congestion, changes in property values, community cohesiveness, and protection of environmentally sensitive areas.

The significance of impacts is based on whether the proposed action conflicts with established land uses in the area, disrupts or divides established land use configurations, represents a substantial change in existing land uses, or is inconsistent with adopted land use plans. If an alternative would conflict with adopted plans and goals of the community or if it would result in a substantial alteration of the present or planned land use of an area, it could have a significant direct effect. If an alternative would result in substantial new development or prevent such development elsewhere, it could have a significant indirect effect.

Mitigation measures for changes in land use might include moving a proposed action to a different location to avoid conflicts with adjacent land uses, obtaining a land use plan change where the proposed action is inconsistent with existing land use or zoning maps, and creating open space or other physical buffers at the periphery to reduce perceived conflicts.

Hazardous Material/Hazardous Waste
Based on regulatory definitions, substances are hazardous materials prior to and during their use. After their use and when they are no longer needed, hazardous materials may become hazardous wastes.

SIGNIFICANCE
One method to determine significance of impacts is the use of, or reference to, standards and criteria.

Any impact resulting from the proposed action and alternatives that results in increases to the constituent concentration from levels below to levels above the standards, criteria, or risk

thresholds may be considered a significant impact. Actions could also result in significant effects if they result in substantial increases in the generation of hazardous wastes or place substantial restrictions on property use due to hazardous waste, materials, or site remediation.

For example, an alternative could have a significant effect if it would result in a substantial increase in the generation of hazardous substances, increase the exposure of persons to hazardous or toxic substances, increase the presence of hazardous or toxic materials in the environment, or place substantial restrictions on property use due to hazardous waste, materials, or site remediation.

NOTE: An alternative could have a significant impact to human health and safety if it would expose field training units to unexploded ordnance without proper protection. In addition, significant impacts would occur if an alternative resulted in environmental health risks or safety risks specifically to children.

Traffic and Transportation. An alternative could have a significant effect on traffic if it would increase the volume of traffic beyond the existing road capacity, cause parking availability to fall below minimum local standards, or require new or substantially improved roadways or traffic control systems.

Socioeconomics

SIGNIFICANCE

If an alternative would alter substantially the location and distribution of the population within the geographic "region of influence" cause the population to exceed historical growth rates, or substantially affect the local housing market and vacancy rates, the effect could be significant. In addition, an alternative could have a significant effect if it would create a need for new or increased fire or police protection, or medical services, beyond the current capability of the local community.

Environmental justice: Significant effects could occur if an alternative would disproportionately affect minority or low-income populations.

NOTE: Per 40 CFR 1508.14 (CEQ regulations), social or economic effects are not intended *by themselves* to require the preparation of an EIS. Only when social or economic effects occur with natural or physical environmental effects from the same proposed action will all of these effects be analyzed as part of the NEPA process.

VEC Impact Ratings

The assessment for each installation and their designated training areas is offered in Tables 4.0-1 through 4.0-6 below. The assessment has been conducted for stationing scenarios which could apply to a given installation. The following is a basic description of VEC ratings:

These ratings assess the composite intensity of impacts to the installation by individual VEC resulting from i) cantonment construction, ii) training infrastructure construction, iii) live-fire training, and iv) maneuver training associated with each of the stationing scenarios.

While there are variations in the impacts from each of the unit stationing scenarios to the installations identified, generally, the broad comparison of these impacts demonstrates patterns of expected impacts from each of the stationing scenarios.

Description of VEC Impact Ratings

◯	No impact, minimal or minor impacts are anticipated
⊙	Less than Significant
⊘	Significant but Mitigable
⊗	Significant Adverse impacts
+	Beneficial Impact
N/A	Not Applicable

Table 4.0-1. Combat Service Support Scenario Summary of Potential Effects (1,000 Soldiers)

VEC	Location					
	Schofield Barracks & Oahu Sites	Fort Shafter	Pohakuloa Training Area	Fort Richardson	Fort Wainwright	Donnelly Training Area
Air Quality	⊘	⊙	⊘	⊙	⊗	○
Airspace	○	○	○	○	○	○
Cultural Resources	⊗	⊙	⊗	⊘	⊘	⊙
Noise	⊗	⊗	⊘	⊙	⊙	⊙
Soil Erosion	⊘	⊘	⊘	⊙	⊙	○
Biological Resources	⊘	⊘	⊘	⊘	○	⊙
Wetlands	○	○	○	○	⊘	⊙
Water Resources	⊘	⊙	⊙	⊙	⊙	⊙
Facilities	⊙	⊗	⊙	⊘	⊘	○
Energy Demand / Energy Generation	⊙	⊘	⊙	○	⊙	○
Land Use Conflict / Compatibility	⊙	⊗	⊙	⊙	⊘	○
Hazardous Material / Hazardous Waste	⊙	⊙	○	⊙	⊘	○
Traffic and Transportation	⊘	⊘	⊙	⊙	⊙	○
Socioeconomics	⊙ +	⊙ +	⊙	⊙ +	⊘ +	○

⊗ = Significant Adverse
⊘ = Significant but Mitigable
⊙ = Less than Significant
○ = Minor or No Impact
\+ = Beneficial Impact
N/A = Not Applicable

Table 4.0-2. Combat Support Scenario Summary of Potential Effects (1,000 Soldiers)

VEC	Location					
	Schofield Barracks & Oahu Sites	Fort Shafter	Pohakuloa Training Area	Fort Richardson	Fort Wainwright	Donnelly Training Area
Air Quality	⊘	⊙	⊘	⊙	⊗	○
Airspace	○	○	○	○	○	○
Cultural Resources	⊗	⊙	⊗	⊘	⊘	⊙
Noise	⊗	⊗	⊘	⊙	⊙	⊙
Soil Erosion	⊘	⊘	⊘	⊙	⊙	○
Biological Resources	⊘	⊘	⊘	⊘	⊙	○
Wetlands	○	○	○	○	⊘	⊙
Water Resources	⊘	⊙	⊙	⊙	⊙	⊙
Facilities	⊙	⊗	⊙	⊘	⊘	○
Energy Demand / Energy Generation	⊙	⊘	⊙	○	⊙	○
Land Use Conflict / Compatibility	⊙	⊗	⊙	⊙	⊘	○
Hazardous Material / Hazardous Waste	⊙	⊙	○	⊙	⊘	○
Traffic and Transportation	⊘	⊘	⊙	⊙	⊙	○
Socioeconomics	⊙ +	⊙ +	⊙	⊙ +	⊘ +	○

⊗ = Significant Adverse
⊘ = Significant but Mitigable
⊙ = Less than Significant
○ = Minor or No Impact
\+ = Beneficial Impact
N/A = Not Applicable

Table 4.0-3. Fires Brigade Scenario Summary of Potential Effects (1,600 Soldiers)

VEC	Location					
	Schofield Barracks & Oahu Sites	Fort Shafter	Pohakuloa Training Area	Fort Richardson	Fort Wainwright	Donnelly Training Area
Air Quality	N/A	N/A	N/A	⊙	⊗	○
Airspace	N/A	N/A	N/A	○	○	○
Cultural Resources	N/A	N/A	N/A	⊘	⊘	⊙
Noise	N/A	N/A	N/A	⊙	⊙	⊙
Soil Erosion	N/A	N/A	N/A	⊙	⊙	○
Biological Resources	N/A	N/A	N/A	⊘	⊙	⊙
Wetlands	N/A	N/A	N/A	○	⊘	⊙
Water Resources	N/A	N/A	N/A	⊙	⊙	⊙
Facilities	N/A	N/A	N/A	⊗	⊘	○
Energy Demand / Energy Generation	N/A	N/A	N/A	○	⊙	○
Land Use Conflict / Compatibility	N/A	N/A	N/A	⊘	⊘	○
Hazardous Material / Hazardous Waste	N/A	N/A	N/A	⊙	⊘	○
Traffic and Transportation	N/A	N/A	N/A	⊙	⊙	○
Socioeconomics	N/A	N/A	N/A	⊙ +	⊘ +	○

⊗ = Significant Adverse
⊘ = Significant but Mitigable
⊙ = Less than Significant
○ = Minor or No Impact
\+ = Beneficial Impact
N/A = Not Applicable

Table 4.0-4. Combat Aviation Brigade Scenario Summary of Potential Effects (2,800 Soldiers)

VEC	Location					
	Schofield Barracks & Oahu Sites	Fort Shafter	Pohakuloa Training Area	Fort Richardson	Fort Wainwright	Donnelly Training Area
Air Quality	⊘	N/A	⊘	N/A	N/A	N/A
Airspace	⊘	N/A	⊙	N/A	N/A	N/A
Cultural Resources	⊗	N/A	⊗	N/A	N/A	N/A
Noise	⊗	N/A	⊗	N/A	N/A	N/A
Soil Erosion	⊘	N/A	⊗	N/A	N/A	N/A
Biological Resources	⊘	N/A	⊗	N/A	N/A	N/A
Wetlands	○	N/A	○	N/A	N/A	N/A
Water Resources	⊘	N/A	⊙	N/A	N/A	N/A
Facilities	⊘	N/A	○	N/A	N/A	N/A
Energy Demand / Energy Generation	⊙	N/A	○	N/A	N/A	N/A
Land Use Conflict / Compatibility	⊘	N/A	⊙	N/A	N/A	N/A
Hazardous Material / Hazardous Waste	⊙	N/A	⊙	N/A	N/A	N/A
Traffic and Transportation	⊘	N/A	⊙	N/A	N/A	N/A
Socioeconomics	⊙ +	N/A	⊙	N/A	N/A	N/A

⊗ = Significant Adverse
⊘ = Significant but Mitigable
⊙ = Less than Significant
○ = Minor or No Impact
\+ = Beneficial Impact
N/A = Not Applicable

Table 4.0-5. Combat Service Support Scenario Summary of Potential Effects (3,000 Soldiers)

VEC	Location					
	Schofield Barracks & Oahu Sites	Fort Shafter	Pohakuloa Training Area	Fort Richardson	Fort Wainwright	Donnelly Training Area
Air Quality	⊘	N/A	⊘	⊙	⊗	○
Airspace	○	N/A	○	○	○	○
Cultural Resources	⊗	N/A	⊗	⊘	⊘	⊙
Noise	⊗	N/A	⊙	⊙	⊙	⊙
Soil Erosion	⊘	N/A	⊘	⊙	⊙	○
Biological Resources	⊘	N/A	⊘	⊘	⊙	○
Wetlands	○	N/A	○	○	⊘	⊙
Water Resources	⊘	N/A	⊙	⊙	⊙	⊙
Facilities	⊘	N/A	⊙	⊗	⊘	○
Energy Demand / Energy Generation	⊙	N/A	○	○	⊙	○
Land Use Conflict / Compatibility	⊙	N/A	⊙	⊘	⊘	○
Hazardous Material / Hazardous Waste	⊙	N/A	○	⊘	⊘	○
Traffic and Transportation	⊘	N/A	⊙	⊗	⊘	○
Socioeconomics	⊘ +	N/A	⊙	⊘	⊘ +	○

⊗ = Significant Adverse
⊘ = Significant but Mitigable
⊙ = Less than Significant
○ = Minor or No Impact
\+ = Beneficial Impact
N/A = Not Applicable

Table 4.0-6. Combat Support Scenario Summary of Potential Effects (3,000 Soldiers)

VEC	Location					
	Schofield Barracks & Oahu Sites	Fort Shafter	Pohakuloa Training Area	Fort Richardson	Fort Wainwright	Donnelly Training Area
Air Quality	⊘	N/A	⊘	⊙	⊗	○
Airspace	⊙	N/A	○	○	○	○
Cultural Resources	⊗	N/A	⊗	⊘	⊘	⊙
Noise	⊗	N/A	⊙	⊙	⊙	⊙
Soil Erosion	⊘	N/A	⊘	⊙	⊙	○
Biological Resources	⊘	N/A	⊘	⊘	⊙	○
Wetlands	○	N/A	○	○	⊘	⊙
Water Resources	⊘	N/A	⊙	⊙	⊙	⊙
Facilities	⊘	N/A	⊙	⊗	⊘	○
Energy Demand / Energy Generation	⊙	N/A	○	○	⊙	○
Land Use Conflict / Compatibility	⊙	N/A	⊙	⊘	⊘	○
Hazardous Material / Hazardous Waste	⊙	N/A	○	⊘	⊘	○
Traffic and Transportation	⊘	N/A	⊙	⊗	⊘	○
Socioeconomics	⊘ +	N/A	⊙	⊘	⊘ +	○

⊗ = Significant Adverse
⊘ = Significant but Mitigable
⊙ = Less than Significant
○ = Minor or No Impact
\+ = Beneficial Impact
N/A = Not Applicable

Table 4.0-7. No Action Alternative Summary Table

No Action Alternative

VEC	Location					
	Schofield Barracks	**Fort Shafter**	**Pohakuloa Training Area**	**Fort Richardson**	**Fort Wainwright**	**Donnelly Training Area**
Air Quality	⊘	⊙	⊘	⊙	⊘	⊙
Airspace	○	○	○	○	○	○
Cultural Resources	⊗	⊙	⊗	⊘	⊘	⊘
Noise	⊗	○	⊙	⊙	⊙	⊙
Soil Erosion	⊘	⊙	⊘	⊙	⊙	⊙
Biological Resources	⊘	○	⊘	⊙	⊙	⊙
Wetlands	○	○	○	○	○	⊙
Water Resources	⊘	○	⊙	⊙	⊙	⊙
Facilities	⊙	⊙	⊙	⊙	⊙	⊙
Energy Demand /Energy Generation	⊙	○	⊙	○	○	○
Land Use Conflict /Compatibility	⊙	○	⊙	⊙	⊙	⊙
Hazardous Material /Hazardous Waste	○	⊙	○	⊙	⊙	⊙
Traffic and Transportation	⊙	⊙	⊙	⊙	⊙	⊙
Socioeconomics	⊙	⊙	⊙	⊙	⊙	⊙

⊗ = Significant Adverse
⊘ = Significant but Mitigable
⊙ = Less than Significant
○ = Minor or No Impact
\+ = Beneficial Impact
N/A = Not Applicable

4.1 U.S. ARMY GARRISON, HAWAI'I

The U.S. Army Garrison, Hawai`i (USAG-HI) is located on the islands of O'ahu and Hawai`i. USAG-HI is headquartered at Wheeler Army Airfield (WAAF), approximately 25 miles northwest of the state capital of Honolulu, and maintains approximately 22 responsibility areas (sub-installations). The major units supported by the Garrison include the 25th Infantry Division and its subordinate units; the 8th Theater Sustainment Command (TSC) and its subordinate units; the US. Army Pacific Command (USARPAC); the 45th Corps Support Group (Forward); and a variety of combat support and sustainment units. Hawai`i has the capability of hosting a variety of joint training exercises and provides the Pacific Command with the ability to train and deploy Soldiers rapidly from a forward positioned location.

Installations in Hawai`i capable of supporting growth and realignment as part of the Proposed Action are Schofield Barracks Military Reservation (SBMR) and Fort Shafter. Units stationed as part of the growth and realignment to support operations in the Pacific would be stationed at these locations and conduct administrative functions and Garrison operations (office functions, vehicle and equipment maintenance, Soldier recreation and living quarters etc.) from these locations. SBMR includes the Schofield Barracks Main Post (SBMP), South Range, and Schofield Barracks East Range (SBER); however, throughout the analysis areas are identified by their more specific description (South Range and SBER) when practicable. Troops are housed on main post; and training would occur on all of these sites. Training would be conducted at a number of other training areas in Hawai`i, including Dillingham Military Reservation (DMR), Kahuku Training Area (KTA), Kawailoa Training Area (KLOA), and Wheeler Army Airfield (WAAF) on O'ahu. On the Island of Hawai`i, combat support units proposed for stationing under Alternatives 1 and 2 would continue to support combat maneuver unit training rotations at Pohakuloa Training Area (PTA), which includes the West PTA, and Bradshaw Army Airfield (BAAF). Combat maneuver units, aviation units, and combat support units conduct integrated battalion and brigade maneuver rotations, CALFEX exercises, indirect fires training, and aviation gunnery activities at PTA. Training resources that would be used by growth and realignment units include small arms and crew served weapons qualification facilities, maneuver training areas, convoy live-fire facilities, and in the case of the Combat Aviation Brigade the aviation gunnery range at PTA.

SBMR, South Range, and SBER accommodate Soldier weapons qualification activities and small unit maneuver training tasks, as well as provide the Garrison infrastructure to house and administer Army units. Although no live-fire currently occurs at KTA, once construction of a planned CACTF (Combined Arms Collective Training Facility) is complete (supporting currently stationed units) live-fire training will occur using the SRTA. No live-fire exercises are conducted on SBER; all exercises are limited to blank and pyrotechnic ammunition. The Army has established a 1,000 foot noise buffer zone during the day and a 2,000 foot noise buffer zone at night between the range and Wahiawa residential areas. The use of small arms blank ammunition is not authorized on select SBER ranges between 6PM and 6AM.

WAAF is in central O'ahu and is bordered by SBMR and SBER. WAAF consists of 1,369 acres and provides administration, some housing requirements, maintenance, training and flight facilities for military aviation units. 25th Infantry Division aviation support currently consists of two aviation battalions consisting of 108 helicopters, 280 military trucks, fuelers and service vehicles, and approximately 1,000 Soldiers stationed there.

KLOA is used primarily for helicopter training. Access to KLOA is limited due to unimproved roads, steep terrain, and dense vegetation. KLOA consists of 23,348 acres. The training area

is used by light infantry for mountain and jungle warfare training. Aviation units support insertions and conduct aerial maneuvers at the training site.

DMR is a 664-acre training site and has an active joint-use airfield. Portions of the reservation have been leased by the Hawai`i Department of Transportation (DOT), for civilian light aircraft use. Approximately 354 acres are suitable for maneuver and field training. Infantry and other combat support units use DMR for small unit training exercises. Units use blank ammunition to rehearse their mission essential tasks.

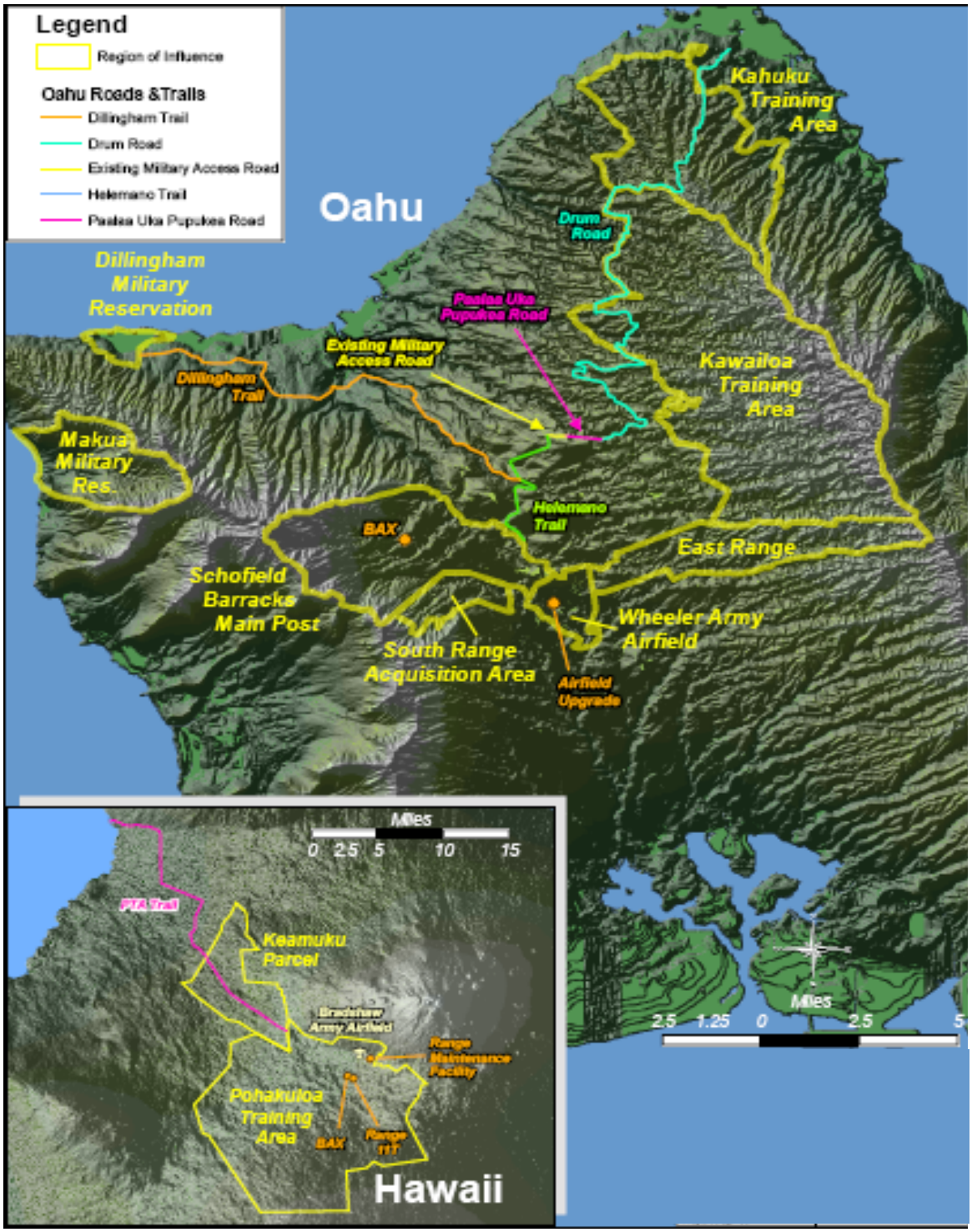
KTA is a 9,398-acre maneuver site that is located on the northern end of O'ahu. It's the largest contiguous ground maneuver training area on O'ahu. The northern portion of KTA supports all tactical maneuver training scheduled on KTA. Training includes jungle warfare training, pyrotechnics, and air support training. KTA accommodates training exercises primarily through company level though some limited battalion training tasks can also be supported. A number of small drop zones are located on KTA and can be used to conduct small unit parachute drops.

PTA is the largest military training area in Hawai`i and consists of over 130,000 acres, since the acquisition of the Keamuku parcel. The ordnance impact area consists of approximately 51,000 acres and extends from central PTA to the southern boundary of the training area. This area can accommodate the firing of all USAG-HI's training munitions and is used by other services to conduct live fire training events. PTA supports large unit maneuvers (battalion and brigade) and provides a venue for combat units to conduct integrated live-fire and maneuver training with other types of units in an operational scenario.

Attainment of operational readiness of these units is not dependent on the use of Makua Military Reservation (MMR). While the MMR is an integral part of USAG-HI training capabilities and historically used by other services, Army growth units could perform live-fire training at other ranges. Commanders of newly stationed units might choose to use MMR if the range is available following completion of the Makua ROD, but the training area is not projected to be required for new growth units. For purposes of stationing decisions made as part of this analysis it is assumed that MMR is unavailable for training purposes.

Figure 4.1-1 on the next page depicts the locations of USAG-HI major training areas and their geographic locations on the islands of O'ahu and Hawai`i. Figure 4.3-1 depicts the geographic location of Ft. Shafter, and Figure 4.4-1 depicts the Pohakuloa Training Area on the Big Island of Hawai`i.

Figure 4.1-1. Map of O'ahu and Hawai`i illustrating locations evaluated



Note: The locations shown here for evaluation in the Supplemental PEIS for Army Growth include only Schofield Barracks (including South Range and SBER), Wheeler Army Airfield, Kawailoa Training Area, Kahuku Training Area, Dillingham Military Reservation; and the Pohakuloa Training Area (located on the Island of Hawai`i).

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4.2 Schofield Barracks, Hawai`i & O'ahu Training Sites

Schofield Barracks & O'ahu Training Sites Summary

This section provides an overview of the actions the Army would take to implement the Proposed Action under each stationing scenario at Schofield Barracks. The Army would undertake four primary types of actions to support new unit stationing. These actions include cantonment construction, training infrastructure construction, live fire training, and maneuver training activities Table 4.2-1 below lists the environmental impacts that are anticipated to occur if the Army were to implement various different unit stationing assignments to Schofield Barracks to support growth of the Army needed to support operations in the Pacific Theater. Stationing scenarios possible at Schofield Barracks include the stationing of 1,000 additional Combat Support (CS) or Combat Service Support Soldiers (CSS), 3,000 additional CS or CSS Soldiers, or a new Combat Aviation Brigade. The Army is not considering the stationing of a Fires Brigade in Hawai`i, and therefore its analysis is not included in this section.

As discussed in section 1.7, information from the stationing scenarios will be extrapolated to estimate the environmental impacts associated with the implementation of specific alternatives. A detailed list of units associated with each Alternative can be found in Chapter 3.

A summary of the symbology that discusses intensity of anticipated environmental impacts is provided below:

Description of VEC Impact Ratings

◯	No impact, minimal or minor impacts are anticipated
⊙	Less than Significant
⊘	Significant but Mitigable
⊗	Significant Adverse impacts
+	Beneficial Impact
N/A	Not Applicable

Table 4.2-1. Schofield Barracks & O'ahu Training Sites VEC Ratings

Schofield Barracks & Oahu Training Sites, Hawai`i						
VEC	Combat Service Support (1,000 Soldiers)	Combat Support (1,000 Soldiers)	Combat Aviation Brigade (2,800 Soldiers)	Combat Service Support (3,000 Soldiers)	Combat Support (3,000 Soldiers)	No Action Alternative
Air Quality	⊘	⊘	⊘	⊘	⊘	⊘
Air Space	○	○	⊘	○	○	○
Cultural	⊗	⊗	⊗	⊗	⊗	⊗
Noise	⊗	⊗	⊗	⊗	⊗	⊗
Soil Erosion Effects	⊘	⊘	⊘	⊘	⊘	⊘
Biological Resources	⊘	⊘	⊘	⊘	⊘	⊘
Wetlands	○	○	○	○	○	○
Water Resources	⊘	⊘	⊘	⊘	⊘	⊘
Facilities	⊙	⊙	⊘	⊘	⊘	⊙
Energy Demand/ Generation	⊙	⊙	⊙	⊙	⊙	⊙
Land Use Conflict/ Compatibility	⊙	⊙	⊘	⊙	⊙	⊙
Haz Mat/ Haz Waste	⊙	⊙	⊙	⊙	⊙	○
Traffic and Transportation	⊘	⊘	⊗	⊗	⊗	⊙
Socioeconomics	⊙ +	⊙ +	⊙ +	⊘ +	⊘ +	⊙

Schofield Barracks & O'ahu Training Sites Introduction

Schofield Barracks Military Reservation (Schofield Barracks) is located on the island of O'ahu, approximately 22 miles to the northwest of the capital City of Honolulu. Prior to its military use, historical land uses of this area include agricultural, primarily Sheep grazing and cultivation, until 1899 when the land was set aside for a military post. By 1914, Schofield Barracks was a permanent base and full-time training camp. During World War II the installation became home to the 24th and 25th Infantry Divisions; and during the war in Vietnam Schofield Barracks served

as a Soldier staging center (U.S. Army, 1994). Some of the 25th ID subordinate units stationed there include the 2nd and 3rd BCTs 25th ID, 25th Combat Aviation Brigade, 25th Special Troops Battalion, and the 556th Personnel Service Battalion.

4.2.1 Schofield Barracks Proposed Actions to Support Army Stationing Scenarios

As discussed in Chapter 4.0 (Methodologies) the Army is evaluating several stationing scenarios in USAG-HI. Force management is a dynamic and on-going process. Stationing scenarios have been designed to approximate the impacts of Alternatives proposed in this analysis and inform Army decision-makers of the potential environmental consequences of future stationing actions. Stationing scenarios evaluated in Hawaii include the stationing of an additional 1,000 combat support or combat service support troops; 3,000 combat support or service support troops; or an additional aviation brigade. The Army has considered the stationing of a Maneuver Enhancement Brigade (MEB) in Hawaii in this document as well. As the MEB's constituent units are not qualitatively different from other CS units the analysis of impacts of this action are evaluated within the 3,000 Soldier CS stationing scenario at SBMR. The Army does not anticipate requirements to station a Fires Brigade (Field Artillery) or any additional combat maneuver units in Hawai`i. Each of these stationing scenarios could result in environmental impacts from cantonment area construction, training range and infrastructure construction, firing range use, and maneuver training. A description of activities that would be implemented as part of each scenario is provided below:

Scenario 1: Growth by 1,000 Additional Combat Service Support Soldiers

Cantonment Construction: As part of this alternative, a majority of additional Garrison infrastructure such as company operations facilities (COFs), Headquarters buildings, storage buildings, motor pools for military vehicle parking, and other maintenance facilities would be sited on Schofield Barracks, South Range Acquisition Area (See Figure 4.2-1 below). This is one of the few locations that has buildable space to support the cantonment operations of additional units. Growth by 1,000 additional Soldiers would drive requirements for 80-100 acres of facilities construction in the South Range. Cantonment construction in the South Range will require establishment of supporting facilities to include wastewater transport, water lines, upgrading of roads and bridges, and construction of an additional sub-station for increased power supply. In addition to these cantonment construction requirements, drainage projects would be sited to channel water during storm events.

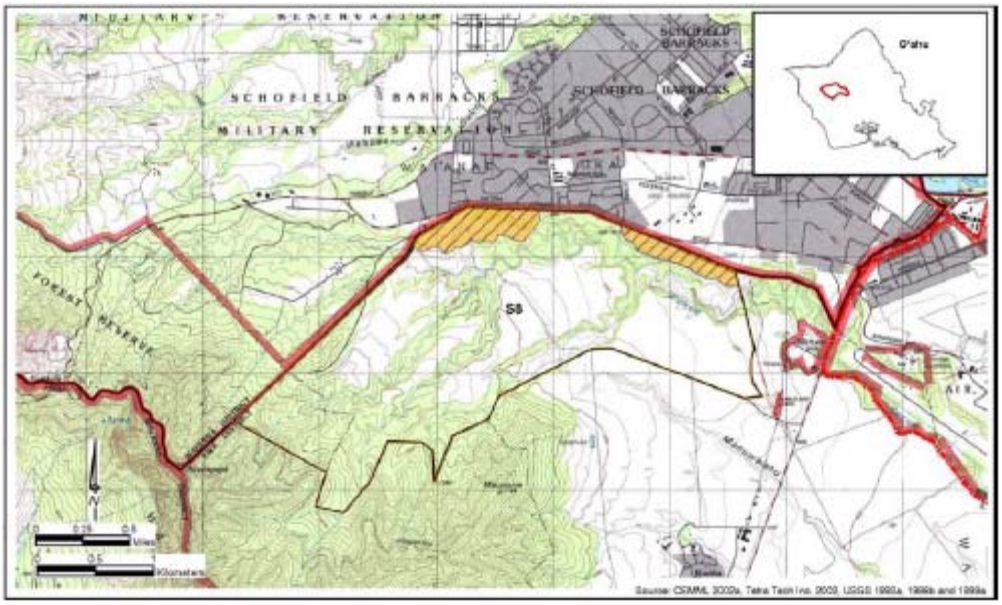


Figure 4.2-1. South Range area (center of map)

In addition to the construction of cantonment facilities at the South Range a Soldier barracks and parking area would be constructed on SBMR's existing cantonment area. The barracks would be a standard Army barracks and have the capacity to accommodate 192 Soldiers with their associated parking requirements for civilian vehicles. This barracks would be sited in the existing cantonment area and the Army would take down existing facilities to establish the barracks. Figure 4.2-2 below depicts a possible location for the barracks at SBMR which would involve the siting of the barracks on outdated Family housing units.

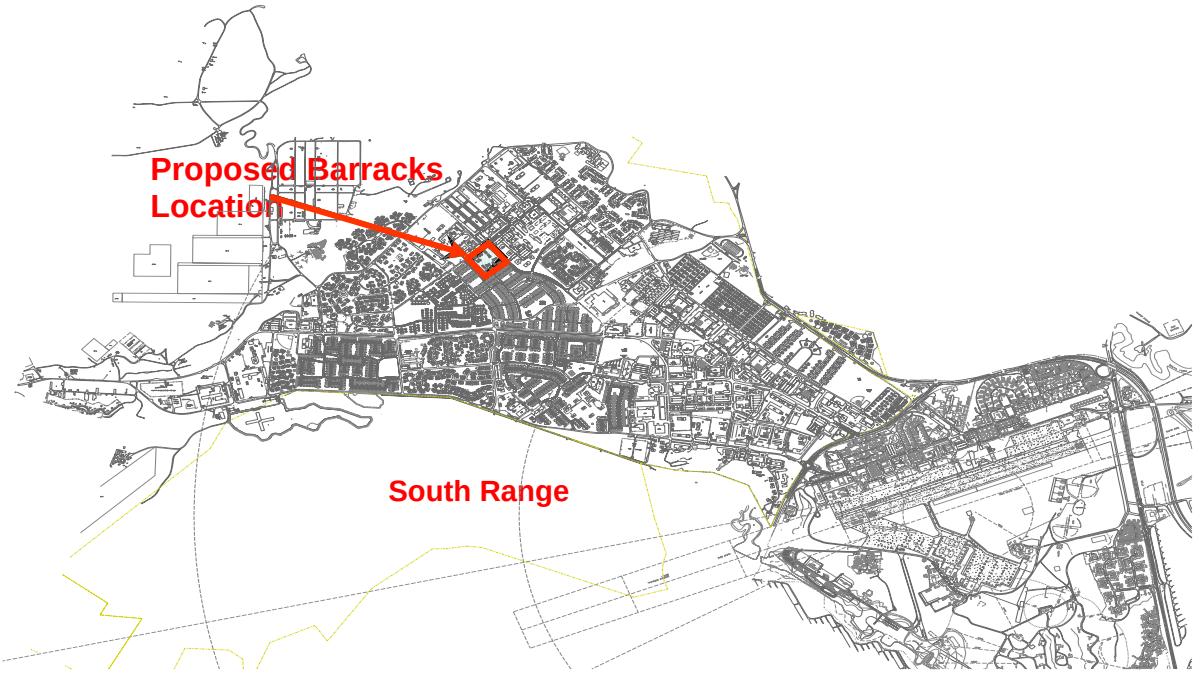


Figure 4.2-2. Possible location for a Soldier barracks at SBMR

Training Range Infrastructure Construction: The combination of existing and previously planned training range infrastructure would be able to meet the training needs of units under this scenario. No new range construction would be required to implement this stationing scenario.

Live-fire Training: Training activities of CSS units would primarily involve weapons qualifications with individual weapons (pistols, rifle, and light machine gun) and crew served weapons qualification with heavy machine guns. Firing activities would be conducted on existing or previously planned qualification ranges on SBMR and on South Range. Primary ranges that would be used by CSS units include SBMR's weapons zero ranges and Qualification Training Range (QTR) 1 and 2. CSS Soldiers stationed as part of this action would use firing ranges for their planned and intended use and would not alter or change the munitions activities planned to take place on these ranges. The implementation of this stationing scenario would result in an approximate 5 percent increase in live-fire weapons qualification activities at SBMR. CSS units each have a half-day training requirement to conduct convoy live-fire exercises, but do not have a training requirement to conduct CALFEX exercises. CSS units would conduct Convoy Live Fire exercises at the Kolekole Range complex, on the SBMR Battle Area Complex as available after completion, or other approved ranges. In addition to these activities, CSS units also may elect to conduct training operations in an urban setting at SBMR and Kahuku Training Area as facility availability permits.

Maneuver Training: Units stationed under this scenario would not appreciably increase the amount and scale of maneuver training that takes place in Hawai`i. CSS units as part of this stationing scenario would continue to support the maneuver training exercises of combat maneuver units; supporting logistics and other requirements. The total increase in projected Maneuver Impact Miles (MIMs) as part of this stationing scenario represents a projected 2% increase in the total number of MIMs currently executed across the maneuver training areas in Hawaii. A large majority of maneuver training would occur at maneuver training areas on Oahu, particularly SBMR, East Range, and KTA. Implementation of this alternative would result in an imperceptible (less than 1%) overall increase in the Maneuver Impact Miles expended at PTA. CSS units would support the maneuver BCTs during integrated maneuver training exercises, but the overall frequency of use of PTA by CSS is not projected to increase. More CSS units stationed at SBMR would mean that existing CSS units would deploy less frequently to support combat maneuver units while conducting training on Oahu. The frequency and intensity of use of PTA is primarily a function related to the number of combat maneuver units and training rotations they will require.

Off-trail maneuver by CSS units would be limited, with major operations consisting of re-supply, transport of equipment, and command and control functions. A majority of maneuver operations on Oahu and at PTA would take place on existing road and training infrastructure

Scenario 2: Growth by 1,000 Additional Combat Support Soldiers

Cantonment Construction: Same as discussed for Scenario 1.

Training Range Infrastructure Construction: Same as discussed for Scenario 1.

Live-fire Training: Training activities of CS units would primarily involve weapons qualifications with individual weapons (pistols, rifle, and light machine gun) and crew served

weapons qualification with heavy machine guns and MK-19 automatic grenade launching systems. Most of these firing activities would be conducted on existing qualification ranges on SBMR on South Range. Additional activities associated with CS units would include demolitions training and other live-fire training that engineer and military police units would engage in. This stationing scenario would increase the volume of live-fire activities on both individual and collective unit training ranges at SBMR and South Range. The increase in live-fire activities would represent an approximate 7.5% increase compared to current training requirements of USAG-HI. The vast majority of munitions firing activities (95% +) would be associated with small arms (rifle, pistol), and machine gun qualification or training activities on existing ranges currently designated for weapons qualification or use. Much of the estimated 7.5% increase in live-fire activities would be projected to occur on QTR 1 or 2 in accordance with their existing and planned live-fire use. MK-19 training rounds (no high explosive charges) would be fired by MP and engineer units on QTR 1 on Oahu with limited firing of live rounds on Range 8 at PTA. CS units would also conduct training operations in an urban setting at SBMR and KTA. These units would conduct separate training events to maintain urban operations proficiency as well as support integrated training events with other maneuver units. Additionally, CS units would conduct Convoy Live Fire exercises at the Kolekole Range complex, on the SBMR Battle Area Complex as available after completion, or other approved ranges.

Implementation of this alternative would minimally increase the frequency of use of ranges at PTA (less than 1% increase in current use), to include the BAX (Battle Area Complex) once completed. CS units would support the CALFEX training events of combat maneuver units during integrated maneuver and live-fire training exercises, but the overall frequency of use of PTA ranges is projected to increase marginally, if at all. More CS units stationed at SBMR would mean that existing CS units would deploy less frequently in support of combat maneuver training rotations and operational deployments while conducting training on Oahu. The frequency and intensity of use of PTA is predominantly related to the number of combat maneuver units and integrated maneuver training events they require.

Maneuver Training: Units stationed under this scenario would not appreciably increase the amount and scale of maneuver training that takes place in Hawai`i. Major operations would consist of establishing checkpoints, providing security, reconnaissance tasks, engineering support tasks, route clearance, and other special functions. Additional small unit (platoon and company) maneuver support missions would be supported at KTA, SBER, SBMR, or DMR. Under this stationing scenario vehicular maneuver (on and off-trail) at current or planned maneuver training areas designated for maneuver use on the island of Oahu would increase by approximately 2.5 percent. CS units would engage in both on and off-trail maneuvers.

Implementation of this alternative would result in an imperceptible (less than 1%) overall increase in the Maneuver Impact Miles expended at PTA. CS units would support the maneuver BCTs during integrated battalion and BCT maneuver training exercises, but the overall frequency of use of PTA by CS is not projected to increase. More CS units stationed at SBMR would mean that existing CS units would deploy less frequently to support combat maneuver units while conducting training on Oahu. The frequency and intensity of use of PTA is primarily a function related to the number of combat maneuver units and training rotations they will require.

Scenario 3: Growth by 3,000 Additional Combat Service Support Soldiers

Cantonment Construction: As part of this alternative, additional Garrison infrastructure such as company operations facilities (COFs), Headquarters buildings, storage buildings, motor pools for military vehicle parking, and other maintenance facilities would be sited on Schofield Barracks, South Range (See Figure 4.2-1). This is one of the few locations that has buildable space to support the cantonment operations of additional units. Growth by 3,000 additional Soldiers would drive requirements to build on 200-300 additional acres of land in the South Range within the general areas identified in Figure 4.2-1. Cantonment construction in the South Range will require establishment of supporting facilities to include wastewater transport, water lines, upgrading of roads and bridges, and construction of an additional sub-station for increased power supply. In addition to these cantonment construction requirements, drainage projects would be sited to channel water during storm events. As discussed under the first scenario, a barracks facility capable of accommodating 192 additional Soldiers would be sited in available space in the existing cantonment area at SBMR.

In addition, under this stationing scenario facilities for a wounded warrior transition unit would be constructed within the existing cantonment area at SBMR. These facilities would consist of a 55,000 square foot barracks, an administrative operations center (2,400 square feet), a Soldier assistance center (1,400 square feet), a company and battalion operations building, parking and utility lines and connections. As part of the action, one existing building consisting of approximately 15,700 square feet would be renovated and two additional buildings of 18,500 square feet and approximately 8,000 square feet would be constructed to provide administrative facilities for the company and battalions, respectively. This project is needed to provide adequate permanent facilities to support the healing process of wounded Soldiers returning from operations abroad and provide facilities for an administrative headquarters. These facilities would be sited at a location adjacent to or in close proximity to the barracks in SBMRs existing cantonment area proposed as part of Alternative 1 (see Figure 4.2-2) and space for these facilities would be provided by deconstruction/demolition and renovation of existing facilities.

Training Range Infrastructure Construction: The addition of 3,000 CSS Soldiers would be supported by existing and planned range infrastructure at SBMR and South Range. Hours for conducting live-fire training for individual weapons qualification events would potentially need to be extended to meet units live-fire training requirments on existing range infrastructure.

Live-fire Training: Training activities of CSS units would primarily involve weapons qualifications with individual weapons (pistols, rifle, and light machine gun) and crew served weapons qualification with heavy machine guns. These firing activities would likely be conducted on existing Qualification ranges on SBMR and on the Qualification Training Range on South Range. This stationing scenario would increase the volume of live-fire activities on both SBMR and South Range, and would require ranges to operate extend operational hours.

CSS units would conduct Convoy Live Fire exercises at the Kolekole Range complex, on the SBMR Battle Area Complex as available after completion, or other approved ranges. In addition to these activities, CSS units also may elect to conduct training operations in an urban setting at SBMR and Kahuku Training Area as facility availability permits.There would be an approximate 15% percent increase in live-fire activities (over existing live-fire training activities) as part of this stationing scenario. CSS units do not have a requirement to conduct training on the Battle Area Complex's or to support CALFEXs.

Maneuver Training: Units stationed under this scenario are projected to increase the amount of Maneuver Impact Miles (MIMs) that take place in Hawaii by approximately 7.5%. CSS units as part of this stationing scenario would continue to support the maneuver training exercises of combat maneuver units; supporting logistics and other support functions. A majority of maneuver training would occur at maneuver training areas on Oahu, particularly SBMR, East Range, and KTA. Implementation of this alternative would result in an imperceptible (less than 1%) overall increase in the Maneuver Impact Miles expended at PTA. CSS units would support the maneuver BCTs during integrated maneuver training exercises, but the overall frequency of use of PTA by CSS is not projected to increase. More CSS units stationed at SBMR would mean that existing CSS units would deploy less frequently to support combat maneuver units while conducting training on Oahu. The frequency and intensity of use of PTA is primarily a function related to the number of combat maneuver units and training rotations they will require.

Off-trail maneuver by CSS units would be limited, with major operations consisting of re-supply, transport of equipment, and command and control functions. A majority of maneuver operations on Oahu and at PTA would take place on existing road and training infrastructure

Scenario 4: Growth by 3,000 Additional Combat Support Soldiers

Cantonment Construction: In addition to construction at SBMR and South Range discussed as part of scenario 1, the Army would propose to build an unmanned aerial vehicle taxiway, apron and hangar at Wheeler Army Airfield. The facilities would be sited to at WAAF to allow UAVs and their operators to access the runway at WAAF from the taxiway and provide adequate runway standoff distance of the hangar facility to continue to allow landing of fixed wing aircraft. Figure 4.2-3 below shows a proposed layout for the facility. The hanger facility would be sited on previously disturbed area in the vicinity of the runway and consists of a 129,000 foot hangar for storage and maintenance of UAV's.

Figure 4.2-3. Proposed Lay Out of the Warrior UAS Facilities

Training Range Infrastructure Construction: The addition of 3,000 CS Soldiers would be supported by existing and planned range infrastructure at SBMR and the South Range. Hours for conducting live-fire training for individual weapons qualification events would potentially need to be extended on designated facilities to meet units live-fire training requirments on existing range infrastructure.

Live-fire Training: Training activities of CS units would primarily involve weapons qualifications with individual weapons (pistols, rifle, and light machine gun) and crew served weapons qualification with heavy machine guns and MK-19 automatic grenade launching systems. Most of these firing activities would be conducted on existing qualification ranges on SBMR on South Range. Additional activities associated with CS units would include demolitions training and other live-fire training that engineer and military police units would engage in. This stationing scenario would increase the volume of live-fire activities on both individual and collective unit training ranges at SBMR and South Range. The increase in live-fire activities would represent an approximate 15% increase compared to current training requirements of USAG-HI. The vast majority of munitions firing activities (95% +) would be associated with small arms (rifle, pistol), and machine gun qualification or training activities on existing ranges currently designated for weapons qualification or use. Much of the estimated 15% increase in live-fire activities would be projected to occur on QTR 1 or 2 in accordance with their existing and planned live-fire use. MK-19 training rounds (no high explosive charges) would be fired by MP and engineer units on QTR 1 on Oahu with limited firing of live rounds to familiarize Soldiers with the experience on Range 8 at PTA. In addition to these activities, CS units would also conduct training operations in an urban setting at SBMR and KTA. These units would conduct separate training events to maintain urban operations proficiency as well as support integrated training events with other maneuver units. CS units would conduct Convoy Live Fire exercises at the Kolekole Range complex, on the SBMR Battle Area Complex as available after completion, or other approved ranges.

Implementation of this alternative would minimally increase the frequency of use of ranges at PTA (less than 1% increase in current use), to include the BAX once completed. CS units would support the CALFEX training events of combat maneuver units during integrated maneuver and live-fire training exercises, but the overall frequency of use of PTA ranges is projected to increase marginally, if at all. More CS units stationed at SBMR would mean that existing CS units would deploy less frequently in support of combat maneuver training rotations and operational deployments while conducting training on Oahu. The frequency and intensity of use of PTA is predominantly related to the number of combat maneuver units and integrated maneuver training events they require.

Maneuver Training: Units stationed under this scenario would increase the amount of maneuver training that takes place in Hawai`I by approximatrely 7.5% compared to existing maneuver use on USAG-HI lands. Major operations CS units would engage in consist of establishing checkpoints, providing security, reconnaissance tasks, engineering support tasks, route clearance, and other special functions. Small unit (platoon and company) maneuver training would be conducted at KTA, SBER, SBMR, or DMR. Under this stationing scenarios vehicular maneuver activities would consist of both on and off-trail maneuvers.

Implementation of this alternative would result in an imperceptible (less than 1%) overall increase in the Maneuver Impact Miles expended at PTA. CS units would support the maneuver BCTs during integrated battalion and BCT maneuver training exercises, but the overall frequency of use of PTA by CS is not projected to increase. More CS units stationed at

SBMR would mean that existing CS units would deploy less frequently to support combat maneuver units while conducting training on Oahu. The frequency and intensity of use of PTA is primarily a function related to the number of combat maneuver units and training rotations they will require.

Scenario 5: Growth by a 2,800 Soldier, Combat Aviation Brigade

Cantonment Construction: As part of this alternative, additional Garrison infrastructure such as company operations facilities (COFs), Headquarters buildings, and storage buildings would be sited on Schofield Barracks and South Range (See Figure 4.2-1 above). Growth by an additional 2,800 Soldiers would drive requirements to build on 100-150 additional acres of land in the South Range within the general areas identified in Figure 4.2-1. Cantonment construction in the South Range would require establishment of supporting facilities to include wastewater transport, water lines, upgrading of roads and bridges, and construction of an additional sub-station for increased power supply. In addition to these cantonment construction requirements, drainage projects would be sited to channel water during storm events.

In addition to cantonment construction that would be needed in the South Range (barracks and administrative facilities), the Army would need to build equipment storage and maintenance facilities at Wheeler Army Airfield (WAAF) (Figure 4.2-3). The Army would construct additional aircraft hangars to conduct storage and maintenance of aircraft and other equipment that would be stationed with the Combat Aviation Brigade. Currently WAAF has several hangar facilities suitable for a battalion-sized aviation unit, but more hangar space, parking, and administrative facilities would need to be sited there to support this scenario. In addition, an increased number of underground or above ground fuel storage tanks would be needed to support this unit. In order to accommodate construction of additional facilities at WAAF, some existing facilities or functions at WAAF may need to be relocated to Schofield Barracks. If a new CAB were to be stationed at USAG-HI, additional planning would need to be conducted in order to determine potential relocation opportunities, impacts, and alternatives.

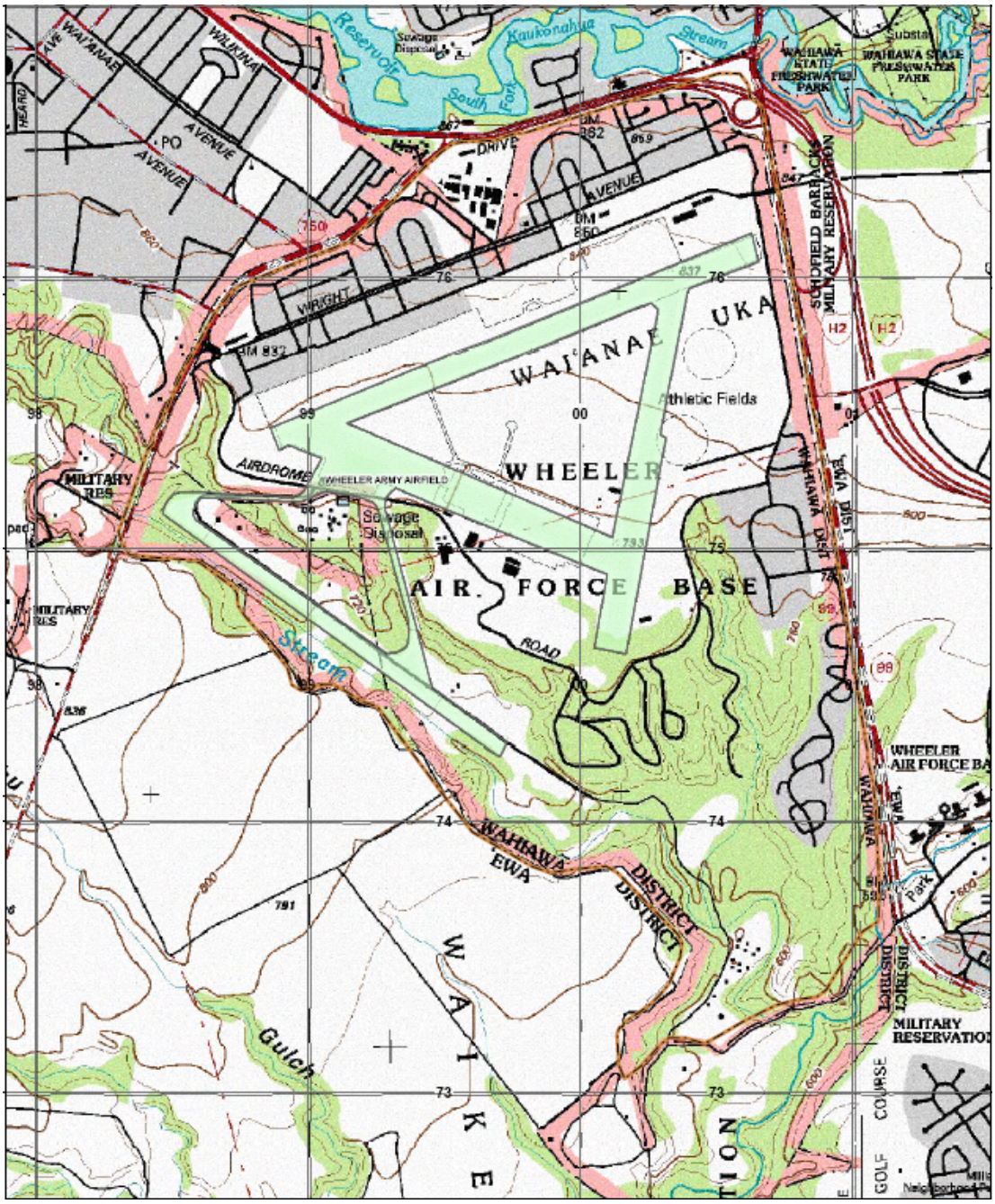


Figure 4.2-3. Wheeler Army Airfield proposed construction area

Training Range Infrastructure Construction: The addition of up to 2,800 aviation Soldiers would be supported by existing and planned range infrastructure at SBMR and the South Range. Scheduling hours for live-fire training activities at SBMR and South Range ranges would be extended to maximize training capacity of existing range infrastructure.

Live-fire Training: Training activities for an aviation brigade would primarily involve weapons qualifications for Soldiers on their individual weapons (pistols, rifle, and light machine gun) and

crew served weapons. These firing activities would be conducted on existing ranges on SBMR and South Range. The total increase in live-fire activities at SBMR and SRAA would represent an approximate 15% increase in the volume of live fire activities.

At PTA, helicopter crews would rehearse door gunnery tasks and other live-fire tasks that are discussed in Chapter 4.4 as part of the PTA discussion.

Maneuver Training: USAG-HI in partnership with the Federal Aviation Administration and the State of Hawai`i has designated specified routes for transit of military aircraft to and from PTA training areas. These routes are compatible with existing land use during times that the military is permitted to fly. The aviation unit would utilize designated airspace to access existing ranges and training areas at PTA when departing WAAF. These units would support maneuver training rotations of ground combat forces at SBMR and PTA's training facilities. Aviation maneuvers supporting combat maneuver units in SBER and KLOA would be expected to double in frequency. CAB maneuver training activities would also be expected to roughly double at PTA as part of this stationing scenario.

Baseline description for Schofield Barracks No Action Alternative

The No Action alternative baseline for SBMR and Oahu training sites consists of impacts related to unit's presently stationed at SBMR. The 2/25th SBCT and 3/25th IBCT, as well as the other units stationed at SBMR would remain, and no additional units or Soldiers would be stationed there. The Soldier population at SBMR would remain approximately 15,050. Ongoing and planned cantonment and range construction projects would proceed, including those associated with the transformation and permanent stationing of the 2/25th SBCT such as the BAX and Helemano Trail projects and those identified in the 2008 SBCT Stationing EIS as being non-SBCT specific, to include QTR2 at SRAA, airfield upgrade at WAAF, and the CACTF and tactical Vehicle Wash facility at KTA. The No Action baseline also assumes the completion of projects associated with modularity. Units would continue to train with on existing ranges as they are presently equipped. Live-fire training at ranges on SBMR, South Range, SBER and KTA will continue at existing levels. Maneuver and non-live fire training at SBMR, South Range, SBER, KTA, and KLOA would also continue at current levels with existing equipment. Regulatory and administrative mitigation measures, BMPs (Best Management Practices), and other programs (e.g. INRMP, ICRMP, IFWMP, ITAM, DuSMMoP) will continue to be implemented to reduce impacts associated with Army activities.

4.2.2 Schofield Barracks & O'ahu Training Sites Affected Environment and Environmental Consequences

This chapter discusses the existing baseline conditions for each environmental resource as well as the anticipated consequences to Schofield Barracks should the Army implement one of the stationing scenarios discussed in Chapter 4.2.1.

4.2.3 Air Quality

4.2.3.1 Affected Environment

The Region of Influence (ROI) for air quality is dependent upon the pollutant and source of emission under consideration. The ROI for a regional secondary pollutant such as ozone (O_3) is generally the entire island and is not emitted directly but transformed through chemical reactions in the atmosphere; whereas the ROI for primary pollutants may extend no more than a few miles away from the source (depending on the source and meteorological conditions Primary pollutants (which could be measured under unfavorable dispersion conditions) may be diluted and dispersed by wind, resulting in lower pollutant concentrations at greater distances away from the source.

Major air emissions sources in Hawaii include burning of sugar cane and emissions from volcanic activity and geothermic development. Hawai`i operates nine ambient air quality monitoring stations on O'ahu, one station on Kauai, two on Maui, and five stations on the large island of Hawai`i. Each air quality monitoring station is located in at or near urban areas and each in coastal regions; many of which function to either monitor volcanic emissions or industrial activities. None of the nine stations are located near Army training areas.

Air pollution levels in Hawai`i are generally low due to the state's small size and location. Therefore upwind areas do not significantly contribute to background pollution levels, and locally generated air pollutants are generally transported offshore and away from land areas. Intermittent high concentrations of suspended particulate matter can occur in some areas, primarily due to agricultural burning or fireworks use during holiday celebrations. The entire state is classified as being in compliance with federal ambient air quality standards, and thus is designated as an attainment area.

Hawai`i has adopted ambient air quality standards that are in some areas more stringent than the comparable federal standards and addresses pollutants that are not covered by federal ambient air quality standards. Hawai`i has established significant ambient air concentration thresholds and criteria for hazardous air pollutants (Hawai`i Administrative Rules Title 11, Chapter 60.1, Chapter 179). These are applied under the permit review process for emission sources that require state or federal air quality permits. These thresholds and criteria are found in Table 4.2-2, below.

Table 4.2-2. State and National Ambient Air Quality Standards Applicable in Hawai'i

Pollutant	Averaging Times	State Standards	Federal Standards	Units
CO	1-hour	9	35	ppm
		10,000	40,000	µg/m³
	8-hour	4.4	9	ppm
		5,000	10,000	µg/m³
NO_2	Annual (Arith. Mean)	0.04	0.053	ppm
		70	100	µg/m³

Table 4.2-2. State and National Ambient Air Quality Standards Applicable in Hawai'i

Pollutant	Averaging Times	State Standards	Federal Standards	Units
SO_2	3-hour	0.5	0.5	ppm
		1,300	1,300	µg/m³
	24-hour	0.14	0.14	ppm
		365	365	µg/m³
	Annual (Arith. Mean)	0.03	0.03	ppm
		80	80	µg/m³
Ozone	1-hour	-	0.12	ppm
	8-hour	0.08	0.08	ppm
		157	157	µg/m³
PM_{10}	24-hour	150	150	µg/m³
	Annual (Arith. Mean)	50	Revoked	µg/m³
Lead	Quarterly Average	1.5	1.5	µg/m³
Hydrogen Sulfide	1-hour	0.025	-	ppm
		35	-	µg/m³
$PM_{2.5}$	24-hour	-	35	µg/m³
	Annual (Arith. Mean)	-	15	µg/m³

Source: Hawai`i State Department of Health (HSDH) 2007
Notes:
All standards except the national PM_{10} and $PM_{2.5}$ standards are based on measurements corrected to 25 degrees C and 1 atmosphere pressure.
The national PM_{10} and $PM_{2.5}$ standards are based on direct flow volume data without correction to standard temperature and pressure.
The "10" in PM_{10} and the "2.5" in $PM_{2.5}$ are not particle size limits; these numbers identify the particle size class (aerodynamic diameter in microns) collected with 50% mass efficiency by certified sampling equipment. The maximum particle size collected by PM_{10} samplers is about 50 microns. The maximum particle size collected by $PM_{2.5}$ samplers is about 6 microns.
ppm = parts per million
$\mu g/m^3$ = micrograms per cubic meter

- For noncarcinogenic compounds, an 8-hour average concentration equal to 1 percent of the corresponding 8-hour threshold level value (TLV) value adopted by the Occupational Safety and Health Administration (OSHA);
- For noncarcinogenic compounds, an annual average concentration equal to 1/420 (0.238 percent) of the 8-hour TLV value adopted by OSHA;
- For noncarcinogenic compounds for which there is no OSHA-adopted TLV, the Director of Health is authorized to set ambient air concentration standards on a case-by-case basis so as to avoid unreasonable endangerment of public health with an adequate margin of safety; and
- For carcinogenic compounds, any ambient air concentration that produces an individual lifetime excess cancer risk of more than 10 in 1 million assuming continuous exposure for 70 years.

There are no air quality monitoring stations close to SBMR or SBER facilities; the closest monitoring station is located approximately 6 miles away from Schofield at Pearl City. Recent monitoring data from that source show that ambient air quality records are generally well within state and federal ambient air quality standards. In the years 2004 to 2006, concentrations of Particulate Matter measured at 10 and 2.5 µm (PM_{10}) and ($PM_{2.5}$) have exceeded state or federal 24-hour $PM_{2.5}$ standards on 1 to 2 days per year. However, at no time in these three years was the federal 24-hour PM_{10} standard exceeded.
Schofield Barracks is a "major source" and maintains a Title V air permit. Individual emissions sources that contribute to the Schofield Barracks' overall status include boiler systems, generators for backup power, various equipment operations,

The Army operates three automated weather stations at SBMR that it utilizes for monitoring and predicting fire hazard conditions at the range areas. Although weather data from these stations have not been fully summarized, historical data from Wheeler Army Airfield show the average daily minimum temperature range to be from 60°F in January to 69°F in August. Average daily maximum temperatures range from 75°F in March to 83°F in September. The average precipitation rate is 37.9 inches per year and ranges from 1.38 inches in July to 5.22 inches in December. Wind speeds recorded at SBMR are generally light, averaging between 1 and 7 miles per hour (mph); while at SBER they range from 1 to 8 mph. The maximum wind speed rarely exceeds 15 mph.

There are no air quality monitoring stations close to Dillingham Military Reservation (DMR). The closest air quality monitoring station is located on the south side of O'ahu. The major military activities contributing to air emissions at DMR include vehicle traffic and aircraft flight operations. The Army only uses the airfield at DMR for approximately 3 percent of total annual flight operations (mainly for refueling and rearming OH-58D helicopters during flight operations). The airfield is primarily used by private aircraft. Live-fire activities are not conducted at DMR; however, the Army does use blank ammunition and ground-based smoke devices during training exercises. Meteorological conditions at DMR are monitored from a weather station located between DMR and Makua Military Reservation.

There are no air quality monitoring stations located at KTA or KLOA. The primary sources of air emissions at these locations include vehicle traffic, aircraft flight operations (helicopters mainly), and training munitions. These activities are presently intermittent at both KTA and KLOA. Most training at KLOA involves dismounted Soldier maneuver and helicopter operations. The Army operates a remote weather station at KTA that is used primarily to monitor conditions in the context of fire management. Historical data show an average wind speed of 13.7 mph and a maximum average hourly wind speed of 34 mph. The hourly average wind speeds did exceed 9.9 mph approximately 75 percent of the time and (specifically at KTA) exceeded the 15 mph threshold commonly associated with wind erosion processes approximately 40 percent of the time.

4.2.3.2 Environmental Consequences

No Action Alternative: (Significant but Mitigable)

Under the no action alternative, the current uses of the affected environment would not change from the conditions described in 4.2.3.1, other than as discussed as a part of pre-existing trends and the ongoing actions discussed below.

Under the No action alternative, the expected impacts from training range infrastructure construction at Schofield Barracks and Oahu training sites are expected to remain as significant but mitigable to less than significant. The impacts associated with live-fire training are expected to remain as less than significant.

Cantonment Construction. Under the No Action Alternative, no additional cantonment construction is required in USAG-HI. With existing, on-going and limited currently planned non-GTA projects, the garrison has critical facilities available to support existing units' living, administrative, and vehicle maintenance requirements. Additionally, some construction renovation may occur at SBMR on as needed basis in the future. Furthermore, no additional

Soldiers would be stationed at the base. Therefore, current levels of impacts to air quality, which are less than significant, would continue to occur.

Range Infrastructure Construction. No new range construction would occur under the No Action alternative. Ongoing and currently planned non-GTA construction projects may result in a temporary increase in fugitive emissions from activities at construction sites. Construction contractors will continue to comply with the provisions of Hawaii Administrative Rules, Sec. 11-60.1-33 on Fugitive Dust as part of the requirements of their construction contracts. Consequently, the impact from range construction at these locations is anticipated to be less than significant. In addition, annual emissions of ozone precursors from construction vehicles at USAG-HI are expected to be too small to have a measurable effect on ozone levels (USAEC, February 2008).

Live-Fire Training. Live-fire training would continue across the training areas at present levels. Approximately 96 percent of the annual ordnance use throughout USAG-HI will consist of small arms ammunition, each item of which emits only a very small propellant charge. Ordnance items with explosive or pyrotechnic components (such as mortars, artillery, mines, demolition charges, smoke devices, flares, or blast simulators) represent only a small percent of annual ordnance use at USAG-HI.

Live ordnance is not used at DMR, but blank ammunition and ground-based smoke devices are used for some training exercises. Smoke, flare, and simulator items remain the predominant munitions used at DMR. Based on the general nature of detonation processes and the very low emission rates that have been published in studies of munitions firing and open detonations, emissions associated with ordnance use at DMR pose very little risk of creating adverse air quality effects.

Ordnance use at KTA includes pyrotechnic ammunition and blank ammunition (and SRTA upon completion of the CACTF). Only blank ammunition is used KLOA. Based on the general nature of detonation processes and the very low emission rates that have been published in studies of munitions firing and open detonations, emissions associated with ordnance use at KTA and KLOA pose very little risk of creating adverse air quality effects.

The impact on air quality from wildfires (and thus emissions from wildfires) throughout the garrison is anticipated to be less than significant. Wildfires occur at all training areas. These are the result of natural processes such as lightning; and anthropogenic activities such as live-fire and nonlive-fire training, and the accidental ignition of fuels such as from cigarette disposal. Wildfire emissions associated with increased ordnance use may result from continued live-fire training. Overall, training at all ranges increases the potential for increased frequency of wildfires. With continued implementation of the garrison's Wildfire Management Plan used in conjunction with mitigation measures, wildfire-related air quality impacts are anticipated to be less than significant.

Maneuver Training. The emissions from tactical and non-tactical vehicle use is distributed throughout USAG-HI. Fuel combustion in military and personnel vehicles produce criteria emissions, including NOx, CO, SOx, and PM_{10}. NOx emissions are of concern primarily as an ozone precursor; however, these emissions are too small to have a measurable effect on ozone levels.

Maneuver training will continue to occur at SBMR, DMR, and KTA. Maneuver training will remain a combination of on-road and off-road areas on Oahu. Off-road maneuver activity

throughout Oahu as a result of existing training conditions may continue to reduce or eliminate vegetation cover in some areas. Vegetation removal increases soils susceptibility to vehicle and wind erosion and PM_{10} would be generated by these actions from the affected areas. The Army's ITAM program will continue to maintain these areas in order to promote a sustainable training environment, and mitigate air quality impacts to less than significant.

Schofield Barracks

CS (1,000), CSS (1,000), CS (3,000), CSS (3,000): (Significant but Mitigable).

Cantonment Construction: **Less Than Significant Impacts**

Short-term and long term impacts are anticipated under each of these stationing scenarios. SBMR's main post does not currently have additional vacant space and housing needed to support an additional 1,000 or more Soldiers and their Families. The construction required, as indicated in Chapter 4.1 in the 1,000 and 3,000 Soldier stationing scenarios would be needed to meet shortfalls in headquarters buildings, barracks, and other facility types. Construction may occur within the boxed areas depicted in Figure 4.1-1 on page 15, within the South Range Acquisition Area (SRAA) and limited construction would also occur at SBMR. Construction at SBMR would involve the demolition of existing facilities to provide a footprint for new construction. As part of the 3,000 person CS stationing scenario construction would also occur in existing cantonment areas of WAAF to support unmanned aerial aircraft operations.

Nitrogen oxide emissions are of concern primarily as an ozone precursor. Even though construction emissions would increase, annual emissions of ozone precursors from construction activities associated with construction under all stationing scenarios would be too small to have a measurable effect on ozone levels.

Impacts to air quality would be temporary, occurring during the 12-24 months of facilities construction. Vehicle emissions and fugitive dust generated by heavy construction equipment and materials transport may have short-term impacts that are anticipated to be less than significant. Construction contractors would comply with the provisions of Hawai`i Administrative Rules on fugitive dust in accordance with §11-60.1-33.

Training Range Infrastructure Construction: **No Impacts**

Units under all stationing scenarios units would utilize existing or previously planned weapons qualification ranges on which to train; therefore limited minor impacts are anticipated. Stationing scenarios as these scenarios would not involve new training range construction at SBMR or training sites on Oahu. All firing activities would occur on facilities which are or will be designed to accommodate live fire training.

Live-fire Training: CSS scenarios **Minor Impact** / CS stationing **Less than Significant**

Soldiers under the stationing scenarios discussed above would train to meet semi-annual live-fire training requirements as part of all stationing scenarios. In addition, CS units would support live fire and maneuver training events of combat maneuver units. Increase in live fire activites and munitions expenditure on SBMR and Oahu training site ranges would increase by 5-15% depending on the stationing scenario selected. This would result in minor (CSS stationing) or

less than significant (CS stationing) impacts. At SBMR and South Range, the emissions released into the environment from live-fire training would result from the use of small arms weapons such as M-16 and M-4 rifles; crew served weapons such as machine guns; and explosive munitions. Approximately 96 percent of the annual ordnance use would consist of small arms ammunition, each item of which emits only a very small propellant charge.

CS units would use a greater percentage of ordnance items with explosive or pyrotechnic components (such as mortars, artillery, mines, demolition charges, smoke devices, flares, or blast simulators) that would represent about 4 percent of their annual ordnance use. CS units may also use training obscurants, such as smoke, as part of their routine training.

Rifles and Machine Guns have very low emissions rates; while smokes may lay an obscuration cloud with surface concentrations of 4 mg/m^2 to 260 mg/m^2 (this is a high estimate) these items are generally dispersed quickly (depending on wind speed and direction) (Driver et al, 1993). Air emissions from firing qualifications are released at the firing point. These emissions are anticipated to be relatively minor and are found at the EPA's Technology Transfer network Clearinghouse for Inventories & Emissions Factors, AP42, Fifth Edition, Volume I (www.epa.gov/ttn/chief/ap42/ch15/index.html, n.d.).

At DMR, smoke and flare use would increase as part of CS stationing scenarios. Based on the studies conducted by the Army and addressed in Air Pollutant Emission Factors (AP42s) published by the EPA, there would be a very low risk of emissions generated from these training devices.

At KTA and SBER, the use of some pyrotechnic devices may be employed, but due to their low annual utilization rate and air emission rates, the use of these devices is not anticipated to have significant effects to air quality. Only blank ammunition, which poses very little risk of creating adverse air quality effects, is used at KLOA.

Controlled burns are sometimes used to manage vegetation on range areas or to prepare areas for UXO (Unexploded Ordnance) clearance. Controlled burns are not frequent events and so the resulting emissions have not been estimated. These emissions would be considered in the prescribed burn plans prior to the actual burn event. The frequency of controlled burns would not increase under any of the proposed stationing scenario.

Live-fire and other training activities would increase the risk of wildfires in proportion to the percentage increase in training munitions use, and increase the risk of wildfire associated air pollutant emissions (for example PAHs (Polycyclic Aromatic Hydrocarbons)).

Based on the general nature of detonation processes and the very low emission rates that have been published in studies of munitions firing and open detonations, emissions associated with ordnance use at DMR pose very little risk of creating adverse air quality effects. Consequently, air quality effects expected from munitions use under Alternative A are considered less than significant.

Maneuver Training: **Significant but Mitigable** (All Scenarios)

Under these scenarios, limited maneuver training would occur across the training areas of USAG-HI to include KTA, SBMR, South Range, SBER, KTA, KLOA and PTA (discussed in Chapter 4.3). CS and CSS units would conduct training on the island of O'ahu to obtain proficiency in individual unit skills and would support maneuver rotations of combat maneuver

units at PTA. The direct impacts of CSS stationing scenarios would be less than that of CS units because of a greater percentage of off-road maneuver training executed by CS units. Under 1,000 Soldier stationing scenarios unit maneuvers are expected to increase by 2.5% on Oahu maneuver training areas and 7.5% as part of 3,000 person CS and CSS stationing scenarios. Air quality impacts from all ratings are listed as Significant but Mitigable though 3,000 person stationing scenarios, particularly for CS units doing a higher percentage of off-road maneuvers are anticipated to be proportionately greater than the 1,000 person stationing scenarios.

Vehicles associated with CS or CSS training occurring on roads, trails, or hardened surfaces would increase the occurrence of opacity or fugitive dust emissions; however these effects are anticipated to be localized to the range area. Vehicle emissions would also add to the pollutants currently being released in maneuver areas including particulate matter (PM),carbon monoxide (CO), sulfur oxides and other reactive organic compounds. The overall increase in these compounds would be expected to correlate highly with the number of increased MIMs resultant from implementing stationing scenarios (approximately 2.5% for 1,000 Soldier and 7.5% for 3,000 Soldier stationing scenarios).

The amount of off-road vehicle activity would increase due to proposed training activities. Off-road vehicle activity of CS units at would reduce or eliminate vegetation cover in affected maneuver training areas of SBMR, KTA, DMR and SRAA, resulting in increased susceptibility to emissions from vehicle travel and wind erosion. PM_{10} would be generated by these actions from the affected areas. 1,000 person stationing scenarios are anticipated to generate .26 tons of PM 10 per year and 3,000 person stationing scenarios would be projected to generate approximately .75 tons of PM 10 per year from maneuver training.

Regulatory and Administrative Mitigation 1: The Army continually funds and implements USAG-HI-wide land management practices and procedures described in the ITAM annual work plan to reduce erosion and other soil and geologic impacts (USARHAW 2001a and USARHAW 2001b). Currently, these measures include implementing a TRI (Toxic Releae Inventory) program, implementing an ITAM program, implementing an SRA program, developing and enforcing range regulations, implementing an Erosion and Sediment Control Management Plan, coordinating with other participants in the Koolau Mountains Watershed Partnership (KMWP), and continuing to implement land rehabilitation projects, as needed, within the LRAM (Land Rehabilitation and Maintenance) program. Examples of erosion and sediment control measures identified in the ITAM annual work plan include stormwater runoff control structures (silt fences, hay bales, etc.) as part of standard BMPs, which would divert water from the construction sites. Standard range maintenance BMPs implemented by USAG-HI include road grading, target repair, and berm recontouring. Examples of current LRAM activities at USAG-HI include revegetation projects involving site preparation, liming, fertilization, seeding or hydroseeding, tree planting, irrigation, and mulching; combat trail maintenance program (CTP), coordination through the TCCC on road maintenance projects; and development mapping and geographic information system (GIS) tools for identifying and tracking progress of mitigation measures. These mitigation measures would reduce impacts to air quality from maneuver training to less than significant.

Combat Aviation Brigade (2,800): (Significant but Mitigable).

Cantonment Construction: **Less than Significant**

Impacts to support the stationing of an CAB would be similar to those discussed as part of alternatives to station the 3,000 CS or CSS Soldiers. Helicopters associated with the CAB would be maintained at WAAF. While the Airfield has the facilities available to support an additional attack battalion-sized unit, it does not have adequate facilities to store the equipment required for an additional Aviation Brigade. Construction of new aircraft hangars would be needed. Construction would take place in existing pre-disturbed areas at WAAF and are anticipated to result in temporary air quality issues from vehicle emission and dust at that facility. Construction activities would be temporary and would conform to State regulations regarding air quality control. Hangar construction under this scenario would occur in the following location.

Training Range Infrastructure Construction: **Less than Significant**

Temporary minor effects are anticipated. The Garrison would need to consider reinforcing landing zones or adding new zones where helicopters will land and take-off during tactical maneuvers. Similar to construction at the cantonment area, construction equipment would remove vegetation and would disturb soils. Worker vehicles and construction equipment would generate CO and other emissions; as well as generate dust in the construction zone. Best management practices (BMPs) would be used to mitigate fugitive dust emissions during construction.

Live-fire Training: **Less than Significant**

Soldiers of the aviation brigade would train to meet semi-annual live-fire training requirements. The emissions released into the environment from live-fire training would result from the use of hand-held weapons such as rifles and crew served weapons such as machine guns.

Rifles and Machine Guns have very low emissions rates; while smokes may lay an obscuration cloud with surface concentrations of 4 mg/m^2 to 260 mg/m^2 (this is a high estimate) these items are generally dispersed quickly (depending on wind speed and direction) (Driver et al, 1993). Impacts on the Island of O'ahu are anticipated to be similar to those discussed under the 3,000 Soldier stationing scenarios.

Helicopter gunnery activities under this stationing scenario that would take place at PTA are discussed in Chapter 4.4.1.

Maneuver Training: **Significant but Mitigable**

Given the wide distribution of emissions resulting from maneuver training of aviation units, it is not anticipated that regional air quality would be significantly affected by the proposed action. Maneuver training of aviation units would occur primarily at KLOA and SBER on the island of Oahu. Helicopter would increase the occurrence of opacity or fugitive dust emissions; however these effects are anticipated to be localized to the maneuver training area. Helicopter and logistics vehicles associated with the aviation brigade would add to the pollutants currently being released in maneuver areas including particulate matter (PM),carbon monoxide (CO), sulfur oxides and other reactive organic compounds.

PM_{10} would be generated by these actions from the affected areas. The combat aviation Brigade would be expected to generate approximately 1.2 additional tons of 10 per year from maneuver training of the aviation unit and its logistics support vehicles. More than half of this increase would be anticipated to occur at PTA.

The incidental emissions resulting from training would be primarily from mobile sources and be widely distributed both spatially and temporally and produce limited impact to the regional airshed.

Regulatory and Administrative Mitigation 1: Although violation of air quality standards is not likely, the overall level of PM_{10} generated by wind erosion would increase. To mitigate this potential impact of stationing a CAB at SBMR/WAAF, the Army would implement additional Dust and Soils Management and Monitoring Plans to reduce PM 10 inputs at helicopter landing areas at KLOA and SBER which are accessible by garrison environmental staff.

4.2.4 Airspace

4.2.4.1 Affected Environment

Airspace is defined by vertical and horizontal boundaries and time of use. The Federal Aviation Administration (FAA) manages the air navigation system, equipment, airports, and the rules and regulations relating to powered flight. The FAA is also responsible for managing the airspace for commercial airliners and air carriers, general aviation, and government agencies, including the U.S. military.

Six classes of airspace are designated by the FAA. Airspace designated as Class A, B, C, D, or E is controlled airspace. Class G airspace is uncontrolled airspace. Within controlled airspace, air traffic control (ATC) service is provided to aircraft in accordance with the airspace classification. No ATC service to aircraft is provided within Class G airspace, other than possible traffic advisories when the air traffic control workload permits and radio communications can be established.

Use of airspace is required for the successful operation of the U.S. military. Some military flight activities are not compatible with civilian uses of airspace, and some military activities potentially conflict with other uses of military airspace. Airspace restrictions are needed within military installations to ensure safety and to avoid possible conflicts of airspace use.

Large segments of controlled and uncontrolled airspace have been designated as special use airspace. Operations within special use airspace are considered hazardous to civil aircraft operating in the area. Consequently, civil aircraft operations may be limited or even prohibited, depending on the area. Special use airspace is divided into prohibited, restricted, warning, alert, and military operations area (MOA).

MOAs are airspaces designated for non-hazardous military flight training, and they were established to minimize interaction between high-speed military aircraft and civilian air traffic. These areas include horizontal coordinates (i.e., latitude and longitude), vertical zones (i.e., base and ceiling), use restrictions, and exclusions. Restricted areas denote the existence of unusual, often invisible hazards to aircraft, such as artillery firing, aerial gunnery, or guided missiles. Consequently, flights from non-participating civilian or military aircraft are prohibited during certain training exercises.

The airspace above the Island of O'ahu is generally controlled airspace. The area around Honolulu International Airport is Class B airspace; while other airports on the island are covered by Class D airspace. WAAF in central Hawai`i is also covered by Class D airspace with a ceiling 3,300 feet. Although there are no formal military training routes on O'ahu, the military

habitually uses select areas within which to train. Typical training activities include 10 helicopters at any one time, although maximum numbers have reached 36 aircraft. During deployment training C-130 aircraft utilize airspace in O'ahu.

The Island of O'ahu also has several areas designated as Special Use Airspace. Uncontrolled (Class G) airspace exists from the surface to up to either 700 or 1,200 feet above mean sea level (MSL) over O'ahu in select locations.

4.2.4.2 Environmental Consequences

No Action Alternative: (Minor)

Under the no action alternative, the current uses of airspace would not change from the conditions described in 4.2.4.1, other than as discussed as a part of pre-existing trends and the ongoing actions discussed below.

Under the No action alternative, the expected impacts to airspace resources from training range infrastructure construction at Schofield Barracks and Oahu training sites are expected to remain minor. The impacts associated with live-fire training are expected to remain minor. Maneuver training with UAVs and other aircraft will cause less than significant impacts.

Cantonment Construction. Under the No Action Alternative, no additional cantonment construction is required in USAG-HI. With existing, on-going and limited currently planned non-GTA projects, the garrison has critical facilities available to support existing units' living, administrative, and vehicle maintenance requirements. Additionally, some construction renovation may occur at SBMR on as needed basis in the future.

Range Infrastructure Construction. No new range construction projects would occur under the No Action alternative. On-going and currently planned Non-GTA related range projects would temporarily increase human presence and activity at construction sites. Construction of these ranges would not require modifications to existing controlled or special use airspace and no new special use airspace would be needed. No impacts to airspace are expected.

Live-Fire Training. No changes to existing airspace use would occur under the No Action alternative and no new special use airspace would be needed. As part of overall transformation and modernization of ranges, a controlled firing area (CFA) will be established above QTR2 at SRAA; however, CFAs pose no problems for VFR (Visual Flight Rules) or IFR flights. Activities within a CFA must be suspended immediately when radar, spotter aircraft, or ground lookouts detect an approaching aircraft.

Maneuver Training. No change to existing maneuver training Oahu ranges would occur. With respect to airspace resources, the No Action alternative would include flights by UAVs associated with units presently stationed on Oahu. UAV flights primarily would be conducted within previously designated restricted areas (e.g., R-3109 and R-3103). For UAV flights that could not be conducted entirely within restricted areas, operations would occur in accordance with well-defined FAA procedures for remotely operated aircraft. These procedures include approval of the UAV flights by the FAA regional office in Honolulu at least 60 days in advance. Continued maneuver training of ground-based units (i.e. those without UAVs) will have no effect on airspace at SBMR or Oahu training sites.

CS (1,000), CSS (1,000), CS (3,000), CSS (3,000): (Minor Impact).

Cantonment Construction: **No Impact**

Construction of Family housing, Soldier barracks, motor pools, or other facilities at SRAA or SBMR (barracks) is not anticipated to modify airspace. Therefore, no additional affects are expected.

Training Range Infrastructure Construction: **No Impact**

No impacts are anticipated for these stationing scenarios as existing ranges would be able to meet their training requirements.

Live-fire Training: **Minor Impact**

Minor effects would occur. The training of any of these scenarios would be similar to current training activities throughout the Garrison. Training would generally involve the use of small arms ranges. A controlled firing area (CFA) is pre-established above existing ranges. Although CFAs pose no problems to flights, activities within a CFA must be suspended immediately when radar, spotter aircraft, or ground lookouts detect an approaching aircraft.

Maneuver Training: **No Impact**

Maneuver training ground-based CS/CSS units will have no effect on airspace at SBMR or O'ahu training sites.

Combat Aviation Brigade (2,800): (Less than Significant).

Cantonment Construction: **No Impact**

The construction of additional hangars to accommodate aviation would not result in the modification to existing airspace designations. his scenario is anticipated to have a less than significant impact from aircraft operations.

Training Range Infrastructure Construction: **No Impact**

No new ranges would be constructed to support the live-fire training of a CAB as part of this scenario.No effects are anticipated. Although landing zones in tactical training areas (SBER and KLOA) may need to be reinforced. These improvements would not require modifications to existing airspace.

Live-fire Training: **Minor Impact**

Live-fire training would involve the use of existing small arms ranges. Existing ranges have pre-established CFAs. Although CFAs pose no problems to flights, activities within a CFA must be suspended immediately when radar, spotter aircraft, or ground lookouts detect an approaching aircraft.

Live-fire activities associated with the aviation brigade are discussed in the section designated for PTA.

Maneuver Training: **Significant but Mitigable**

Helicopters associated with the aviation brigade would be stationed at WAAF; where the airfield is not currently constrained for aircraft use. The volume of helicopter flights and departures from WAAF would approximately double and would require further analysis of airspace use and scheduling requirements. Given that airspace usage would increase but not change existing flight corridors, the anticipated effects of this scenario should be mitigable through management of scheduling aviation activities. Flight corridors commonly used by military traffic are well north of the major commercial flight corridors for Honolulu International Airport and are not anticipated to interfere with commercial flights. When supporting operations at PTA aviation units would continue to utilize the flight corridor designated for military traffic.

4.2.5 Cultural Resources

4.2.5.1 Affected Environment

Cultural resources are defined as historic properties, cultural items, archaeological resources, sacred sites, or collections. Cultural resources include prehistoric and historic archaeological sites, historic buildings and structures, and Native American or Native Hawaiian traditional resources. In the source documents for this analysis, Native Hawaiian traditional resources are discussed as areas of traditional interest (ATIs), these categories include traditional resources, use areas, and sacred sites that are potentially eligible for the National Register of Historic Places (NRHP) as traditional cultural properties (TCPs). These resources are subject to protection under the National Historic Preservation Act (NHPA), the Archaeological Resources Protection Act (ARPA), the Native American Graves Protection and Repatriation Act (NAGPRA), Executive Order 13007 (Indian Sacred Sites), the Archeological and Historic Preservation Act (AHPA), the guidelines on Curation of Federally Owned and Administered Collections (36 CFR Part 79), and other federal and state regulations and treaties. Army Regulation implements Army compliance with the National Historic Preservation Act (NHPA), the Native American Graves Protection and Repatriation Act (NAGPRA), the American Indian Religious Freedom Act (AIRFA), the Archeological Resources Protection Act (ARPA), the Archeological and Historic Preservation Act (AHPA), Executive Order 13007: Indian Sacred Sites; and other federal and state regulations and treaties.

Cultural and/or historical resources on SBMR and O'ahu training sites include such things as buildings, structures, sites, districts, properties of traditional religious and cultural importance, sacred sites or objects from prehistoric or historic occupation or activities.

The Army EIS for Transformation of the 2/25th Infantry Division (Light) to a Stryker BCT (2004)[2] identified five cultural landscape types of significance to Native Hawaiian tradition and culture. These include "1) Areas of naturally occurring or cultivated resources used for food, shelter, or medicine; 2) Areas that contain resources used for expression or perpetuation of Hawaiian culture, religion, or language; 3) Places where historical and contemporary religious beliefs or customs are practiced; 4) Areas where natural or cultivated endangered terrestrial or marine flora and fauna used in native Hawaiian ceremonies are located, or where materials for

[2] Supplemented by the Environmental Impact Statement for the Permanent Stationing of the 2/25th Stryker Brigade Combat Team (February 2008)

ceremonial arts and crafts are found; and 5) Areas that provide natural and cultural community resources for the perpetuation of language and culture including place names and natural, cultural, and community resources for art, crafts, music, and dance." All of these types of areas of cultural significance are found either on or near the military areas affected by the proposed action.

The ROI includes the geographic extent of SBMR, South Range, SBER, DMR, KTA, and KLOA. The ROI for cultural resources includes the areas of construction of new facilities and training areas to be constructed or used.

Archaeological sites on SBMR and O'ahu training sites are diverse and may include heiau (religious structures), koa (small shrines), fishponds, stone markers, fishing shrines, habitation sites, caves and rock shelters, mounds, burial platforms, earth ovens, stone walls and enclosures, agricultural terraces, canals or ditches, rock art sites, and trails. Historic period archaeological sites include gun emplacements, concrete structures and bunkers, concrete walls, wooden structural remains, masonry platforms, concrete revetments, bermed depressions, berms and rock piles, tunnels, miscellaneous feature complexes, road beds, railroad remnants, and trash deposits.

The central plateau where SBMR is located is of religious and cultural significance to Native Hawaiians, and numerous traditional natural settings exist in the area. Hawaiians lived in the central plateau of O'ahu hundreds of years before European contact. The boundaries of SBMR correspond roughly to the traditional Hawaiian land unit called Waianae Uka, a land-locked portion of the ahupuaa of Waianae. Waianae Uka was somewhat isolated from the rest of its ahupuaa, and the trail that connected Waianae Uka with Waianae Kai (coastal portion) by way of Kolekole Pass was strategically important. Archaeological evidence indicates the presence of traditional Hawaiian agricultural field systems, both dryland and irrigated taro wetland fields (loi) along the streams that flow through SBMR.

Archaeological surveys have been completed in the SBMR cantonment area, WAAF, and SBER. Investigations have documented 217 archaeological sites in 4,151 acres of survey (Annual report of cultural resource management of transformation projects (USAG-HI 2006)). Most archaeological sites have not been evaluated for NRHP eligibility. All identified cultural resources are being treated as eligible until such determinations are made. Archaeological sites that have been recommended as not eligible include five historical archaeological sites within the cantonment areas relating to military use of the property. No prehistoric sites have been identified within the cantonment area of SBMR; although a prehistoric site has been identified at WAAF named Mauna Una.

A cultural resources survey has been conducted for the South Range. If construction is required, the Army would take every precaution to avoid impacts to cultural resources that have been identified. Cultural resources have not been identified in areas most areas suitable for cantonment facilities construction. USAG-HI would need to conduct surveys of suitable cantonment area prior to any planned construction.

Traditionally, important places in the area of DMR are associated with spiritual beings, myths, legendary stories, and oral histories along the shoreline, on the upper slopes of the mountains above the installation, and in Kaena to the west. The best known among these important places is Kaena Point.

Archaeological evidence of prehistoric land use and settlement on DMR is limited. Native Hawaiians buried their dead in a line of sand dunes along the coast fronting DMR. Along the slope at the foot of the Waianae Mountains are several agricultural features indicating crop cultivation in the area. Part of the slope area was set aside as a sacred place on which Kawailoa Heiau was constructed (USAG-HI 2004).

Most of DMR has been covered by archaeological surveys. Seven of the sites contain prehistoric or traditional components and one of these sites is very extensive. The remainder are historic sites related to agriculture, transportation, and military use (USAG-HI 2004). All but two of the archaeological sites are historic or traditional historic sites related to agriculture, transportation, or military use.

Archaeological surveys covering the historic built environment at DMR occurred in the 1990s. These surveys identified 21 buildings associated with a Nike missile site. All but five of these have been demolished.

No TCP surveys or oral histories have been completed for the DMR.

KTA is on the northernmost point of the traditional Koolauloa District. Important legends hold that this land was once a separate island. Many traditional stories are associated with this land (USAG-HI 2004). The KTA area has been occupied at least seasonally since the 14th century; evidence of early occupation includes rockshelters, burials, irrigation complexes, and habitation sites. In the late 17th century, there was a more intensive settlement of the upper valleys (USAG-HI 2004).

Past surveys conducted by the Army have located 103 archaeological sites on KTA and 79 sites on KLOA. Thirty-eight of these sites are considered eligible or need to be evaluated for eligibility. Site probability models for KTA identify bluff slopes and edges and the mouths of narrow gullies as areas of high probability for surviving sites (USAG-HI 2004). Limited areas of KLOA that have not been surveyed due to very rugged and steep terrain have a low probability for sites. Some other areas that have not been surveyed are similar to areas with known sites.

A variety of Cold War era buildings and structures exist on KTA. The buildings and structures are principally the eligible Nike missile sites and associated facilities that were in use between 1961 and 1970. One of the stipulations resulting from Section 106 consultation over the demolition of the Nike missile site on DMR was that the KTA Nike site be preserved as an intact example of a Cold War Nike missile site.

Several ATIs have been identified on KTA including three heiau consisting primarily of rock platforms. One of these is believed to have been destroyed, but a recently identified cluster of features may be remnants of the site. Formal TCP and ATI surveys have been undertaken for KTA and KLOA. This project is ongoing.

4.2.5.2 Environmental Consequences

No Action Alternative: (Significant Adverse)

Under the no action alternative, the current uses of the affected environment would not change from the conditions described in 4.2.5.1, other than as discussed as a part of pre-existing trends and the ongoing actions discussed below.

Existing cantonment areas and live-fire ranges have been surveyed for cultural and historic resources, and known sites have been avoided or mitigated. Live-fire and maneuver training will continue to pose a potential significant impact to undiscovered resources. Continued adherence to Section 106 and the NHPA will minimize impacts to newly discovered sites; however, significant impacts to undiscovered resources may occur.

Cantonment Construction. Under the No Action Alternative, no additional cantonment construction is required in USAG-HI. With existing, on-going and limited currently planned non-GTA projects, the garrison has critical facilities available to support existing units' living, administrative, and vehicle maintenance requirements. Additionally, some construction renovation may occur at SBMR on as needed basis in the future. As no cantonment construction would occur, no impacts are expected.

Range Infrastructure Construction. No new range construction projects would occur under the No Action alternative. Range maintenance would continue as needed. This would include berm, trail and targetry maintenance and would temporarily increase human presence and activity at range sites. All existing areas of range and support facility construction have been surveyed for cultural resources. The annual cultural resource management reports list cultural resource sites documented since 2003. To date, all of the sites identified during pedestrian survey before commencement of UXO clearance have been avoided during range design and layout of the construction footprint.

Though no new range construction would occur under the No Action alternative, on-going and currently planned range construction would involve grubbing vegetation, grading site surfaces, excavating subsurface, and moving heavy construction equipment. All of these activities, particularly excavation, could result in direct damage to or destruction of archaeological resources. Destruction, damage, or restricted access to previously unknown properties of traditional importance could occur. The Army has been working to mitigate adverse effects by redesigning projects to avoid cultural resources, developing and implementing cultural resource site protection plans, monitoring earth disturbing activities, and developing long-term site protection measures. These mitigation measures would continue to minimize impacts to cultural resources; however, the potential impacts would not be mitigated to a less than significant level.

Live-Fire Training. Existing conditions would continue at all of the training areas. There would be no project-related increase in frequency or intensity of training, no use of new ranges, and no change in weapons or equipment. All sites identified in prior archeological inventory surveys have been avoided during range design where feasible and the treatment of those that cannot be avoided is subject to consultation. Despite ongoing surveys and the implementation of protective measures and post-training monitoring of known sites by cultural resource personnel, there remains a potential for impacts to undocumented sites. The use of live-fire ranges, even at existing levels, will remain a potential cause of significant impacts to cultural resources.

Maneuver Training. There would be no change to the existing type and frequency of maneuver training on Oahu. Continued impacts to maneuver areas could result in significant impacts on cultural resources in the maneuver areas caused by ground troop activities, off-road vehicle movement, and ground disturbance. Mechanisms and procedures are in place to monitor the effects of operations, maintenance, and training exercises, and to respond to any unanticipated discoveries. The Army would continue to inventory and evaluate cultural resources in compliance with Section 110 of the NHPA, and project planning would comply with Section 106 and its implementing regulations. Despite ongoing surveys and documentation of cultural

resources, there remains a potential for impacts to undocumented sites. Maneuver training, even at existing levels, will remain a potential cause of significant impacts to cultural resources. Significant impacts to archaeological sites are not mitigable to a less than significant level.

CS (1,000), CSS (1,000), Combat Aviation Brigade (2,800), CS (3,000), CSS (3,000): (Significant Adverse).

Cantonment Construction: **Significant Adverse**

For any of the proposed stationing scenarios construction at the SRAA may pose a potential risk to documented or undocumented cultural or archaeological resources. Documented archaeological sites are located on South Range to the north, south, and west of the where construction for several facilities could occur. This could mean that undocumented sites may be uncovered during site construction. The likelihood of this will depend on the final scope, design, and siting of the projects. The garrison will complete archaeological surveys in this area and avoid building on known sites wherever possible. The garrison would conduct Section 106 Consultation with the State Historic Preservation Office, the Office of Hawaiian Affairs, and appropriate Native Hawaiian organizations/individuals as part of this action. Direct effects to undocumented resources could occur from grading/re-grading site surfaces, grubbing vegetation, and using heavy equipment to excavate the subsurface. However, the anticipated area for construction has been used many years to grow pineapples and therefore has been subject to extensive ground-disturbance through cultivating and harvesting of the crops.

Construction of a barracks at SBMR would occur as infill (built among existing structures) on previously disturbed land within the cantonment area; potentially within the footprint of existing structures (that would need to be demolished). None of the existing buildings or structures within the project footprint are historic properties. It is reasonable to suggest no additional effects to cultural resources at SBMR would potentially occur.

The impacts from construction at WAAF to accommodate an additional CAB would be mitigated through siting and proper planning. If facilities were to be constructed at disturbed or built-up locations where other facilities currently exist, these areas are anticipated to have been previously surveyed and known resources will be avoided. Adverse impacts to the Wheeler National Historic Landmark buildings and structures would be avoided during siting of new facilities. Siting new facilities in new locations of the cantonment area may require additional surveys for cultural resources. The garrison will avoid building on known sites, and as part of this scenario USAG-HI would conduct Section 106 Consultation with the State Historic Preservation Office, the Office of Hawaiian Affairs, and appropriate Native Hawaiian organizations/individuals as required.

Regulatory and Administrative Mitigation 1: The Army has been working to mitigate adverse effects to cultural resources by redesigning projects to avoid cultural resources, developing and implementing cultural resource site protection plans for construction and UXO clearance, monitoring earth disturbing activities when appropriate, and developing long-term site protection measures. The Army will engage in Section 106 consultations regarding various aspects of the proposed projects, to include appropriate mitigation measures as siting/design plans continue to develop.

Training Range Infrastructure Construction: **No Impact**

No effects are anticipated. These stationing scenarios would be accommodated by existing range facilities and no training range construction would be required.

Live-fire Training: **Less than Significant**

The permanent stationing of units as part of CS/CSS and CAB stationing scenarios would result in the incremental increase in the live-fire activities of units at existing small arms qualification ranges to include QTRs 1 and 2. These ranges and supporting targetry have been sited to avoid known cultural resources at South Range and SBMR following identification of these sites during cultural resource surveys and protective measures have been implemented for sites within their footprint. Less than significant impacts are projected as a result of the work that has been done to protect cultural resources on these ranges.

Maneuver Training: **Less than Significant (CSS and CAB scenarios) / Significant but Mitigable (CS stationing scenarios)**

Potential significant impacts from maneuver training would be the most widespread impacts associated with unit stationing scenarios. Stationing scenarios would not result in qualitatively different maneuver training than currently occurs on Oahu if they were implemented. CS/CSS units and the CAB all would involve the maneuvers of light and medium tactical trucks and ground logistics support vehicles. CS units, particularly combat engineers would engage in surface excavation activities and demolitions at select areas on Oahu. These activities would occur within areas that have been surveyed and designated as appropriate for this type of activity which has been ongoing in these areas for many years.

CSS units and CAB logistics support would primarily maneuver on existing roads and trails and is not projected to do much off-road or trail maneuver or surface excavation. Helicopter flights would also not be expected to impact documented or undocumented cultural resources and maneuver activities for these scenarios have been assessed as less than significant.

Current maneuver training areas would be used and 2.5 to 7.5% more maneuver training would be conducted at SRAA, KTA, DMR and KLOA.

Cultural resource surveys of SBMR (excluding South Range) have identified 170 archaeological sites. There are also 47 archaeological sites on affected portions of South Range. Most of these sites have not been evaluated for eligibility. Only 24 archaeological sites have been reported on DMR and the Dillingham Trail, again these sites are evaluated as eligible or not yet evaluated for eligibility. Most of the known archaeological sites at DMR are on densely vegetated steep slopes, and impact from any stationing scenario would be projected to be limited. To date, 182 archaeological sites have been reported on KTA (103) and KLOA (79). Thirty-eight of those sites are evaluated as eligible, the rest have not yet been evaluated for eligibility. As noted earlier, all identified cultural resources are being treated as eligible and appropriately protected until such determinations are made.

Regulatory and Administrative Mitigation 1 (CS stationing scenarios): The primary mitigation is the avoidance of sites so impacts would be minimized. Areas around known sites would be designated as no-use areas for maneuver training and protective measures will be placed around sites to avoid impacts from training. There would be regular monitoring of known sites by cultural resource personnel after training activities to ensure that the site protection measures are working and adjust protection if needed. If sites cannot be avoided, appropriate

mitigation measures that may include data recovery would be implemented after appropriate consultation

4.2.6 Noise

4.2.6.1 Affected Environment

Noise zones (NZ) are based on Army land use compatibility and Center for Health Promotion and Preventative Medicine (CHPPM) guidelines. NZ I conditions (L_{dn} levels below 62 dBA) are considered compatible with all residential land use. Approximately 15 percent of the population would be disturbed with these levels of background noise. NZ II conditions (L_{dn} levels of 62 to 70 dBA) are considered unacceptable for noise-sensitive land uses such as housing areas, educational facilities, and medical facilities. Approximately 15 to 39 percent of the population would be annoyed with these noise levels. NZ III conditions (L_{dn} levels over 70 dBA) are considered incompatible with residential and educational land uses. Studies conducted by the EPA found that people living in noisy areas have acclimated to those noise levels and are less affected by the increased noise levels than people living in relatively quiet locations (U.S. Army CHPPM, 1999). Table 4.2-3 below expresses the sound exposure level at which certain noises may be audible over a 1-second time interval. As a basis of comparison for the reader, military unique sounds are weighed against non-military unique sounds.

Table 4.2-3. A-Weighted Decibel Values for Example Noise Sources

Characterization	dBA	Example Noise Source or Condition	Other Noise Examples
Threshold of pain	130	Surface detonation, 30 pounds of TNT at 1,000 feet	
Possible building damage	120	Mach 1.1 sonic boom under aircraft at 12,000 feet	Air raid siren at 50 feet; B-1 flyover at 200 feet
	115	F/A-18 aircraft takeoff with afterburner at 1,600 feet	Commercial fireworks (5 pound charge) at 1,500 feet
	110	Peak crowd noise, pro football game, open stadium	Peak noise at firing position of rifle range
	100	F/A-18 aircraft departure climb out at 2,400 feet	Jackhammer at 10 feet; B-52 flyover at 1,000 feet
Extremely noisy	95	Locomotive horn at 100 feet; 2-mile range, foghorn at 100 feet	Wood chipper processing tree branches at 30 feet
8-hour OSHA limit	90	Heavy truck, 35 mph at 20 feet; leaf blower at 5 feet	Person yelling at 5 feet; dog barking at 5 feet
Very noisy	85	Power lawn mower at 5 feet; city bus at 30 feet	Pneumatic wrench at 50 feet; jet ski at 20 feet
Noisy	75	Street sweeper at 30 feet; idling locomotive at 50 feet	Beach with medium wind and surf
	70	Auto, 35 mph at 20 feet; 300 feet from busy 6-lane freeway	Stream bank 10 feet from small/medium waterfall
Moderately noisy	65	Typical daytime busy downtown area conditions	Beach with light wind and surf; tree branches, light wind
	55	Typical daytime urban residential area away from major streets	Leaves, tall grass rustling in light/moderate wind
	50	Typical daytime suburban conditions	Open field, summer night, insects
Quiet	45	Typical rural area daytime conditions	

Table 4.2-3. A-Weighted Decibel Values for Example Noise Sources

Characterization	dBA	Example Noise Source or Condition	Other Noise Examples
	40	Quiet suburban area at night	
Very quiet	30	Quiet rural area, winter night, no wind	Quiet bedroom at night, no air conditioner
	20	Empty recording studio	Barren area, no wind, water, insects, or animals
Barely audible	10	Audiometric testing booth	
Threshold of hearing	0		

Individual pieces of construction equipment typically generate noise levels of 80 to 90 dBA at a distance of 50 feet. With multiple items of equipment operating concurrently, noise levels can be relatively high during daytime periods at locations within several hundred feet of active construction sites. The zone of relatively high construction noise typically extends to distances of 400 to 800 feet from the site of major equipment operations. Locations more than 1,000 feet from construction sites seldom experience noteworthy levels of construction noise. Table 4.2-4 presents typical noise levels (dBA at 50 feet) that EPA has estimated for the main phases of outdoor construction.

Table 4.2-4. Noise levels associated with outdoor construction

Construction Phase	Sound Level (dBA)
Ground clearing	84
Excavation, grading	89
Foundations	78
Structural	85
Finishing	89

Source: USEPA 1971

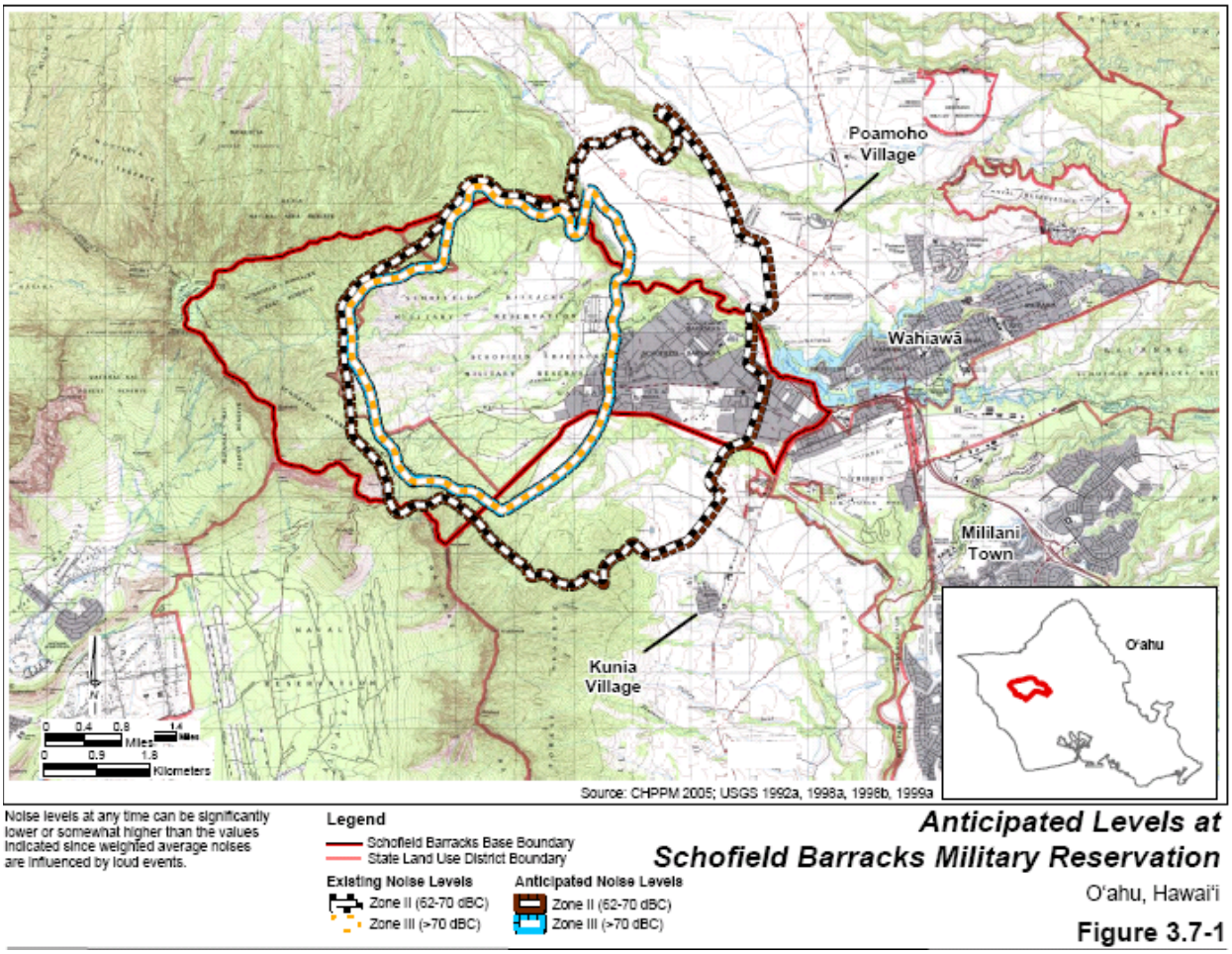
The most significant sources of noise at Schofield Barracks includes vehicle traffic, weapons firing, and helicopter flights (which are heard at locations outside the installation boundary). Noise from firing of large caliber weapons firing affects most of Schofield Barracks; and individual detonations are audible in residential areas near the boundaries of the installation.

Schofield Barracks consists of NZ II on the easternmost portion of the cantonment area, and NZ III at the westernmost area and southwestern portion of the cantonment area. NZ I (below 62dBA) includes the residential areas in the towns of Wahiawa, Mililani Mauka, and Mililani. This NZ is considered compatible with that land use).

NZ II conditions encompass much of the cantonment area and extend into undeveloped areas to the north and south of the cantonment area; the exposure area for NZ II does include Solomon Elementary School and Hale Kula Elementary School (with the nighttime penalty factor). NZ II contours also extend approximately 985 to 1,300 feet to encompass additional Soldier and Family housing areas on the eastern part of the main post. Some undeveloped areas to the north and south of post may also be affected

Recent 2/25th Stryker BCT stationing decisions resulted in NZ III conditions contracting at the northern portion of the main post; however NZ III may extend to encompass additional Family housing units on post. These changes may occur due to a potential for increasing the number of 155mm artillery rounds fired and due to an increase in nighttime artillery and mortar firing. Figure 4.2-3 below depicts the noise contours of SBMR following implementation of the SBCT stationing decision.

Figure 4.2-3. Anticipated Noise Levels at Schofield Barracks



No live-fire training is conducted at SBER, only simulated training, pyrotechnic devices, and blank ammunition; East Range contains no impact areas or firing ranges.

A 65-dBA L_{dn} contour around WAAF extends into Leilehua Golf Course but not into any residential area. Aircraft flight noise at WAAF also affects residential areas on- and off-post.

There is no noise monitoring data available for DMR, KTA, or KLOA. The dominant noise sources include general aviation aircraft, vehicle traffic, limited military aircraft traffic, military vehicle traffic, and limited use of blank ammunition during Army exercises. No live-fire training occurs at DMR. Blank ammunition is primarily used at KLOA. Ordnance use at KTA consists primarily of blank ammunition and pyrotechnic devices (FEIS for the Permanent Stationing of

the 2/25th Stryker Brigade Combat Team (USAEC, February 2008)). Some noise effects from ordnance use at KTA may be experienced at nearby residential areas.

4.2.6.2 Environmental Consequences

No Action Alternative: (Significant Adverse)

Under the No Action alternative, the current levels of noise created by Army activities would not change from the conditions described in 4.2.6.1, other than as discussed as a part of pre-existing trends and the ongoing actions discussed below.

Under the No action alternative, the expected noise impacts from training range infrastructure construction at Schofield Barracks and Oahu training sites are expected to remain minor. Noise from live-fire and maneuver training will continue to be produced at existing levels, and are expected to remain less than significant except at SBMR, levels that already represent a significant impact.

Cantonment Construction. Under the No Action Alternative, no additional cantonment construction is required in USAG-HI. With existing, on-going and limited currently planned non-GTA projects, the garrison has critical facilities available to support existing units' living, administrative, and vehicle maintenance requirements. Additionally, some construction renovation may occur at SBMR on as needed basis in the future. No additional noise impacts are expected.

Range Infrastructure Construction. No new ranges would be constructed under the No Action alternative. Planned construction and maintenance projects would proceed, and would temporarily increase human presence and activity at construction sites. These include ranges planned as part of the 2/25th SBCT stationing at SBMR, including a BAX at SBMR and the completion of QTR2 at SRAA. Individual items of construction equipment typically generate noise levels of 80 to 90 dBA at a distance of 50 feet. With multiple items of equipment operating concurrently, noise levels can be relatively high during the day at locations within several hundred feet of active construction sites. The zone of relatively high construction noise levels typically extends to distances of 400 to 800 feet from the site of major equipment operations. Locations more than 1,000 feet from construction sites seldom experience significant levels of construction noise. As noise increases from range construction will be temporary, and the nearest noise-sensitive areas are well over 1000 feet away, less than significant impacts are expected.

Live-Fire Training. There would be no change in the number or type of rounds used during live-fire training. Noise contours are not expected to extend beyond current limits. Much of the cantonment area at SBMR would remain impacted by Zone III and Zone II noise conditions. A large portion of the family and troop housing and two elementary schools on the Main Post are exposed to undesirable noise levels. Continued exposure of troop housing and family housing areas at SBMR to Zone III and Zone II noise conditions would be a significant and unavoidable impact under No Action.

Maneuver Training. Maneuver training will continue to occur and will be distributed throughout the existing maneuver areas on Oahu: SBMR, DMR, and KTA. This would include maneuver training of the 2/25th SBCT and other units. Maneuver training will remain a combination of on-road and off-road areas. Current levels of helicopter and fixed-wing aircraft flight operations

would continue over SBMR and SBER, and UAV flight operations also would be conducted. Significant impacts are not expected because maneuver training would occur within the boundaries of established training areas where sensitive noise receptors are fewer. Noise impacts from maneuver training would be less than significant.

All Stationing Scenarios: (Significant Adverse)

Cantonment Construction: **Less than Significant (All Scenarios)**

Temporary noise impacts from construction would last the duration of the cantonment construction period under all CS/CSS unit stationing scenarios. Noise associated with construction equipment will generally produce levels of 80 to 90 dBA at a distance of 50 feet. Permissible noise exposures identified by the Occupational Safety and Health Administration (OSHA) (29 CFR 1910.95) for an 8-hour work day is 90 dBA. Construction noise would be generated at SBMR and South Range as part of all CS/CSS stationing scenarios. Additional construction would occur at WAAFunder the 3,000 person CS stationing scenario with construction needed to support the Unmanned Aerial Surveillance (UAS) unit and under the CAB stationing scenario.

With multiple items of equipment operating concurrently, noise levels can be relatively high during the day at locations within several hundred feet of active construction sites. The zone of relatively high construction noise levels typically extends to distances of 400 to 800 feet from the site of major equipment operations. Locations more than 1,000 feet from construction sites seldom experience significant levels of construction noise.

Potential construction locations at South Range, WAAF and SBMR are at distances greater than 1,000 feet from the nearest existing civilian residences. Construction is not anticipated to have significant impacts outside the installation boundary. Given the temporary nature of proposed construction activities, and distance to off-post noise receptors, CS/CSS stationing scenarios are anticipated to have a less than significant effect.

Training Range Infrastructure Construction: **No Impact**

No new ranges would be required to support these stationing scenarios, therefore no effects are anticipated.

Live-fire Training. **Significant Adverse (All Scenarios)**

Impact 1: Noise from ordnance use. Noise levels from weapons firing and ordnance detonations are quite variable, with noise levels at long distances influenced in part by weather conditions. Small arms firing, which would occur under all stationing scenarios, can produce relatively high peak noise levels at localized areas around the range. High explosive munitions detonations can produce high energy low frequency noise events. Equations for estimating noise from small arms firing typically predict the peak unweighted dB value (Lpk). Because human hearing does not respond as rapidly to impulse noise events as do noise monitoring instruments, the 1/8 second Lmax noise level measurement is a better indicator of how people perceive impulse noise than the unweighted peak dB measurement. The 1/8 second Lmax value typically would be about 15 to 20 dB lower than the Lpk measure. Limited studies of annoyance from noise near civilian shooting ranges have found that the A-weighted 1/8 second Lmax value is the most useful predictor of annoyance. For most small arms types, the A-weighted decibel value would

be about 3.5 dB lower than the unweighted decibel value. Thus, the A-weighted Lmax for small arms firing is about 20 dB lower than the peak unweighted dB value.

As indicated by past estimates of noise contours around WAAF and by the noise contours for large caliber weapons, firing noise levels associated with SBMR do not cause noise levels in off-post residential areas to exceed generally accepted land use compatibility criteria. The Army anticpates a slight expansion of Zone II conditions and some small changes in the location of Zone III conditions within the SBMR ROI. The expansion of Zone III noise conditions would be anticipated in conjunction with CS unit stationing. Noise zones would impact additional troop and family housing areas on the eastern side of the Main Post.

Zone II conditions would affect some undeveloped areas north and south of SBMR, but are not anticipated to expand into existing off-post residential areas. Solomon Elementary School and Hale Kula Elementary School would remain under the Zone II noise contour. Some additional family housing units would be encompassed by the Zone III contour in this area.

Large detonations would not increase under CSS stationing scenarios and no artillery assets are being proposed for stationing in Hawaii as part of the proposed stationing scenarios.

Although the numerical increase in noise levels within the cantonment area at SBMR would be small resulting primarily from a 5% to 15% increase in small arms and crew served weapons quailifications, existing noise levels already represent a significant impact. Therefore, noise from increased ordnance use under the Proposed Action would remain a significant impact on people residing on or working at SBMR.

Due to the proximity to housing units the installation generally avoids using their QTRs beyond 2000 hrs (8:00 PM). This stationing scenario may result in the need for expanding range times beyond 2000 hrs, which may have potential affects to nearby residents. As hours of live-fire operations may extend, an increased level of nighttime noise may be audible at Solomon Elementary School and Hale Kula Elementary School; however, because regular educational hours are during the daytime, and because the majority of elementary school extracurricular activities (including plays, recitals, or meetings) are likely to occur prior to 8:00 PM, these impacts are not anticipated to affect school-related activities.

Only a marginal increase in live-fire activities is projected under CS/CSS stationing scenarios, and would not be anticipated to have any new effects on wildlife populations.

Mitigation 1: Although there are likely no mitigation measures that are available to reduce the identified significant impacts to a level below significance thresholds, certain mitigation measures may be available to reduce these identified impacts. Potential mitigation measures for identified impacts to the local noise environment include the following:

- The Army routinely evaluates training techniques, scheduling, and location to reduce overall noise impacts at SBMR. In these evaluations, the Army considers the benefit of timing restrictions on training and moving certain training activities to PTA.
- The Army proposes to provide noise-insulating measures whenever new buildings are constructed or existing buildings are renovated, such as modifications to window materials and cooling systems to noise-sensitive land uses that are or that may become exposed to Zone II and Zone III noise conditions.

- The Army will continue to work with local residents to minimize impacts of noise generating training events.

Unlike SBMR, the other USAG-HI training areas do not have significant existing noise concerns. Therefore, the minor increase in noise attributable to the proposed action is expected to cause a less than significant impact at DMR, KTA, and KLOA.

Blank ammunition and ground-based smoke generating items are the only types of ordnance that would be used at DMR. Small arms firing with blank ammunition can produce relatively high peak noise levels at distances of up to 3,000 feet and might remain audible at distances of up to 1.5 miles. The 1/8 second Lmax noise level from blank ammunition is typically about 71 to 78 dBA at 2,000 feet and 50 to 57 dBA at 1 mile. Noise levels from firing blank small arms ammunition typically drop below levels that cause substantive annoyance at distances of 2,500 to 3,000 feet. The closest residential areas are more than 2 miles from the areas where blank ammunition would be used at DMR. Noise effects from ordnance use at DMR would be less than significant.

Blank ammunition, SRTA, and various pyrotechnic devices are the only types of ordnance items that would be used at KTA. Only blank ammunition is used at KLOA. The closest residential areas are about 1 mile from the areas where training ammunition would be used at KTA. Noise effects from ordnance use at KTA would be less than significant.

Maneuver Training: **Less than Significant (All CS/CSS scenarios)**

Noise levels along on-post roadways and along military vehicle trails would increase. However, overall traffic volumes and vehicle speeds generally are low for these types of roadways. As a result, noise increments attributable to vehicle traffic would remain within the Army's land use compatibility guidelines.

Traffic on military vehicle trails between SBMR and other installations would increase noise levels along the trail corridors during the periods of vehicle travel. Because there are no noise-sensitive land uses immediately adjacent to Helemano Trail, these noise levels would constitute a less than significant impact. The smaller size of vehicle convoys to DMR would result in lower noise levels along the Dillingham Trail than along the Helemano Trail.

Military vehicle maneuvers would occur along unpaved roads and in various off-road areas at SBMR and SBER. Peak pass-by noise levels would drop by 15 dBA at a distance of 500 feet from the travel path. Vehicle maneuvers would occur during both daytime and nighttime hours, making vehicle maneuver activity noise an issue of concern where residential land uses and school sites are close to SBER boundaries.

Because vehicle speeds are low during most maneuver activities and vehicles tend to be relatively dispersed during off-road maneuvers, maneuver activities would be expected to produce hourly average noise levels of less than 55 dBA at a distance of about 500 feet, with brief peaks of 65 to 70 dBA. Such noise levels would not cause significant noise effects at off-post noise-sensitive land uses during daytime hours. These noise levels would be more disturbing during nighttime hours. The Army has established a 1,000-foot noise buffer along those portions of SBER that border residential areas of Wahiawa. As long as nighttime vehicle maneuver activity is minimized in this buffer area, vehicle noise from training and maneuver activities would be less than significant.

Most military vehicle travel to and from DMR would occur on Dillingham Trail. In addition, vehicle maneuver training would occur at DMR. During an individual training activity at DMR, fewer than 75 vehicles are operating at any one time. Generally, fewer than 60 vehicles would travel in a convoy to DMR on the Dillingham Trail per hour. Resulting hourly average traffic noise levels along Dillingham Trail would be about 65 dBA at a distance of 100 feet from the vehicle trail. Vehicle activity within DMR would produce comparably low noise levels. Consequently, noise from military vehicle use at DMR would constitute a less than significant impact.

Most military vehicle travel to and from KTA and KLOA would occur on the Helemano Trail and Drum Road. In addition, vehicle maneuver activity would occur at KTA. During an individual training activity at KTA and KLOA, up to 241 vehicles are expected to be operating at any one time, with up to 216 vehicles using Helemano Trail and Drum Road to reach KTA. For the maximum number of vehicles, resulting hourly average traffic noise levels along Helemano Trail and Drum Road would be about 72 dBA at a distance of 50 feet from the vehicle trail and about 64 dBA at 200 feet from the vehicle trail. Vehicle activity within KTA and KLOA would produce comparably low noise levels, so noise from military vehicle use at KTA and KLOA would constitute a less than significant impact.

As CS and CSS units would utilize the same types of equipment (trucks, light tactical vehicles, etc.) that are currently used in Hawaii, impacts are projected to be less than significant from maneuver training. Noise impacts would be projected to be similar in volume and duration of current maneuver activities. The increase in the number of noise generating events is expected to be directly correclated to the 2.5% to 7.5% increase in maneuver training under CS and CSS stationing scenarios.

With only a minor increase in maneuver activities projected under CS/CSS stationing scenarios, less than significant impacts are anticipated for any biological noise receptors.

The noise effects that would be produced from convoy travel on public roads (when traveling between maneuver areas and their home station) would be short-term, as these activities are intermittent and are usually mitigated through standard operating procedures for convoy maneuver. A convoy is normally defined as six or more military vehicles moving simultaneously from one point to another under a single commander, ten or more vehicles per hour going to the same destination over the same route, or any one vehicle requiring a special haul permit. Per command guidance, USAG-HI convoys normally maintain a gap of 15 to 30 minutes between serials (a group of military vehicles moving together), 330 feet between vehicles on highways, and 7.5 to 15 feet while in town traffic. Per state regulation, military convoys are not authorized movement on state highways during peak-hour conditions (between 6:00 AM and 8:30 AM and 3:00 PM and 6:00 PM, Monday through Friday). Movements on Saturday, Sunday, and holidays would be by special request only. The Garrison would continue to implement policies on convoy travel that would mitigate adverse effects from vehicle noise.

Combat Aviation Brigade (2,800): (Significant Adverse).

Impacts from cantonment construction, range construction, and live fire training at SBMR and Oahu training sites are captured as part of discussion above. Maneuver training impacts are projected to have significant impacts to both human and biological noise receptors and are presented as a separate discussion.

Maneuver Training. The addition of an aviation brigade would not change the type of flight operations at WAAF, KLOA or SBER, however it would be projected to roughly double the use of these areas for aviation training.

The 65-dBA Ldn contour around WAAF extends into Leilehua Golf Course but not into any residential area (USAEHA 1993; U.S. Army CHPPM 1999). Overall changes in airfield vicinity noise levels would be significant.A large increase in helicopter flight operations would take place over SBMR and SBER

Data summarized in U.S. Army CHPPM (2001) indicate that annoyance with individual aircraft and helicopter flyover and flyby events can be correlated with maximum noise levels during the event. Even though actual noise levels at off-post locations may not be very loud, the tonal characteristics would make helicopter noise increments readily distinguishable from normal background noise conditions. Thus, the overall increase in helicopter flight activity over the Keamuku Parcel would be noticeable to residents of Waikii Ranch and probably would lead to an increase in the frequency of noise complaints. Overall noise levels at Waikii Ranch would remain within the Army's guidelines for noise levels compatible with residential land uses. Though the change in noise conditions would be readily noticeable, this effect is considered less than significant.

Helicopters normally operate at low flight altitudes, often within 300 feet of ground level. The Army would continue to work with affected communities on noise buffers and may adjust the buffer size depending on these discussions. Noise from aircraft operations at PTA and BAAF would constitute a less than significant impact.

Impacts to Biological Receptors: **Significant Adverse**

A number of studies have documented bird response behavior to noise. Stone (2000) conducted a study near Boulder, Colorado, and identified a decrease in species richness with increases in noise levels. He noted species composition shifted, with certain species being more common in more noisy areas.

On military installations, noise is a consequence of training activities. Rounds are fired, helicopters carry troops and supplies, and airplanes and jets support mission needs. The presence of birds is an obvious concern on runways (e.g., Bird/Wildlife Aircraft Strike Hazard or BASH),and recently, the military’s impact on bird populations has been of interest.

Ward et al. (1999) examined species behavior response to aircraft. *Branta bernicla nigricans* (Pacific brant) and *B. canadensis taverneri* (Canada goose) were found sensitive to aircraft overflights. The species were more sensitive to small aircraft lateral distance than altitude. The species were more responsive to helicopters than to propeller planes for most combinations of altitude and lateral distances studied. Ward et al. (1999) concluded the spectral characteristics of the aircraft, rather than noise intensity, were the reason. Helicopters tend to produce a low frequency impulse noise from rotor blades.

In another study, Delaney et al. (1999) attributed differences in reproductive success between *Strix occidentalis lucida* (spotted owls) exposed to military helicopter over-flights and those not

exposed to attrition and not to a treatment effect. Delaney et al. (1999) noted owls flushed more often to a distant stimulus compared to a close in one, and as noise levels increased over time. Owls were minimally affected by flights greater than 150 meters (492 feet) away. Aerial disturbances appeared to be tolerated because they were short in duration, noise levels increasedgradually, the source provided minimal visibility, and the disturbances were not associated withhuman activities (e.g., long lasting or abrupt ground disturbances such as with a chain saw).Delaney et al. (1999) speculated that hovering and slow maneuvers would increase flush responses.

Helicopter activities have a long history at Fort Carson Military Reservation (FCMR), Colorado, compared to Pinon Canyon Maneuver Site (PCMS), Colorado, which had no helicopter activity prior to the following study. *Buteo jamaicensis* (red-tailed hawk) response to low-level air traffic was compared between the two locations. Birds at the PCMS exhibited a stronger response behavior to overflights than did those at the FCMR, suggesting habituation had occurred at the FCMR (Anderson et al. 1990).

A second group of studies notes bird behavioral response to ground noises. Brown et al. (1999) monitored individual *Haliaeetus leucocephalus* (bald eagle) reactions to weapons testing at Aberdeen Proving Ground, Maryland, at three nests (11 individuals) and two large communal roosts (58 birds). The nests were 0.5 to 4 kilometers (0.3 to 2.5 miles) from test ranges and multiple firings were common. Observed reactions to firing were infrequent, suggesting habituation had occurred. Similar results were documented at Fort Lewis Army Reservation, where only 8% of 1452 *Haliaeetus leucocephalus* (bald eagle) flushed during 373 weapon firing events (Stalmaster and Kaiser 1997). Flushing response was most common to automatic weapons (9%), followed by artillery impacts (6%), mortar impacts (4%), and small arms fire (3%). As distance increased between nests and weapons firing, flushing response decreased.

The noise response to military activities has been studied on a single Hawaiian species, *Chasiempis sandwichensis ibidus* (elepaio). VanderWerf (2000) recorded two responses to 238 artillery blasts. Both cases concerned an incubating male that was preening and had his head down at the time of the blast. The bird appeared to locate the source of the sound and returned to preening in seconds. When bird behavior was compared between Schofield Barrack's sites with a site without artillery blasts (Honouliuli Reserve), there was no statistical difference in incubation or nestling stages. Both attendance and hourly feeding rates were the same. Nest failure was the same between the two sites. Even with varying levels of sounds, there were no perceived effects.

Distance is often the single most important predictor of response, followed by duration of the disturbance, visibility, number of disturbances per event, and stimulus position relative to the affected individual (Grubb and King 1991). While military activities might evoke behavioral effect responses, noise probably has not excluded native species from the installation.

Noise not only has the potential to affect bird behavior, but also bat behavior. The effect of noise on bats is documented for continental United States species. *Myotis sodalis* (Indiana bat) hibernation can be disrupted by disturbances in and near hibernacula. Disturbances elicit an energetic cost (i.e., loss of fat) due to awakening that cannot be replaced (Hall 1962). When military maneuvers were conducted near a roost cave, *Myotis grisescens* (gray bat) abandoned the cave. Colonies showed strong home range fidelity, and Tuttle (1979) suggested cave abandonment could lead to the loss of an entire colony. Maternity caves are most harmed from late May through mid-July and hibernation caves from mid-August through April (Mitchell 1998).

In contrast to continental U.S. bat species, *Lasiurus cinereus semotus* (Hawaiian hoary bat) is a nonmigratory, solitary species that nests in trees (FWS 1998a). Because of favorable year-round environmental conditions, the species probably does not hibernate. Little is known about the species because of its solitary nature, but because the taxon is not colonial and probably does nothibernate, noise may not be as important a factor compared to its relatives.

No wildlife-based noise analysis study has been conducted at SBMR or Oahu training sites. Given the noise impacts from a large percentage increase in Helicopter maneuvers, impacts to biological noise receptors are assumed to be a significant adverse impact. Impacts to sensitive species may occur to the species, particularly avian species which are listed in Appendix F. Appendix G provides a comprehensive list of sensitive species in Hawaii.

Mitigation 2: Although there are likely no mitigation measures that are available to reduce the identified significant impacts to a level below significance thresholds, certain mitigation measures may be available to reduce these identified impacts. Potential mitigation measures for identified impacts to the local noise environment include the following:

- The Army routinely evaluates training techniques, scheduling, and location to reduce overall noise impacts at SBMR. In these evaluations, the Army considers the benefit of timing restrictions on training and moving certain training activities to PTA.
- The Army proposes to provide noise-insulating measures whenever new buildings are constructed or existing buildings are renovated, such as modifications to window materials and cooling systems to noise-sensitive land uses that are or that may become exposed to Zone II and Zone III noise conditions.
- The Army will continue to work with local residents to minimize impacts of noise generating training events.

4.2.7 Soil Erosion

4.2.7.1 Affected Environment

The topography of USAG-HI ranges from nearly flat to sloping, to steeply sloping terrain, dissected by mountain ranges. Soils generally consist of volcanic ash and silty clays, and are high in magnesium, calcium, and iron. The soils are moderately permeable with slow surface water runoff (U.S. Army, 1995.) A brief description of soil characteristics and erodibility for the region of influence is included in the paragraphs that follow.

The USAG-HI Integrated Training Area Management (ITAM) program is responsible for inventorying and monitoring land conditions, educating land users to minimize potential adverse impacts from use, integrates training requirements with land capacity, and provides land maintenance and rehabilitation practices. The Garrison manages the soils there primarily by managing natural water run-off rates, erosion, and sedimentation in streams and other waterbodies to ensure the continued and sustainable use of resources.

The main post of SBMR is geographically located within the Waianae Range geomorphic province with the Kaukonahua stream to the east, and the town of Wahiawa to the west. The elevation there ranges from 660 feet above mean sea level (amsl) to approximately 3,000 feet amsl. The soils there are similar to much of the rest of the Hawaiian Islands, thin, acidic, and

derived from volcanic ash and high in organic matter. Soil erodibility is moderate to high (USAG-HI, 2007).

Much of the South Range area is south of Waikele stream, and is comprised of east-sloping upland sloping from an approximate elevation of 1,200 feet amsl in the southwest to roughly 850 feet amsl near WAAF in the east. The upland area is divided by Waikele Gulch and several north-draining tributaries to Waikele stream. The soils there are underlain by Kunia silty clay; however soils on the east side of the area include Kolekole silty clay loam and Mahana silty clay loam. Water runoff is low and presents a slight erosion hazard. It is important to note that the State of Hawai'i classifies South Range as being "important farmland" because it supports un-irrigated pineapple culture.

WAAF is located between the SBMP and SBER facilities, at the southern portion of the Schofield Plateau. Wheeler is mainly flat with gentle slops and has an elevation range of 860 feet amsl to 790 feet amsl. The soils there are well drained and are at least four (4) feet thick, developed on alluvium over weathered basalt. Water runoff is slow. The erodibility of soils there is minimal, except for the area nearby Waikele stream, which has a high erosion hazard.

The SBER facility is bound between the Kauhonahua watershed and the Waikele watershed in the south. The northern boundary lies between the Kaukonahua watershed and Poamoho watershed. The elevation there ranges from 2,681 feet amsl to approximately 850 feet amsl. The area is comprised of rugged terrain and steep stream valley walls. The East Range contains thin soils and is considered rough mountainous land. Soils there are underlain by saprolite. The ridge tops are poorly drained, consisting of silty clays and high in organic matter retaining a high compaction potential and moderate erosion potential. Soils found downslope of these areas are generally composed of silty clay. On the gentler slopes of the facility, soils can be gravelly with a slight to moderate erosion potential.

The elevations of KTA and KLOA range from approximately 1,860 feet amsl to at or near sea level. The soils there primarily consist of silty clay which is well drained and runs deep in the subsurface. Sloping areas are comprised of moderately fine to fine subsoil which raises the erodibility of the soils on steep slopes to high. The Paumalu-Badland Complex soils exhibit medium to rapid runoff and have a medium erosion potential. The Badland area contains rocky land with a high erosion potential due to existing erosion caused by wind and water. The KTA area has experienced a high soil loss due to training operations.

DMR is on O'ahu's Waialua Plain and extends to the Waianae Range. Elevation ranges from near sea level on the northern boundary to 200 feet near the southern boundary. Soils at DMR are developed on beach sand deposits, with various mixtures of finer and coarser sediments. Most of the area is underlain by Jaucas sand, which has been disturbed or filled to construct the airstrip, roads, and building sites. DMR also contains boggy seasonal wetlands, which are underlain by Lualualei clay, and marginal sloping uplands predominantly underlain by Kaena very stony clay or other stony or rocky soils. The Jaucas sand is highly susceptible to wind erosion. Kaena very stony clay exhibits moderate to severe water erosion (USAG-HI 2004).

4.2.7.2 Environmental Consequences

No Action Alternative: (Significant but Mitigable)

Under the No Action alternative, the Army activities contributing to soil erosion would not change from the conditions described in 4.2.7.1. Construction of cantonment and range projects will proceed as they are planned, and will temporarily create conditions promoting soil loss. Live-fire and maneuver training will continue to disturb soil and remove vegetation creating the potential for soil erosion.

Standard range maintenance BMPs implemented by USAG-HI include road grading, target repair, and berm recontouring. Mitigation measures, implementation of the ITAM annual work plan, and BMPs are followed to minimize soil loss and mitigate impacts to a less than significant level.

Cantonment Construction. Under the No Action Alternative, no additional cantonment construction is required in USAG-HI. With existing, on-going and limited currently planned non-GTA projects, the garrison has critical facilities available to support existing units' living, administrative, and vehicle maintenance requirements. Additionally, some construction renovation may occur at SBMR on as needed basis in the future.

Range Infrastructure Construction. No new ranges would be constructed under the No Action alternative. Planned construction projects would proceed, and create soil disturbance at construction sites. These include ranges planned as part of the 2/25th SBCT stationing, including a BAX at SBMR and the completion of QTR2 at SRAA. Road and trail construction projects such as Dillingham Trail could also contribute to soil loss. During construction, erosion by both wind and water could occur, and is dependant upon terrain, the type of construction, and soil types. In general, soil loss from range construction projects would not be significant. Mitigation measures are followed to minimize soil loss and maintain impacts to less than significant. These measures include land management practices and procedures described in the ITAM annual work plan. Examples of erosion and sediment control measures identified in the ITAM annual work plan include stormwater runoff control structures (silt fences, hay bales, etc.) as part of standard BMPs, which would divert water from the construction sites. Standard range maintenance BMPs implemented by USAG-HI include road grading, target repair, and berm recontouring. Mitigation measures, implementation of the ITAM annual work plan, and BMPs are followed to minimize soil loss and mitigate impacts to a less than significant level.

Live-Fire Training. Under the No Action alternative, there would be no change to the nature of live-fire training on SBMR or KTA. While weapons firing would typically occur in existing impact areas and the frequency of the training events would not change, surface disturbance caused by munitions impact would result in larger areas of bare ground than observed under current conditions. Munitions impact can directly create craters and remove patches of vegetation, which normally protect soil from erosion by slowing runoff, intercepting raindrops before they reach the soil surface, and anchoring the soil. Standard range maintenance BMPs implemented by USAG-HI include road grading, target repair, and berm recontouring. Implementation of erosion control measures such as stormwater runoff control structures, revegetation projects, mulching, and other measures under the ITAM annual work plan,as well as the standard range maintenance BMPs described above would minimize soil loss and mitigate impacts to a less than significant level.

Maneuver Training. Mounted and dismounted maneuver training of existing vehicles would continue. The authorized number of Maneuver Impact Miles (MIMs) would continue to be executed at designated maneuver training areas. This is expected to damage or remove vegetation and disturb soils to an extent that could increase soil erosion rates and alter drainage patterns in the training areas, which could lead to gullying, and indirectly to downstream

sedimentation, particularly when the vehicles travel off-road. Mitigation measures, implementation of the ITAM annual work plan, and BMPs are followed to minimize soil loss and mitigate impacts to a less than significant level.

CS/CSS Stationing Scenarios: (Significant but Mitigable).

Cantonment Construction: **Less than Significant**

Short-term and long-term effects would occur from construction at SBMR and South Range as part of these stationing scenarios. The proposed construction at SBMR involves construction in the existing cantonment area with new construction occurring in previously disturbed agricultural lands that would be converted to use for support of military garrison activities. Stormwater management practices are already in place to mitigate potential adverse effects from sediment runoff in SBMR.

Construction would result in vegetation removal and would be projected to result in soil loss, particularly during construction. Soil loss from construction on Oahu would be anticipated to be primarily from water erosion because of the soil properties and moisture content of the soils.

At the South Range construction site, soil could accumulate in culverts at gulch crossings, resulting in flooding and possible washouts of the roadway. Cantonment construction is expected to cause direct, short-term, localized soil erosion impacts when ground surfaces are disturbed to construct SBMR, South Range, and WAAF facilities as part of proposed stationing actions.

Construction activities would result in the compaction of soils, reducing the likelihood for vegetation to re-establish itself and increasing the effects from wind erosion or precipitation. Soils transported away from the construction area may accumulate in gulches, gullies, or to other areas where post-precipitation event water may carry sediments to other waterbodies. Direct short-term effects may occur as construction equipment would disturb soils as a result of digging and excavation, increasing the potential for loose soil particles to be carried away by wind or precipitation.

The Army would construct stormwater runoff control structures as part of standard BMPs, which would divert water from the construction sites. Compared to existing conditions, increased soil erosion resulting from range construction activities is expected to be short-term, local, and less than significant with implementation of standard construction BMPs and the land management practices.

Under 3,000 Soldier stationing scenarios, more short term exposure and loss of soils from construction activities would occur compared to 1,000 Soldier stationing scenarios. All impacts would be considered less than significant for the reasons sited above, however.

Training Range Infrastructure Construction: **No Impact**

No effects are anticipated. Range construction is not expected to be required in support of these stationing scenarios.

Live-fire Training: **Significant but Mitigable**

Weapons firing can typically involve the disturbance of soils, denuding the soil surface of vegetation and increasing the erodibility of soils. While weapons firing would typically occur in existing training areas the frequency of the training events would increase and potentially cause a greater amount of soil disturbance, resulting in larger areas of bare ground than what is observed under current conditions.

For CS units, the use of ordnance items (such as the MK-19 Grenade Machine Gun) or explosives (associated with EOD personnel) could cause wildfires resulting in the removal of large areas of vegetation that normally protects soil from erosion by slowing surface runoff, intercepting raindrops before they reach the soil surface, and anchoring the soil with roots. Without surface vegetation the top layer of soils may be transported away due to natural processes, and the soil remaining may become compacted leaving little opportunity for vegetation (especially native vegetation) to re-establish itself. Vegetation removal resulting from wildland fires could result in increased soil erosion by water and wind, indirectly causing large-scale removal and redeposition of soils, gullying, or unstable slopes in areas of steep slopes and rapid runoff. The impact would be directly proportional to the size of the fire. Under natural conditions, wildland fires occur infrequently in Hawai`i, partly due to lack of lightning. Thus, native plant species are not well adapted to fire. Fire and loss of soil could reduce native plant species and encourage fast-growing nonnative species that recover quickly after fires. Some of these species may be more susceptible, or even dependent, on fire so that the occurrence of wildland fires may help to increase the chance of future wildland fires. The installation's wildfire management plan would be utilized to minimize the effects of live-fire activities to vegetation while maintaining effects to a manageable area.

Regulatory and Administrative Mitigation 1: Installation DPW staff monitors impacts from live-fire activities and would continue to institute the required mitigations and BMPs (such as berm revegetation and regrading) to minimize effects off the firing ranges (DAMO TRS Range & Training Land Complex Maintenance Memorandum, 30 August 2007; AR 350-19).

Regulatory and Administrative Mitigation 2: During range operations and live fire activities, range officers and firing units are required to carry equipment to put out a small fire and are briefed on procedures for reporting fires to range control for rapid fire prevention response.

Maneuver Training: **Significant but Mitigable**

The increased mounted and dismounted traffic on ranges may damage or remove vegetation and disturb soils to an extent that would substantially increase soil erosion rates and alter drainage patterns in the training areas, which could lead to gullying, and indirectly to downstream sedimentation, particularly when the vehicles travel off-road. It should be noted that off-road travel by CSS units is rare; these units are much more likely to use trails or roads and leading to a less than significant impact. The total number of MIMs executed at SBMR and Oahu training maneuver area's would represent a 2.5% -7.5% increase depending on the stationing scenario. Maneuver use by CS/CSS units would occur in existing maneuver areas and would not be qualitatively different from the training that currently occurs at these sites.

CSS units transporting armored vehicles, feul and logistics would speed the wear of existing trail infrastructure as well as sedimentation, gullying and erosion which can be associated with high use road and trail infrastructure.

Drum Road would be used by to transport Soldiers, vehicles, and equipment to KTA. The soils in maneuver areas at KTA are generally well drained, however they have experienced a high rate of loss due to recent training operations. The addition of vehicle maneuvers there may continue to increase the rate of erosion and decrease the sustainability of soils in that training area. Management of soil sustainability at KTA would become more time intensive as more monitoring and mitigation may be required.

DMR would continue to support some maneuver training. Large scale exercises would be supported at PTA. Less than significant effects on land condition may occur because the land damage would be limited to the existing roads and trails instead of distributed over the entire DMR. As with KTA, the effects would be minimized due to USAG-HI institutional programs to include the ITAM program.

The soils at KLOA primarily consist of silty clay which is well drained and runs deep in the subsurface. Sloping areas throughout the range have finer soils and are more prone to erosion from maneuvers and potentially increasing the effects to surface waters there from sedimentation. Due to the terrain at KLOA, only a small amount of ground maneuver can be supported. Mainly maneuver is dismounted, occurring from helicopters transporting Soldiers to the training area. Limited impacts would occur from stationing of 1,000 CS or CSS Soldiers.

Regulatory and Administrative Mitigation 1: The Army continually funds and implements USAG-HI-wide land management practices and procedures described in the ITAM annual work plan to reduce erosion and other soil and geologic impacts (USARHAW 2001a and USARHAW 2001b). Currently, these measures include implementing a TRI program, implementing an ITAM program, implementing an SRA program, developing and enforcing range regulations, implementing an Erosion and Sediment Control Management Plan, coordinating with other participants in the Koolau Mountains Watershed Partnership (KMWP), and continuing to implement land rehabilitation projects, as needed, within the LRAM program. Examples of erosion and sediment control measures identified in the ITAM annual work plan include stormwater runoff control structures (silt fences, hay bales, etc.) as part of standard BMPs, which would divert water from the construction sites. Standard range maintenance BMPs implemented by USAG-HI include road grading, target repair, and berm recontouring. Examples of current LRAM activities at USAG-HI include revegetation projects involving site preparation, liming, fertilization, seeding or hydroseeding, tree planting, irrigation, and mulching; combat trail maintenance program (CTP), coordination through the TCCC on road maintenance projects; and development mapping and geographic information system (GIS) tools for identifying and tracking progress of mitigation measures. These mitigation measures would reduce soil erosion impacts from construction to less than significant.

Regulatory and Administrative Mitigation 2: In association with new unit stationing, the Army would allocate additional funding to USAG-HI to implement road and trail maintenance to prevent excessive wear that can lead to gully erosion.

Combat Aviation Brigade (2,800), CSS (3,000), CS (3,000): (Significant but Mitigable).

Helicopter maneuver is expected to have less than significant effects at KLOA or SBER. Wind generated from helicopters at frequently used landing zones can loosen vegetation and soils. To minimize the erosive effects at landing zones the garrison anticipates the need for hardening soils there using a mixture of soil binder, gravel, and rocks, which would work to improve areas susceptible to impacts from training with attack and medium/heavy lift helicopters.

The installation would continue to implement institutional programs to include the ITAM program to mitigate these impacts.

Large-scale aviation training maneuvers would occur at PTA.

Regulatory and Administrative Mitigation 1: The Army continually funds and implements USAG-HI-wide land management practices and procedures described in the ITAM annual work plan to reduce erosion and other soil and geologic impacts (USARHAW 2001a and USARHAW 2001b). Currently, these measures include implementing a TRI program, implementing an ITAM program, implementing an SRA program, developing and enforcing range regulations, implementing an Erosion and Sediment Control Management Plan, coordinating with other participants in the Koolau Mountains Watershed Partnership (KMWP), and continuing to implement land rehabilitation projects, as needed, within the LRAM program. Examples of erosion and sediment control measures identified in the ITAM annual work plan include stormwater runoff control structures (silt fences, hay bales, etc.) as part of standard BMPs, which would divert water from the construction sites. Standard range maintenance BMPs implemented by USAG-HI include road grading, target repair, and berm recontouring. Examples of current LRAM activities at USAG-HI include revegetation projects involving site preparation, liming, fertilization, seeding or hydroseeding, tree planting, irrigation, and mulching; combat trail maintenance program (CTP), coordination through the TCCC on road maintenance projects; and development mapping and geographic information system (GIS) tools for identifying and tracking progress of mitigation measures. These mitigation measures would reduce soil erosion impacts from construction to less than significant.

4.2.8 Biological Resources

4.2.8.1 Affected Environment

The extensive boundaries and variances in elevation on SBMR and its designated training sites provide a wide diversity in wildlife habitats, highly urbanized areas, streams, native forest, and grasslands (U.S. Army, March 1995). The ROI for biological resources includes those areas where the extent of maneuver, helicopter, and live-fire associated with stationing scenarios would potential pose potential impacts to vegetation and wildlife from human activities such as construction and training. Therefore, the ROI for these scenarios could include SBMR, South Range, DMR, SBER, KLOA, KTA, and WAAF.

This section discusses the affected environment and impacts on biological resources to include vegetation, noxious weeds, threatened and endangered species, habitats, and general wildlife.

Schofield Barracks: Schofield is home to 59 rare plant species, 28 special status wildlife species, 2 rare vegetation communities, and large expanses of Biologically Significant Areas. Vegetative communities descriptions found in the ROI include: a mixed fern and shrub community found in the higher elevations of the Koolau Mountains where rainfall exceeds 150 inches. Falling between 3,200 and 4,000 feet amsl is the Montane wet okia forest, dominated largely by the okia tree. Ohia Shrubland is found at elevations between 2,500 and 3,000 feet amsl. In areas where conditions are warmer and sheltered from the wind, there are three types of lowland wet communities; these are Ohia forest, Uluhe Shrubland, and the Loulu hiwi forest. Lowland moist communities include the Kawelu grassland, Ohia lowland moist Shrubland, O'ahu diverse forest, and Koa/Ohia forest. Adjacent to these areas are swaths of nonnative grasses and shrublands found in fire-disturbed areas.

KTA & KLOA: KTA, which in total encompasses 8,528 acres, are located at the end of the Koolau Mountains, on the northern tip of O'ahu. Private, agricultural, and additional Army training lands border it. Botanical surveys to identify rare plants, communities, and potential threats to these resources have been conducted intermittently since 1977. KLOA is north of SBER and south of KTA in the Koolau Mountains. It consists of 23,348 acres. KLOA was surveyed in 1976 and 1977 by the Environmental Impact Study Corporation and later by HINHP (Hawai'i National Heritage Program) (1989 to 1993). Additional botanical and zoological information was collected on KLOA and adjacent land. Kawailoa is an area of incredible biological richness, with areas of significance for protecting and managing these resources. Native natural community types within the KTA/KLOA ROI fall into six general categories: montane wet, lowland wet, lowland forest, lowland moist, lowland dry, and intermittent aquatic natural communities**.** The areas in and around KTA and KLOA support 20 species of endangered plants, 6 species of concern, and 10 candidate species. KTA and KLOA also support two ecologically sensitive areas and nearly 1,000 acres of biologically sensitive areas. Figure 4.2-4 below demonstrates the location of plant critical habitat on O'ahu.

Much of the lower-lying vegetation of the KTA/KLOA ROI is composed of invasive plants. Several of these widespread species create dense single-species stands (Christmas berry, ironwood, strawberry guava) that shade out understory species. Two of the plants recently discovered in the ROI that are potentially devastating to the native communities of KTA are manuka (*Leptospermum scoparium*) and moho. Disturbed moist forests are most at risk from these invasions, and efforts are needed to protect the native communities within these boundaries. Most of the wildlife species inhabiting the landscape that makes up the KTA/KLOA ROI are nonnative. The Army has been conducting regular zoological field surveys on KTA and KLOA that have focused on special status invertebrates, mammals, and birds. There have been no specific reptile or amphibian surveys on KTA due to the absence of native terrestrial reptiles and amphibians on the Hawaiian Islands.

DMR: The area surrounding DMR is sparsely populated, and neighboring land is owned either privately or by the State of Hawai`i. Botanical surveys to identify rare plants, communities, and potential threats to these resources have been conducted intermittently since 1977. HINHP surveyed the area in 1995, but the visit was brief due to the small size and rugged terrain of the training area. During this site visit, HINHP staff documented the only known example in Hawai`i of extremely dry closed-canopy forest.

In 2003, the Army initiated a formal consultation with the USFWS by issuing a Biological Assessment (BA) for military activities on the island of O'ahu. The USFWS responded with no jeopardy Biological Opinion (BO) (October 2003) for current force activities and transformation of the 2/25th brigade to a SBCT on the islands of O'ahu and Hawai`i (USFWS 2003c and 2003d, respectively). The BO was issued under the condition that the listed species that have less than three stable populations and/or more than 50 percent of known individuals occur within the action area be stabilized. The consultation used an action area that encompasses all land potentially affected by military training and thus includes land outside the installation boundaries.

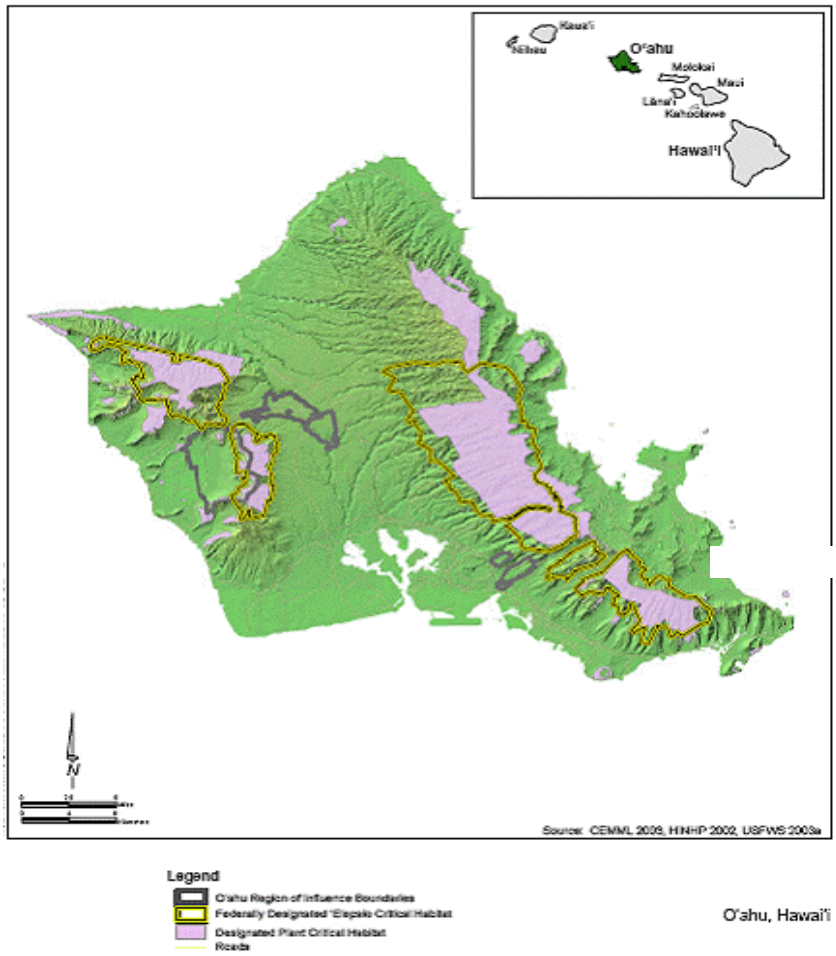


Figure 4.2-4. Plant critical habitat on O'ahu

4.2.8.2 Environmental Consequences

No Action Alternative: (Significant but Mitigable)

Under the No Action alternative, the Army activities contributing to biological impacts would not change from the conditions described in 4.2.8.1. Construction of cantonment and range projects will proceed as they are planned, and will occur in previously disturbed areas. Live-fire and maneuver training will continue, disturbing wildlife by noise and human presence. Training could increase the risk of wildfire, and mitigation measures are in place to minimize that risk. Continued use of Army lands will impact sensitive species, but not to a significant degree.

Cantonment Construction. Under the No Action Alternative, no additional cantonment construction is required in USAG-HI. With existing, on-going and limited currently planned non-GTA projects, the garrison has critical facilities available to support existing units' living, administrative, and vehicle maintenance requirements. Additionally, some construction renovation may occur at SBMR on as needed basis in the future. No additional impacts to sensitive species or their habitats would occur.

Range Infrastructure Construction. No new ranges would be constructed under the No Action alternative. Planned range construction and maintenance projects would proceed. Habitats on SBMR, DMR, and KTA/KLOA are, for the most part, disturbed natural and introduced landscapes. If activities in these areas were to occur, they would mostly affect nonnative species adapted to stressed or nonnative environments. Vegetation within the footprints of these projects, which primarily includes nonnative grasses, shrubs, and pineapple fields, would be disturbed or removed. Projects in these habitats would not adversely affect the risk to threatened and endangered species.

Live-Fire Training. Vegetation communities within the proposed range areas on SBMR, KTA, and KLOA would be disturbed by live-fire training. Army use of those ranges would produce a less than significant impact to threatened and endangered species because live-fire training would occur over a larger area and at more locations. Continued use of Army land for training under No Action would prolong impacts to threatened and endangered species. Live-fire training could potentially increase the frequency of wildfires. Several fire mitigation measures are being implemented throughout the garrison on existing ranges and would continue. These impacts from continued training would remain mitigable to less than significant impact.

Maneuver Training. No change in impacts to general wildlife and habitats is expected from the No Action Alternative. Training with existing vehicles would continue at current levels. Maneuver training would occur on established roads or trails, as well as areas designated for maneuver training throughout the installation. Wildlife would continue to be disturbed by noise and human presence during training, but the level of disturbance would not change from existing levels and remain a less than significant impact. Maneuver training could potentially increase the frequency of wildfires. Several fire mitigation measures are being implemented throughout the garrison on existing maneuver ranges and would continue. Impacts from continued training would remain mitigable to less than significant impact.

All stationing scenarios: (Significant but Mitigable).

Impacts from cantonment construction, live-fire training, and maneuver training would occur exclusively in areas that have been previously disturbed by construction or military training activities. Stationing scenarios do not involve new types of military training or changes in military land use of existing training areas. The majority of the impacted areas are nonnative vegetation and common native plants, primarily grasses and shrubs, which typically colonize denuded areas quickly and thoroughly. General wildlife and habitats would be affected by range construction and training activities. Limited intact, native habitats would be affected. Overall, impacts to general wildlife and habitats would be less than significant. Impacts would be expected to affect the introduction and spread of invasive species through movement of troops and equipment, construction, and fires. Impacts from noxious weeds would be significant, but mitigable to less than significant.

Mitigation measures, planning considerations, and BMPs contained in the INRMP, IWFMP, Biological Opinions, and Draft Oahu Implementation Plan, and other guidance documents would minimize impacts to biological resources of concern to a significant but mitigable level.

The OIP identifies additional management actions, beyond those already used by the Army, needed to stabilize these target taxa. Live-fire training from all CSS stationing scenarios and the CAB scenario fall within the levels of training that the Army has consulted with the US Fish and Wildlife service on as part of the last Biological Opinion. If at any time there is a change in the training areas or action areas, a change in the potential impacts to the species in the action area, a change in the species status, or the discovery of additional taxa the Army is required to reinitiate consultation with the USFWS pursuant to Section 7 of the Endangered Species Act. Examples of mitigation measures that would be implemented under the current proposed training scenarios by the Army at potential impact sites on Oahu include:

- Enclosure fencing of sensitive plant species to eliminate impacts from human disturbance and ungulates.
- Development and implementation of a fire fuel reduction plan.
- Development and implementation of an alien rat control plan to protect sensitive species.
- Expand monitoring programs in potential areas of impact for sensitive species.
- Establish signage to identify areas that are off limits due to the presence of federally listed species.
- Provide education for each set of new Soldiers regarding the importance of avoiding listed species and disturbance to their habitats.

In general, invasive plant species pose a threat to Native Hawaiian ecosystems. Movement of equipment into Hawaii from continental U.S. or foreign ports, as well as from other islands or subinstallations within Hawaii, would increase the likelihood of nonnative plant and animal introductions. In addition, initial transport of vehicles associated with new stationing would also elevate this threat, even though shipped vehicles go through Department of Agriculture and customs inspections as part of standard procedure.

The impact of stationing actions on the spread of invasive species would be lessened by instituting the Army's ongoing environmental programs. Measures identified inthe Oahu Training Areas INRMP (USARHAW and 25th ID[L] 2001a), the Biological Opinion for the Island of Oahu (USFWS 2003), the Transformation EIS (USAG-HI 2004,), and the Draft Implementation Plan for Oahu Training Areas (USARHAW 2008) for protection of biological resources and mitigations proposed as part of the Record of Decision for the 2/25th SBCT stationing EIS (2008) would continue as part of the proposed SBCT project actions.

USAG-HI will follow HQDA guidance developed in consultation with the Invasive Species Council and compliance with Executive Order 13112, which determines federal agency duties with regard to preventing and compensating for invasive species impacts. The implementation of an Environmental Management System will further improve the identification and reduction of environmental risks inherent in mission activities. Mitigation for Impacts from noxious weeds related to Construction and Training, as required in the terms and conditions of the BO (USFWS 2003c), include:

- Educating Soldiers and others potentially using the facilities and roads in the importance of cleaning vehicles, equipment, and field gear.
- Educating contractors and their employees about the need to wear weed-free clothes and maintaining weed-free vehicles when coming onto the construction site and avoiding introducing nonnative species to the project site.
- Preparing a one-page insert to construction contract bids informing potential bidders of the requirement.
- Inspecting and washing all military vehicles at wash rack facilities prior to leaving SBMR, KTA/KLOA, or PTA to minimize the spread of weeds, such as fountain grass, and animal (invertebrate) relocations.

Additional Mitigation: The Army would prevent any weeds brought in from becoming established by monitoring using roadside surveys and eradicating new weeds using the most effective means known specific to each of the invasive species.

- The Army would provide education regarding cleaning vehicles and field gear (these education materials will be Service approved).
- The Army would wash vehicles in wash rack facilities prior to moving from one training area to another (e.g., PTA to SBMR), to minimize weeds (e.g., fountain grass).
- Persons and equipment coming from foreign countries must go through U. S. Department of Agriculture and U.S. Customs inspections before coming into the United States.
- The Army would train and require Soldiers to clean their gear and vehicles when first arriving in Hawaii and prior to moving from installation to installation, as well as when moving from island to island.

Cantonment Construction: **Less than Significant**

The construction of cantonment facilities would occur in existing cantonment areas at SBMR and WAAF (under the 3,000 CS stationing scenario). Under all stationing scenarios a cantonment footprint would be constructed in agricultural lands of South Range.

Construction can introduce invasive species and other weeds through the use of sand and gravel that contains nonnative plant seeds. Impacts from facilities construction in existing disturbed footprints is anticipated to be less than significant. No sensitive species occur within the proposed construction footprints. Transport of construction equipment and materials has the potential to transport noxious weeds, but given the highly disturbed nature of the footprints and high percentage of non-native vegetation components in the existing construction footprints proposed for construction this is not anticipated to be a less than significant impact.

Impacts to general wildlife and habitats. Human presence and elevated noise levels would displace various wildlife species during construction; however, impacts from range construction to wildlife would not be different than the impacts from normal operations and activities occurring in the anticipated construction footprints. Increased noise as a result of construction is not expected to affect terrestrial wildlife because field surveys have shown that it is not a significant factor in behavior and does not affect reproductive success (U.S. Army Engineering

District Honolulu 2000). Impacts to general wildlife and habitats from range construction would be less than significant, and no mitigation is necessary. Measures to reduce impacts from range construction further are the same as those described previously.

Training Range Infrastructure Construction: **No Impacts**

No range infrastructure construction is proposed on Oahu under all training scenarios.

Live-fire Training: **Significant but Mitigable**

The added small arms fire and weapons qualifications would have significant but mitigable impacts to biological resources under all stationing scenarios. This action would not involve introducing new types of weapons systems to Hawaii nor would it involve an increase in live-fire training over the capacity thresholds that the Army has discussed with the US Fish and Wildlife service as part of the 2003 Biological Opinion. The type and intensity of live-fire activities is not anticipated to change; however, the frequency of live fire training on QTR 1, 2 and select live fire zero ranges would increase by between 5-15% (750,000 – 2,250,000 munitions rounds) on these ranges depending on the training scenario. 96% of the munitions fired on these ranges would be small arms and machine gun munitions. Despite the limited nature of changes in live-fire training activities, the potential increase in wildfires resultant with the proportional increase in live-fire activities of all stationing scenarios would be significant though mitigable through the measures discussed below. Stationing scenarios for 3,000 additional personnel would increase live fire activities by a projected 15% and would elevate the risk of fires more than inreases of 5% or 7.5% under 1,000 Soldier CSS and CS scenarios. An increase in fires could result in direct mortality of sensitive species and would also result in an increase in the spread of noxious weeds, loss of vegetative cover, and potential loss of soils from exposure to wind and water erosion.

Regulatory and Administrative Mitigation 1: In addition to the general mitigation measures already being implemented (IFWMP, Soldier Education, Fuel Reduction) and discussed at the beginning of this section, several fire mitigation measures are being implemented throughout the Garrison on existing ranges and would be in place under all stationing scenarios. These mitigations include:

SBMR: Two fire access roads at SBMP, one existing road surrounding the McCarthy Flats ranges and a second road encompassing the south range will be constructed. Dip ponds will be constructed at SBMP and South Range. A new fire access road will be constructed roughly following the western edge of the existing pineapple fields at South Range. These mitigations are designed to minimize impacts from wildfires.

DMR: A fire access road is planned for DMR. Fuel modification projects under consideration at DMR are maintenance of fuels along the Dillingham Military Vehicle Trail and may include prescribed burns. Areas that are overgrown would be managed through the application either of herbicide or by cutting the grass or shrubs. Prescribed burning would be used within the finished fire access road.

At KTA, nonlive-fire training with pyrotechnic devices still has the potential to ignite wildfires; and the increased number of Soldiers training would increase the risk to causing wildfires.

The number of noise generating events would increase proportionately with the increase in live fire activity. Generally speaking, the quality and availability of habitat selection (for wildlife) tend to outweigh noise disturbance generated in that habitat, especially if the noise is not continuous, which is true for live-fire ranges. Live-fire ranges accommodate scheduled training, scheduled maintenance, and are not open year round.

The noise response to military activities has been studied on a single Hawaiian species, *Chasiempis sandwichensis ibidus* (elepaio). VanderWerf (2000) recorded two responses to 238 artillery blasts. Both cases concerned an incubating male that was preening and had his head down at the time of the blast. The bird appeared to locate the source of the sound and returned to preening in seconds. When bird behavior was compared between Schofield Barrack's sites with a site without artillery blasts (Honouliuli Reserve), there was no statistical difference in incubation or nestling stages. Both attendance and hourly feeding rates were the same. Nest failure was the same between the two sites. Even with varying levels of sounds, there were no perceived effects. Distance is often the single most important predictor of response, followed by duration of the disturbance, visibility, number of disturbances per event, and stimulus position relative to the affected individual (Grubb and King 1991). The impacts to wildlife from live-fire (and similar) activities is also discussed by (Bass et al. (1972), Hartley (1989), and Kulichkov (1992)), (Dooling, and; Schubert and Smith, 2000), Gese et al. (1989), Stephenson et al. (1996), Stalmaster and Kaiser (1997).

Maneuver Training: **Significant but Mitigable. (CS and CSS stationing scenarios)**

Maneuver would occur within the footprint of existing training areas at KTA, KLOA, SBER, SBMR, South Range, and DMR. Maneuver training would not change in intensity or type of use on Oahu training areas, though frequency of maneuver training events is anticipated to increase in proportion to the increase in number of MIMs associated with each stationing scenario. Maneuver activities are projected to increase by between 2.5% for each 1,000 person CS and CSS stationing scenario at maneuver training sites on Oahu and 7.5% for each 3,000 person stationing scenario. Impacts are projected to be proportionate to the increase in maneuver training associated with each stationing scenario. These impacts would result in an associated risk of distribution of invasive species among Oahu's training sites.

At SBMR, training would occur in existing maneuver areas. Maneuver impacts would result in a reduction of vegetative groundcover and may increase the risk for establishment of nonnative vegetation in these areas. Habitats and wildlife would be impacted by loss of vegetation, deterring wildlife from foraging in these areas. Habitats that would be impacted on SBMR consist primarily of nonnative vegetation.

Maneuvers may continue to occur throughout portions of SBER. Wildlife and vegetation found in this highly disturbed area is primarily nonnative. Ground-dwelling wildlife and vegetation would be adversely impacted as a result of the increase in maneuvers. The increased use of trails under this scenario could result in the increase in the propagation of invasive species between training areas.

South Range was previously used for intensive agriculture. Potential increases in maneuver on existing trails may impact biological communities of the South Range through an increase in noise generating events, potential further degradation of vegetation and soils (which could indirectly impact surface water) near the existing trail infrastructure, and through the potential for wildfire ignition. As discussed above, wildlife may adjust to the increase in noise generating

events; and the installation's ITAM and maintenance programs would continue to monitor and mitigate impacts from increased maneuver events. As indicated above, fire mitigation measures are being implemented throughout the Garrison on existing ranges and would be in place under all stationing scenarios.

At DMR, maneuver training would occur on established roads or trails, as well as areas currently designated for maneuver training throughout the installation, and may not affect native habitats. The natural communities within the boundary of DMR are two types of lowland dry communities that are on the cliff slopes at the southern end of the training area. These areas may not be used for maneuver training and therefore may not be affected.

The slopes at KTA are steep, and training activities are generally limited by the topography to dismounted maneuvers and vehicle travel on established roads. Vegetative regrowth is fairly rapid. The majority of the training area is nonnative vegetation and common native plants, primarily grasses and shrubs, which typically colonize denuded areas quickly and thoroughly. Sensitive plant and wildlife species occur on KTA/KLOA. Manuka and heirba del solado are nonnative plants that have recently been discovered in the ROI. USAG-HI would continue to implement their invasive species management programs to minimize the spread of these species throughout the training area.

Regulatory and Administrative Mitigation 1: The Army continually funds and implements USAG-HI-wide land management practices and procedures described in the ITAM annual work plan to reduce erosion and other soil and geologic impacts (USARHAW 2001a and USARHAW 2001b). Currently, these measures include implementing a TRI program, implementing an ITAM program, implementing an SRA program, developing and enforcing range regulations, implementing an Erosion and Sediment Control Management Plan, coordinating with other participants in the Koolau Mountains Watershed Partnership (KMWP), and continuing to implement land rehabilitation projects, as needed, within the LRAM program. Examples of erosion and sediment control measures identified in the ITAM annual work plan include stormwater runoff control structures (silt fences, hay bales, etc.) as part of standard BMPs, which would divert water from the construction sites. Standard range maintenance BMPs implemented by USAG-HI include road grading, target repair, and berm recontouring. Examples of current LRAM activities at USAG-HI include revegetation projects involving site preparation, liming, fertilization, seeding or hydroseeding, tree planting, irrigation, and mulching; combat trail maintenance program (CTP), coordination through the TCCC on road maintenance projects; and development mapping and geographic information system (GIS) tools for identifying and tracking progress of mitigation measures. These mitigation measures would reduce loss of vegetation and biological soil components associated with maneuver training.

Combat Aviation Brigade (2,800): (Significant but Mitigable).

Under the scenario of stationing an aviation brigade in Hawai`i, additional studies of noise impacts to biological noise receptors on Oahu would need to be conducted. There would be an increase in helicopters utilizing SBER and KLOA for tactical flight operations which may result in some short-term effects to wildlife from noise and soils and vegetation disturbance from ground insertion and low level hovering / landing activities. Long-term impacts could occur from an increase in helicopter flights at KLOA, depending on where flights would take place. Helicopter overflights could affect the endangered plants and snails found along the summit of the Koolaus. Endangered species may also be impacted from the spread of invasive species

(introduction of seeds from increased Soldier and equipment movement). Downdraft from helicopters maneuvering near landing zones has the potential to directly affect trees hosting endangered snail species.

Large-scale maneuver associated with an aviation brigade would continue to be supported by PTA.

Regulatory and Administrative Mitigation 1: USAG-HI would implement measures in the draft Draft OIP and we would reconsult with the US Fish and Wildlife Service for PTA training if the CAB stationing scenario is selected.

Regulatory and Administrative Mitigation 1: USAG-HI would continue to implement the ITAM program in Oahu to limit the effects of soil erosion and vegetative cover which could have indirect impacts on biological resources

4.2.9 Wetlands

4.2.9.1 Affected Environment

USAG-HI has recently conducted wetlands delineation studies. Table 4.2-5 identifies the wetlands and waterbodies examined as a part of that wetlands study. More detailed information on wetland types, hydrology, vegetation types, and locations in the document titled Wetlands of USARHAW, Island of O'ahu, Hawai`i (September, 2005).

Table 4.2-5. Summary of Wetlands and Waterbodies on USAG-HI Properties

Garrison Property and Wetland Type	Wetlands and Waterbodies (acres)	Likely Wetlands, not Delineated (acres)	Regulated Wetlands (acres)
Schofield Barracks Main Post	**74.1377**	**72.8457**	**0**
South Range California Grass Areas	1.2920	0	0
Mount Ka'ala	72.8457	72.8457	0
Schofield Barracks East Range	**31.0314**	**0.4001**	**1.9112**
Ku Tree Dam & Reservoir	25.6334	0	0
Ko'olau Reservoir	1.0967	0	1.0967
NWI "Wetland"	0.7112	0	0
Cannon Dam Reservoir	1.9601	0	0
Frog Pond	0.4154	0	0
Sedge Pond	0.1713	0	0.1713
Bowl Wetland	0.6432	0	0.6432
KimChiMizu Waterbody	0.4001	0.4001	0
Kahuku Training Area (KTA)	**2.2130**	**0**	**0.0588**
Ponded Water at O'io Stream	0.5038	0	0
Onion Pond	0.0588	0	0.0588
Kaunala Gulch Waterbody	0.7542	0	0

North California Grass Meadow	0.4074	0	0
Central California Grass Meadow	0.3187	0	0
South California Grass Meadow	0.1701	0	0
Kawailoa Training Area (KLOA)	**3.0361**	**3.0361**	**0**
Pe'ahinai 'a Pond	0.3160	0.3160	0
Lehua Makanoe Bog	1.2351	1.2351	0
Poamoho Pond	1.4850	1.4850	0
Dillingham Military Reservation (DMR)	**14.2472**	**0**	**0.0834**
California Grass Meadow (north)	2.6527	0	0
California Grass Meadow (south)	11.5064	0	0
California Grass at Drainage Swale	0.0047	0	0
Perched wetland	0.0834	0	0.0834

There are two waterbodies areas located on SBMP and eight located at SBER. At SBMP, one waterbody (Lake Wilson) is located at the upper reaches of Waikele stream (South Range); the second waterbody is near Mount Kaala at the installation's western boundary. Figure 4.2-5 below shows the location of Lake Wilson as compared to the South Range area.

Figure 4.2-5. Location of Lake Wilson (center of map) as compared to the SRAA

Of the eight waterbodies located at East Range, three are classified as regulated wetlands. Waterbodies there include the Ku Tree Dam and Reservoir area, constructed in 1925; the Koolau Reservoir located in training area ER-12; there is an unnamed wetland feature located on the northern bank of the south fork of Kaukonahua stream (a non-regulated wetland); Canon Dam and its upstream reservoir; Frog Pond located on the southeast side of Wintera Trail; the Sedge Pond; the Bowl wetland; and the KimChiMizu waterbody.

Four waterbodies are present on KTA. Three of these are located in high elevation areas at the installation's southern boundary. There is a pond along the O'io stream which was formed by water accumulating behind a landslide (which is considered a stream and not a regulated wetland). There is also an open water regulated wetland (Onion Pond) at the southern portion of the training area; and an open water area in Kaunala Gulch at the southern portion of KTA. Other areas are dominated by California grass that supports some accumulation of water.

On KLOA there are three areas that are likely to be wetlands, but these have not been verified; these include Peahinaia Pond, Lehua Makanoe Bog, and Poamoho Pond. The terrain in these areas is too steep and likely is not favorable to support military training.

At DMR, the California Grass meadows are previously documented on the National Wetland Inventory (NWI) map; however, each lacked the three necessary criteria required by the 1987 COE (Corps of Engineers) Wetland Delineation Manual. Based on subsequent field visits and sampling points, it was determined that the perched, spring-fed wetland is the only site that meets all three COE hydric indicators. The perched wetland may be subject to permitting by the COE, which may in turn affect possible future development or on-going activities such as training. This, however, is unlikely due to its isolated position on the slope of the mountain. Nonetheless, its conditions should be periodically monitored in the event plans are made that could potentially and negatively impact it.

4.2.9.2 Environmental Consequences

No Action Alternative: (No Impacts)

Under the No Action alternative, the current facilities and training as described in 4.2.9.1, other than as discussed as a part of pre-existing trends and the ongoing actions discussed below. Very few regulated wetlands are present on USAG-HI, and impacts to wetlands from Army activities are expected to remain avoidable.

Cantonment Construction. Under the No Action Alternative, no additional cantonment construction is required in USAG-HI. With existing, on-going and limited currently planned non-GTA projects, the garrison has critical facilities available to support existing units' living, administrative, and vehicle maintenance requirements. Additionally, some construction renovation may occur at SBMR on as needed basis in the future. SOPs and BMPs designed to minimize impacts to wetlands and other water bodies through stormwater and erosion control would continue to be followed for future construction projects.

Range Infrastructure Construction. No new ranges would be constructed under the No Action alternative. Planned construction projects would proceed, including ranges planned as part of the 2/25th SBCT stationing, specifically a BAX at SBMR and the completion of QTR2 at SRAA. Known wetlands on SMBR, DMR, and KTA are not expected to be impacted by these or other range construction projects as the wetlands are distant from the areas likely to be developed.

Live-Fire Training. Under the No Action alternative, there would be no change to the nature of live-fire training on SMBR or KTA. No wetlands have been identified at KLOA, and no live-fire occurs at DMR, so no impacts to wetlands from live-fire training could occur at KLOA or DMR. On KTA, use of the CACTF would take place more than two miles away from Onion Pond, a regulated wetland. Therefore no impacts to this wetland are expected to occur from training at the CACTF. SOPs and BMPs designed to minimize impacts to wetlands and non-regulated water bodies through stormwater and erosion control would be followed.

Maneuver Training. Under the No Action alternative, there would be no change to the nature of maneuver training on SMBR and other Oahu training areas. No wetlands have been identified at KLOA so no impacts to wetlands could occur. SOPs (Standard Operating Procedures) and BMPs designed to minimize impacts to wetlands and non-regulated water bodies through stormwater and erosion control would be followed. Known wetlands are not presently impacted by current maneuver training; therefore, no impacts from continued training are expected.

CSS (1,000), CS (1,000), Combat Aviation Brigade (2,800), CSS (3,000), and CS (3,000): (Minimal).

Cantonment Construction: **No Impact**

No wetlands will be impacted by proposed cantonment construction at SBMR as wetlands areas are not proximal to where the construction of a barracks and parking area may occur. Mitigations concerning stormwater runoff are already in place. No additional effects from soil or sediment transport are anticipated. There are no wetlands located at or near the South Range area where potential construction could occur. Although surface water exists at WAAF, construction would take place in the footprint of previously disturbed cantonment area and is not anticipated to impact wetlands.

Training Range Infrastructure Construction. **No Impact**

No effects would occur. The existing facilities should be adequate to accommodate any of these stationing scenarios.

Live-fire Training. **No Impact**

Onion Pond (at KTA) is located more than two miles from where training may occur; additionally, live munitions are not used in this training area; therefore, no additional effects are expected. There are no wetlands in the vicinity of other live-fire areas located on O'ahu, therefore no effects are anticipated. Live-fire activity increases associated with CS/CSS stationing scenarios would occur on existing and previously planned live-fire training areas designated for live-fire use on SBMR and South Range.

Maneuver Training. **Minor Impact**

Maneuver training at SBMR (Mount Kaala) is not projected to affect wetlands areas.

A wetland delineation of DMR identified one jurisdictional wetland (USACE 2002c). This perched wetland is within DMR but outside of the area that will be used for maneuver training. An additional wetland area was also investigated at DMR. Based on an evaluation by the U.S.

Army Corps of Engineers, Honolulu District, Regulatory Branch, dated September 4, 2002, the wetland area was determined to be non-jurisdictional and not regulated under Section 404 of the Clean Water Act. Because the wetland is outside of the maneuver training area impacts are expected to be minor.

Sedimentation resultant from maneuver training could have impacts on less proximate wetlands outside of SBMR and other maneuver training sites, but given that there are no wetlands in close proximity to maneuver areas on O'ahu that could be impacted by the Soldiers in these stationing scenarios.

4.2.10 Water Resources

4.2.10.1 Affected Environment

Watersheds

The ROI for these stationing scenarios involve the housing of Soldiers and their equipment on the Island of O'ahu, and training at ranges on O'ahu and the Island of Hawai`i. Rainfall throughout the ROI is unevenly distributed and highly dependent on elevation. Above 3,000 feet amsl both islands are relatively dry; conversely the maximum amount of rainfall occurs at elevations between 2,000 and 3,000 feet amsl. At SBMP, the average annual rainfall is 43.75 inches. Comparatively, WAAF has an average rainfall of 38 inches; SBER varies from 200 inches on the crest of Koolau Range to 40 inches near Wahiawa; at KTA and KLOA rainfall ranges from 40 to 50 inches near the coast to about 150 inches at the summit of the Koolau Mountains; and DMR ranges experience an average rainfall of 20 to 30 inches annually, however the amounts vary by elevation and time of year.

SBMR lies near the drainage divide between the Kaukonahua watershed and the Waikele watershed. The principal surface water feature of the Kaukonahua watershed is the Wahiawa Reservoir (Lake Wilson), which lies just outside the eastern boundary of SBMR, east of Highway 99. The reservoir stores drainage from tributaries of the Kaukonahua Stream that originate in the Koolau Range. The reservoir receives small amounts of surface drainage from the eastern side of SBMR and is used for agricultural irrigation. The main drainages at SBMR are the Waikoloa Gulch and the Waikele Stream. The Waikoloa Gulch drains the area just north of the cantonment and joins the Kaukonahua Stream below Wahiawa Reservoir. Two other streams that drain the north part of SBMR (Mohiakea Gulch and Haleanau Gulch) are tributaries to the Kaukonahua Stream. Kaukonahua Stream drains northward through the area underlain by the Waialua aquifer system, joining the Poamoho Stream to form the Kiikii Stream, which discharges to Kaiaka Bay just east of Waialua. Streams in lower reaches of SBMR tend to be intermittent because runoff from small storms is absorbed in bedrock fractures and never reaches the plateau. Runoff from larger or more intense storms overwhelms the capacity of these fracture systems and continues to flow onto the plateau. Waikele Stream, which originates in the Honouliuli Forest Preserve along the east slope of the Waianae Range south of SBMR, drains the south boundary of SBMR. It flows south along the west side of WAAF, across land overlying the Waipahu-Waiawa aquifer system, and eventually discharges to the West Loch of Pearl Harbor.

WAAF is bounded by SBMR, Wahiawa Reservoir, the Kamehameha Highway, and Waikele Stream. Surface drainage from WAAF drains to Waikele Gulch. Runoff from the runway area is reportedly collected in a network of grated drains that drain to a 15-inch-diameter storm drain believed to discharge to Waikele Gulch.

SBER (for the most part) lies within the Kaukonahua watershed. The southern boundary of SBER lies on or near the topographic divide separating the Kaukonahua watershed from the Waikele watershed. Therefore, some surface water from SBER may drain to the Waikakalaua Stream, which ultimately drains south to the West Loch of Pearl Harbor. Most of SBER is drained by the South Fork of Kaukonahua Stream, which discharges to the Wahiawa Reservoir. The Kaukonahua Stream, downstream of Wahiawa Reservoir, ultimately discharges to Kaiaka Bay at Haleiwa. Kaukonahua Stream, at 33 miles, is the longest stream on O'ahu and the longest perennial stream (30 miles). SBER extends to the crest of the Koolau Range, which has the highest rainfall on O'ahu. Thus, the east side of SBER is an important source region for surface water supplies. A number of reservoirs and surface water conveyances (ditches and tunnels) have been constructed along the Kaukonahua Stream drainage and its tributaries. The Ku Tree Reservoir is the largest of these water storage facilities.

The Poamoho watershed is drained by the Poamoho Stream and several smaller streams. The Upper Helemano Reservoir is east of the Helemano Trail and stores water for irrigation. The water is conveyed to farmland in the Poamoho watershed through a network of canals and ditches, some of which follow existing drainages.

The South Range area is drained by Waikele Stream and its tributaries and lies entirely within the portion of the watershed of Waikele Stream that is upstream of WAAF. The tributaries to Waikele Stream are ephemeral and generally dry except during short periods following heavy rainfall.

KTA contains portions of four watersheds: Paumalu, Kawela, Oio, and Malaekahana watersheds. The Paumalu watershed in the west includes drainages from Paumalu Stream on the west to Waialee Gulch on the east. The headwaters of the Paumalu Stream are in the Pupukea Paumalu Forest Reserve, most of which is within the boundaries of KTA. KTA does not include the downstream portion of the Paumalu Stream, but most of the watershed east of the Paumalu drainage, almost to the Kamehameha Highway, is on KTA. To the east of Paumalu watershed is the Kawela watershed, which includes the streams that drain to Kawela Bay (Pahipahialua Stream and Kawela Stream). East of Paumalu and Kawela watersheds is the Oio watershed, which includes the upper portions of drainages from Oio Gulch east to Keaaulu Gulch, which discharges at the town of Kahuku. Adjacent to the Oio watershed is the Malaekahana watershed, which consists of the upper drainage of Malaekahana Stream. The lower reaches of many of these streams have been diverted or captured for irrigation and flood control, but the upper reaches, on KTA, are generally the natural drainages. All streams and gulches on KTA are intermittent except for Malaekahana Stream, which is perennial
.
Drum Road runs along the west slope of the Koolau Mountain Range and across the Schofield Plateau, from KTA, through KLOA to SBMR. Outside of KTA, the Drum Road crosses several watersheds. Waimea watershed is drained by several streams including Kauwalu Gulch, Elehaha Stream, Kamananui Stream, and Kaiwikoele Stream. Kauwalu Gulch and Elehaha Stream are both intermittent, while Kamananui and Kaiwikoele Streams are both perennial. Elehaha and Kamananui Streams are tributaries of the Waimea River. Drum Road passes along the ridge that forms the boundary between the head of the Keamanea, Waimea, and Kawailoa watersheds, northwest of Puu Kapu where eventually the road crosses inside KLOA. West of Puu Kapu, it crosses Kawailoa watershed and then follows the ridge separating the Kawainui and Kawaiiki watersheds (on the east) from the Anahulu watershed (to the west). The Kawailoa watershed is a narrow east-west trending strip of land, north of Puu Kapu that does not have any surface outflow but probably drains below the surface to the adjacent watersheds.

The Kawainui and Kawaiiki Streams (both perennial streams) are tributaries of the Anahulu River, which occupies the Kawailoa Gulch and discharges at Waialua Bay, north of Haleiwa. The junction of the two streams marks the head of the Anahulu watershed. The road follows the boundary of the Kawaiiki watershed, then turns sharply west and continues along the ridge separating the Anahulu watershed and the Opaeula watershed. The Opaeula Reservoir is in the Anahulu watershed, but is recharged by diversions from the Kawaiiki and Opaeula streams via ditches or tunnels that cross the watershed boundaries. Southwest of the Opaeula Reservoir, Drum Road crosses the Opaeula watershed and the Opaeula Stream (a perennial stream) and then follows Twin Bridge Road west of Bryans Mountain House. This segment of the trail is on the boundary between the Opaeula watershed and the Helemano watershed.

The majority of DMR is located in the Kawaihapai watershed. The most extreme eastern portion of DMR is located in the Pahole Watershed. Dillingham Trail is located in the Kawaihapai, Pahole, and Makaleha watersheds. Several unnamed intermittent streams occur on the training area. DMR is on the north slope or at the foot of Kaala Mountain and the northwest-trending ridge of the Waianae Range. Most of the streams carry intermittent flows and are subject to short duration flash floods following rainfall events. Figure 4.2-6 below illustrates the watershed units found on O'ahu.

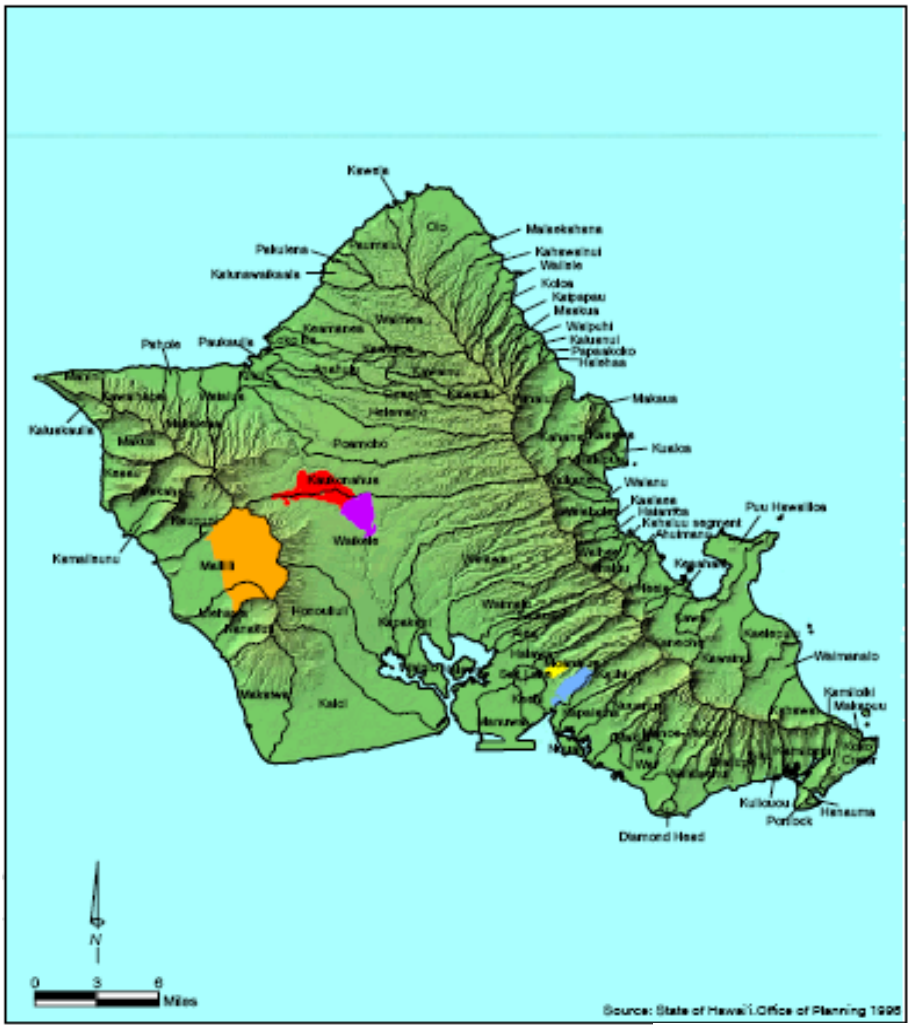


Figure 4.2-6. Watershed units on the Island of O'ahu

Water Supply

Demand for water has been growing in the Ewa area of O'ahu, but the windward side of the island currently has sufficient supplies. Water is supplied to SBMR through pipelines; whereas water must be trucked in to KTA and KLOA.

Potable water is supplied to SBMR and WAAF by a well and water treatment facility located on SBER. This facility produces and treats 4.0 to 9.0 MGD. The State of Hawai`i DLNR permit allocates a 12-month moving average of 5.648 MGD to the Army from the groundwater aquifer. The average ranges from a low of 3.849 MGD in January to a high of 6.948 MGD in September.

Based on a demand factor of 1.3 per person and a domestic allowance of 150 gallons (568 liters) per capita per day, the domestic daily demand was estimated at 4.13 MGD in the 1993 real property master plan. The average estimated daily demand of Schofield Barracks was 3.059 MGD, as identified in the real property master plan (Belt Collins, 1993). Peak daily demands were estimated at 2.5 times the average.

There is no water infrastructure for the South Range area.

Wastewater

Wastewater treatment in Hawai`i is accomplished by wastewater treatment plants and by underground injection control. Wastewater is conveyed from SBMR to the treatment plant at WAAF using a gravity system. The WAAF plant is a secondary treatment facility that was constructed in 1976 and has been upgraded to a capacity of 4.2 MGD. The system does not have redundant backup, so continuous maintenance is required to avoid spills. The Army has recently upgraded the treatment level from secondary to advanced tertiary.

The Schofield Barracks wastewater treatment plant has a design capacity of 4.2 MGD and processes an average daily flow of 2.6 MGD from the installation, WAAF, and other nearby Army facilities.

Stormwater

According to Hawai`i's 1998 305(b) report, most of the state's water bodies have variable water quality that declines when stormwater runoff carries pollutants into surface waters. The most significant surface water pollution problems in Hawai`i are siltation, turbidity, nutrients, organic enrichment, toxins, pathogens, and pH from nonpoint sources, including agriculture and urban runoff. Stormwater runoff from SBMR and O'ahu training sites may affect the waterways and drainage areas described under the subheading "Watersheds" above.

4.2.10.2 Environmental Consequences

No Action Alternative: (Less than Significant)

Under the no action alternative, the current uses of the affected environment would not change from the conditions described in 4.2.10.1, other than as discussed as a part of pre-existing trends and the ongoing actions discussed below.

No additional Soldiers would be stationed at SBMR, and the existing water and wastewater infrastructure would not require modifications other than routine maintenance. Range and cantonment construction projects would proceed as they are planned. Standard construction BMPs would be followed to maintain less than significant impacts from runoff to surface and groundwater. Continued implementation of the ITAM and ORAP (Operational Range Assessment Program) programs will minimize impacts from live-fire and maneuver training and maintain them at a less than significant level.

Cantonment Construction. Under the No Action Alternative, no additional cantonment construction is required in USAG-HI. With existing, on-going and limited currently planned non-GTA projects, the garrison has critical facilities available to support existing units' living, administrative, and vehicle maintenance requirements. Additionally, some construction renovation may occur at SBMR on as needed basis in the future. Water supply and wastewater facilities are adequate and only routine upgrades and maintenance would occur. SOPs and BMPs designed to minimize impacts to surface and groundwater through stormwater and erosion control would continue to be followed. No impacts would occur.

Range Infrastructure Construction. Construction projects, including those associated with the recent stationing of the 2/25th SBCT, may result in temporary impacts to water quality. During ground preparation for new construction sites, grading, excavating, and trenching may expose erodible soils to stormwater runoff and increase the potential for sediments to contaminate surface waters. Similarly, the use of heavy equipment could spill chemicals during equipment refueling, and chemical solvents, paints, and other chemicals used in construction could also be spilled. These potential impacts would be reduced to less than significant levels by implementing standard construction BMPs.

Live-Fire Training. There would be no change in the number or type of rounds used during live-fire training at Oahu ranges. Nonetheless, training ranges have the potential to carry contamination resulting from decades of use. Contaminants associated with military activities include residues of explosives or other constituents of munitions such as metals, constituents of plastics, or combustion products. Other chemical pollutants, such as petroleum hydrocarbon fuels or lubricants, may be inadvertently spilled or released as an indirect result of military activities. To better understand the potential impacts from this, the Army has started an assessment of offsite potential for contaminants at Schofield Barracks under the Operational Range Assessment Program (ORAP). Preliminary results show no contamination of surface water by explosive residues, and less than significant impacts are expected to continue under the No Action alternative.

Maneuver Training. Maneuver training will continue to occur at SBMR, DMR, and KTA. Maneuver training will remain a combination of on-road and off-road areas on Oahu. The same number of Maneuver Impact Miles (MIMs) would continue to be executed at designated maneuver training areas. Maneuver training could involve the possibility of accidental spills of petroleum products (from fuel or hydraulic lines) or other chemicals. Maneuver training will

continue to cause sedimentation and turbidity in water bodies, a potential significant impact. Continued implementation of the ITAM and ORAP programs will minimize these impacts and maintain them at a less than significant level.

1,000 CS and CSS: (Significant but Mitigable).

Cantonment Construction: **Significant but Mitigable**

The addition of water transport and wastewater collection lines would be required to support cantonment construction at the South Range area. Utilizing existing infrastructure at SBMR, the installation would consider development of a 12 inch water line loop that would connect to the existing 20 inch line. The average water demand and flow may need to be modeled. Although a loop system is efficient, it may not have adequate flow demand to meet the requirements for fire protection systems (such as hydrants); therefore a fire water booster pump station may be considered.

The current wastewater collection system at the installation would require additional upgrades in order to accommodate the additional flow (upgrades may include new sewer lines or extensions to existing lines, sewage pump, and upgrades to lines feeding into the existing wastewater treatment plant). In order to determine the scope of any upgrades, the installation project manager for design would need to conduct modeling of the collection system. DPW Utilities Wastewater Manager and/or Aqua Engineers would review the modeling information and approve the results. Table 4.2-6 below identifies projected impacts to the current wastewater flow and capacity from each of the stationing scenarios.

Table 4.2-6. Projected Effects to Wastewater Flow and Capacity from Stationing Scenarios

Units	Number of Soldiers	Estimated per Capita Load (GPD)	Additional Sewer Daily Load (gal)	Additional Family (if est. 60% married & 3.2 per household)	Additional Load from Housing (GPD)
Combat Support or Combat Service Support	1,000	40	40,000	1,920	211,200
Combat Aviation Brigade	2,800	40	100,000	4,800	528,000
Combat Support or Combat Service Support	3,000	40	120,000	5,760	633,600

The extension of sewer services to the South Range area may have more adverse effects. The wastewater collection system that would be needed at South Range may need to include a conveying system (or pumping station), which would increase construction costs. Furthermore, it is suspected that the collection lines at Schofield Barracks and WAAF may currently be at their capacity (based on their diameter and the estimated amount of flow they currently support).

The wastewater treatment plant at Schofield Barracks may also require a major upgrade. As noted above, the wastewater treatment plant is designed for 4.2 MGD, however, the installation would consider an upgrade if the daily flow rate reaches 75 percent of the design flow (or 3.1 MGD) for the system. The addition of 1,000 or more Soldiers could conceivably result in an

increased flow rate approaching 75 percent of the design flow capacity, especially as Soldiers are returning to Hawai'i when ending their deployment rotation overseas.

Lake Wilson may experience impacts from construction due to stormwater runoff (effects would include an increase in turbidity); however these effects may be temporary and should prove mitigable. All work in gullies would require Army 404, State DOH 401 (clean water) and NPDES permits if work were to be conducted at or near existing waterways. Any roadway construction or improvement may require provisions for stormwater drainage and/or detention basins to handle run-off from built or paved areas. Pesticides existing in soils at South Range may impact nearby waterbodies during construction due to stormwater runoff. Implementation of BMPs and mitigations to minimize runoff from construction sites would be required. Due to its location, stormwater runoff from South Range has the potential to affect waterways outside the installation boundary and on WAAF.

Long-term minor effects may occur due to water consumption. As indicated above, the water treatment facility supplying potable water to SBMR and WAAF is currently operating below capacity. There would be adequate potable water capacity to accommodate growth under these Soldier stationing scenarios.

During ground preparation for new construction sites, grading, excavating, and trenching may expose erodible soils to stormwater runoff and increase the potential for sediments to contaminate surface waters. Similarly, broken hydraulic lines on heavy equipment could spill chemicals during equipment refueling, and chemical solvents, paints, and other chemicals used in construction could also be spilled. These potential impacts would be reduced to acceptable levels by implementing standard construction BMPs.

Chemicals, such as petroleum hydrocarbons that may spill or leak onto soils as a result of vehicle use or refueling, could be bound to soil particles and then transported to surface water by erosion. These impacts are expected to be less than significant because spills would be addressed effectively through standard procedures.

Regulatory and Administrative Mitigation 1: Implementing Phase II Stormwater Management Regulations of the Clean Water Act, ITAM and construction BMPs would reduce nonpoint source contamination of surface water to less than significant.

Training Range Infrastructure Construction. **No Impact**

Because training would continue to be supported on existing ranges, no new ranges would be needed. Therefore, no additional effects are anticipated.

Live-fire Training: **Less than Significant** (All Stationing Scenarios)

The added throughput would increase lead and other materials on ranges. Runoff from impacted berms and disrupted soils is possible as the added live-fire activity may increase sediment transported to streams draining the ranges, and ultimately to surface waters beyond the installation boundary. In the absence of mitigation, an increase in sediment erosion could result in greater impacts, possibly in exceedances of health-based standards or antidegradation policy goals. The Army has started an assessment of offsite potential for contaminants at Schofield Barracks under the Operational Range Assessment Program (ORAP). Samples of

surface soils from selected areas on the training ranges were collected and analyzed, and these data provide an indication of the concentrations of metals, semi-volatile organic compounds, and explosive material in surface soils that could be transported to surface water. While still in the early stages of the assessment, preliminary results show no contamination of surface water. Installation DPW staff monitors impacts from live-fire activities and would continue to institute the required mitigations and BMPs (such as berm revegetation and regrading) to minimize effects off the firing ranges. Other chemical pollutants, such as petroleum hydrocarbon fuels or lubricants, may be indirect effects resulting from vehicles parked at the training sites.

The risk of wildland fires is expected to remain at about the same level as under existing conditions or slightly higher due to the increase in use of the MK-19 or explosive materials associated with CS stationing scenarios. The potential for wildland fires is expected to be low but could increase when the land is fallowed due to growth of grasses and other vegetation. Wildland fires can generate chemical contaminants and loss of vegetation can increase the potential for soil erosion and sediment loading to streams. Either of these effects could result in adverse impacts on water quality.

Maneuver Training: **Less than Significant** (CSS scenarios) / Significant but Mitigable (CS stationing scenarios)

Additional traffic on the range road network and stream crossings (at KTA, SBER, or KLOA) during maneuvers may contribute to increased sedimentation and turbidity in waterbodies. Off-road maneuvers of CS units would be projected to account for a larger increase in off-road sedimentation impacts to surface waters, resultant from a loss of vegetative cover and associated loss of soils carried to surface water by wind and water erosion. No new type of maneuver or maneuver land use is being proposed for USAG-HI training areas. All uses would be increases to existing maneuver land use expected to be and increase of 2.5 to 7.5% of USAG-HI total maneuver training load at maneuver training areas on Oahu.

Efforts to reinforce stream crossings or monitor those areas for decreased water quality may also be considered. Further, bivouac sites in the training area may also need to be monitored and maintained more closely to ensure against stormwater runoff that may stem from the effects of increased Soldier throughput in those areas.

Minor impacts would occur to wastewater and stormwater at DMR. The amount of additional training there may not be substantial and would be supported by existing facilities. These areas were to be improved to accommodate training from the 2/25th SBCT; these include drainage improvements, culverts at stream crossings, grass and concrete swales, and drainage structures and lines to manage stormwater runoff.

Regulatory and Administrative Mitigation 2: The Army continually funds and implements USAG-HI-wide land management practices and procedures described in the ITAM annual work plan to reduce erosion and other soil and geologic impacts (USARHAW 2001a and USARHAW 2001b). Currently, these measures include implementing a TRI program, implementing an ITAM program, implementing an SRA program, developing and enforcing range regulations, implementing an Erosion and Sediment Control Management Plan, coordinating with other participants in the Koolau Mountains Watershed Partnership (KMWP), and continuing to implement land rehabilitation projects, as needed, within the LRAM program. Examples of erosion and sediment control measures identified in the ITAM annual work plan include stormwater runoff control structures (silt fences, hay bales, etc.) as part of standard BMPs, which would divert water from the construction sites. Standard range maintenance BMPs

implemented by USAG-HI include road grading, target repair, and berm recontouring. Examples of current LRAM activities at USAG-HI include revegetation projects involving site preparation, liming, fertilization, seeding or hydroseeding, tree planting, irrigation, and mulching; combat trail maintenance program (CTP), coordination through the TCCC on road maintenance projects; and development mapping and geographic information system (GIS) tools for identifying and tracking progress of mitigation measures. These mitigation measures would reduce loss of vegetation and biological soil components associated with maneuver training.

Combat Aviation Brigade (2,800) and 3,000 CSS and CS Scenario: (Significant but Mitigable).

Cantonment Construction: **Significant but Mitigable**

Effects from construction supporting these scenarios would be greater than those identified under the 1,000 Soldier stationing scenarios. These units would require more facilities and generate more wastewater and utilize more potable water. In addition, cantonment construction at South Range would require more land (approximately 200 to 300 acres) which could have a greater degree of impact on surface water.

Construction at WAAF as part of these scenarios could result in runoff from the construction sites, and has the potential to influence water quality form sediment entering the Wahiawa Reservoir or the Waikele Stream (which could then drain to the Kamehameha Highway). The installation would continue implement stormwater runoff controls in accordance with CWA regulations covering stormwater runoff at construction sites.
During ground preparation for new construction sites, grading, excavating, and trenching may expose erodible soils to stormwater runoff and increase the potential for sediments to contaminate surface waters. Similarly, broken hydraulic lines on heavy equipment could spill chemicals during equipment refueling, and chemical solvents, paints, and other chemicals used in construction could also be spilled. These potential impacts would be reduced to acceptable levels by implementing standard construction BMPs.

Chemicals, such as petroleum hydrocarbons that may spill or leak onto soils as a result of vehicle use or refueling, could be bound to soil particles and then transported to surface water by erosion. These impacts are expected to be less than significant because spills would be addressed effectively through standard procedures.

Regulatory and Administrative Mitigation 1: Implementing Phase II Stormwater Management Regulations of the Clean Water Act, ITAM and construction BMPs would reduce nonpoint source contamination of surface water to less than significant.

Training Range Infrastructure Construction: **No Impact**

Live-fire Training: **Less than Significant**

The increase in weapons qualification training would increase lead and other materials on ranges. Runoff from impacted berms and disrupted soils is possible as the added live-fire activity may increase sediment transported to streams draining the ranges, and ultimately to surface waters beyond the installation boundary. In the absence of mitigation, an increase in sediment erosion could result in greater impacts, possibly in exceedances of health-based

standards or antidegradation policy goals. The Army has started an assessment of offsite potential for contaminants at Schofield Barracks under the ORAP. Samples of surface soils from selected areas on the training ranges were collected and analyzed, and these data provide an indication of the concentrations of metals, semi-volatile organic compounds, and explosive material in surface soils that could be transported to surface water. While still in the early stages of the assessment, preliminary results show no contamination of surface water. Installation DPW staff monitors impacts from live-fire activities and would continue to institute the required mitigations and BMPs (such as berm revegetation and regrading) to minimize effects off the firing ranges. Other chemical pollutants, such as petroleum hydrocarbon fuels or lubricants, may be indirect effects resulting from vehicles parked at the training sites.

The risk of wildland fires is expected to remain at about the same level as under existing conditions or slightly higher due to the increase in Soldiers using these ranges. The potential for wildland fires is expected to be low but could increase when the land is fallowed due to growth of grasses and other vegetation. Wildland fires can generate chemical contaminants, and loss of vegetation can increase the potential for soil erosion and sediment loading to streams resulting in impacts to water quality.

Aerial gunnery live-fire is addressed within the Chapter for PTA.

Maneuver Training. **Significant but Mitigable**

Additional traffic on the range road network and stream crossings (at KTA, SBER, or KLOA) during maneuvers may contribute to increased sedimentation and turbidity in waterbodies. Efforts to reinforce stream crossings or monitor those areas for decreased water quality may also be considered. Further, bivouac sites in the training area may also need to be monitored and maintained more closely to ensure against stormwater runoff that may stem from the effects of increased Soldier throughput in those areas.

Minor impacts would occur to wastewater and stormwater at DMR. The amount of additional training there may not be substantial and would be supported by existing facilities. These areas are to be improved to accommodate training from the 2/25th SBCT; these include drainage improvements, culverts at stream crossings, grass and concrete swales, and drainage structures and lines to manage stormwater runoff.

The increase in frequency of helicopter maneuvers at KLOA and SBER may increase sediment inputs into surface waters as a result of denuded vegetation from helicopter maneuvers at landing zones.

Regulatory and Administrative Mitigation 2: The Army continually funds and implements USAG-HI-wide land management practices and procedures described in the ITAM annual work plan to reduce erosion and other soil and geologic impacts (USARHAW 2001a and USARHAW 2001b). Currently, these measures include implementing a TRI program, implementing an ITAM program, implementing an SRA program, developing and enforcing range regulations, implementing an Erosion and Sediment Control Management Plan, coordinating with other participants in the Koolau Mountains Watershed Partnership (KMWP), and continuing to implement land rehabilitation projects, as needed, within the LRAM program. Examples of erosion and sediment control measures identified in the ITAM annual work plan include stormwater runoff control structures (silt fences, hay bales, etc.) as part of standard BMPs, which would divert water from the construction sites. Standard range maintenance BMPs implemented by USAG-HI include road grading, target repair, and berm recontouring. Examples

of current LRAM activities at USAG-HI include revegetation projects involving site preparation, liming, fertilization, seeding or hydroseeding, tree planting, irrigation, and mulching; combat trail maintenance program (CTP), coordination through the TCCC on road maintenance projects; and development mapping and geographic information system (GIS) tools for identifying and tracking progress of mitigation measures. These mitigation measures would reduce loss of vegetation and biological soil components associated with maneuver training.

4.2.11 Facilities

4.2.11.1 Affected Environment

"Facilities" encompasses all aspects of Army real property management including land, facilities, and infrastructure such as Soldier and Family services (child care, chapel) and police and fire. Furthermore this includes interests in land, leaseholds, standing timber, buildings, improvements, and appurtenances. Facilities are the buildings, structures, and other improvements that support the Army's mission. Infrastructure is the combination of supporting systems that enable the use of this land and resident facilities. The Army holds real estate in every state. The variety of locations provides the Army with installations having terrain with the characteristics of the key environments of deserts, the arctic, jungles, and mountains. The Army's installations also contain lands that are classifiable as swamp/wetland, forest, open woodland/savanna, grassland prairie, and semi-arid shrub/steppe. Infrastructure enables the use of Army land assets and facilities; these include utilities such as gas, power, and telecommunications; and roadways and other transportation infrastructure such as rail.

To manage land, facilities, and infrastructure, USAG-HI has prepared a real property management plan. Army Regulation 210-10, Real Property Master Planning, guides USAG-HI's real property planning process. Family housing, barracks, offices, roads, recreational areas, live-fire ranges, and maneuver areas are all real property assets occupying Army lands. The actions involving stationing scenarios described within this document (if implemented at USAG-HI) would occur on land currently owned by the federal government.

4.2.11.2 Environmental Consequences

No Action Alternative: (Less than Significant)

Under the no action alternative, the current uses of the affected environment would not change from the conditions described in 4.2.11.1, other than as discussed as a part of pre-existing trends and the ongoing actions discussed below.

The use of Army facilities would continue as they are currently designed. Demand for public services would not change from existing levels. Continued use and maintenance of ranges will degrade these facilities, but impacts will be less than significant as the ranges will be repaired and maintained.

Cantonment Construction. Under the No Action Alternative, no additional cantonment construction is required in USAG-HI. With existing, on-going and limited currently planned non-GTA projects, the garrison has critical facilities available to support existing units' living, administrative, and vehicle maintenance requirements. Additionally, some construction renovation may occur at SBMR on as needed basis in the future. No additional Soldiers would be stationed at SBMR. Therefore, no impacts to facilities would be anticipated.

Range Infrastructure Construction. Range maintenance projects on existing ranges would proceed as needed. Maintenance projects would not add new facilities to the inventory of facilities on Oahu. These projects would slightly increase the demand for utilities and public services. The overall effects of the range construction projects would be less than significant.

Live-Fire Training. Use of live-fire training areas would continue at ranges currently available. Ongoing use of live-fire training areas would continue to degrade these facilities. However, with continued implementation of regulatory and administrative mitigation such as ITAM, INRMPs, ecosystem management, and the sustainable range management program, impacts to facilities are expected to be less than significant.

Maneuver Training. Use of maneuver training areas would continue at maneuver areas currently available for maneuver use. Ongoing use of maneuver training areas would continue to degrade these facilities. However, with continued implementation of regulatory and administrative mitigation such as ITAM, INRMPs, ecosystem management, and the sustainable range management program, impacts to facilities are expected to be less than significant.

CSS (1,000), CS (1,000): (Less than Significant).

Cantonment Construction: **Less than Significant**

Existing facilities in USAG-HI are not capable of supporting additional Soldier stationing under these scenarios. New administrative and living space would need to be established. These facilities would need to be tied in to existing infrastructure (water lines, wastewater transport, power transmission, etc.). There is adequate land available at South Range to accommodate construction for these stationing scenarios.

Construction of a barracks at SBMR would occur as infill (built among existing structures and infrastructure) with demolition of existing facilities in the cantonment area; in addition new infrastructure, utility lines, sewage lines and water lines would be built to support construction of garrison administrative facilities to support units as part of these stationing scenarios at South Range. .

Training Range Infrastructure Construction: **No Impacts. (All Scenarios)**

Live-fire Training: **No Impacts**. **(All Scenarios)**

Maneuver Training: **No Impacts. (All Scenarios)**

CSS (3,000), CS (3,000): (Less than Significant).

Cantonment Construction: **Less than Significant**

Existing facilities in USAG-HI are not capable of supporting additional Soldier stationing under these scenarios. New administrative and living space would need to be established. These facilities would need to be tied in to existing infrastructure (water lines, wastewater transport, power transmission, etc.). There is adequate land available at South Range to accommodate construction for these stationing scenarios; however, due to the number of Soldiers (and

potential Family members) associated with these scenarios, the construction footprint at South Range could encompass an estimated 200 to 300 acres. Water demand, sewage treatment requirements, and power demand would increase by a factor of three in comparison with the 1,000 Soldier stationing scenarios. If any of these scenarios are selected, additional studies of facilities capacity would need to be conducted to ensure adequate facilities requirements are met. Due to the availability of space at South Range, the impacts from construction of new facilities is anticipated to be less than significant.

Combat Aviation Brigade (2,800): (Less than Significant).

Cantonment Construction: **Less than Significant**

Existing facilities in USAG-HI are not capable of supporting additional Soldier stationing under these scenarios. New administrative and living space would need to be established. These facilities would need to be tied in to existing infrastructure (water lines, wastewater transport, power transmission, etc.). There is adequate land available at South Range to accommodate construction for these stationing scenarios. Due to the number of Soldiers (and potential Family members) associated with these scenarios, the construction footprint at South Range could encompass an estimated 200 to 300 acres. Water demand, sewage treatment requirements, and power demand would increase by a factor of three in comparison with the 1,000 Soldier stationing scenarios. If any of these scenarios are selected, additional studies of facilities capacity would need to be conducted to ensure adequate facilities requirements.

This scenario involves additional facilities requirements at WAAF. Aircraft maintenance requirements would increase the demand for water and power for additional hangars that would be constructed at WAAF. The airfield does not have adequate enough facilities to provide for the additional helicopters associated with a brigade-level unit. Due to space constraints at WAAF, siting of new hangars and other facilities may occur within the footprint of existing facilities. This option may require some functions (currently at WAAF) to be relocated to Schofield Barracks, or possibly to South Range. USAG-HI would need to conduct further planning studies in order to determine the feasibility, potential impacts, and reasonable alternatives to potential CAB stationing locations. Due to the availability of land and resources at Schofield Barracks and South Range, the impacts are expected to be significant but mitigable to less than significant.

Training Range Infrastructure Construction. Training would occur on existing range facilities, therefore no expansion is required and no effects are anticipated.

Aerial gunnery range upgrade requirements are discussed in Chapter 4.4 PTA.

4.2.12 Energy Demand and Generation

4.2.12.1 Affected Environment

Electrical power to the O'ahu is supplied from the Hawaiian Electric and Light Company (HELCO). Power supplies are described as adequate for both locations. Both of the islands are self-sufficient and provide an independent electrical generation supply (i.e., do not import or export power to other islands). Increases in population and tourism have resulted in an escalating demand to each island's power supply. To meet rising demand and future demands, the power company is planning construction of a new facility that will generate approximately 100 megawatts per year. The facility is expected to be fully operational in 2009.

Schofield Barracks is presently serviced by two substations, these are Castner and Menoher; both are provided energy from HELCO 46 kV circuits. One of these lines presently runs through the South Range Acquisition Area.

The USAG-HI continues efforts to reduce power demand by implementing energy conservation methods, including promoting the use of photovoltaic lighting where feasible, and examining renewable sources of energy production.

4.2.12.2 Environmental Consequences

No Action Alternative: (Less than Significant)

Under the no action alternative, the current uses of the affected environment would not change from the conditions described in 4.2.12.1, other than as discussed as a part of pre-existing trends and the ongoing actions discussed below.

Energy demand through the use of Army facilities would continue and not change from existing levels. As the energy demands for Oahu cantonment and training ranges is currently adequate, impacts from their use at present levels will be less than significant.

Cantonment Construction. Under the No Action Alternative, no additional cantonment construction is required in USAG-HI. With existing, on-going and limited currently planned non-GTA projects, the garrison has critical facilities available to support existing units' living, administrative, and vehicle maintenance requirements. Additionally, some construction renovation may occur at SBMR on as needed basis in the future. No impacts to energy demand are be anticipated.

Range Infrastructure Construction. No new range construction projects would occur under the No Action alternative. Range maintenance would proceed as needed. Range maintenance would temporarily increase the use of energy (fuels) at the construction sites. This increase would be temporary and less than significant in the overall context of energy usage.

Live-Fire Training. The number of required live-fire user days per year at Oahu installations would be near current levels and would not change the amount of energy use (fuels and electricity) around the training areas. Consequently, live-fire training is not expected to cause any changes to energy demand, a less than significant impact.

Maneuver Training. Maneuver training would continue at all current training areas available for maneuver training. The number of maneuver rotations Oahu installation would be near current levels and would not change the amount of energy use (fuels and electricity) around the training areas. Impacts to energy use would be similar to what occur presently. Therefore, impacts to energy use would be less than significant.

CSS (1,000), CS (1,000), Combat Aviation Brigade (2,800), CSS (3,000), CS (3,000): (Less than Significant).

Cantonment Construction. Long-term effects are anticipated. These scenarios would result in a greater demand on energy usage at SBMR. Construction of new facilities at South Range

would require the addition of a new sub-station to supply new facilities in South Range with power.

Training Range Infrastructure Construction. Training would occur on existing range facilities, therefore no expansion is required and no effects are anticipated.

Live-Fire Training. Live-fire training would increase under these stationing actions; and the addition of a firing range would add demand to the power supply; however, impacts from energy use are expected to be less than significant as the power required by live-fire facilities is minimal compared to other facility types (such as housing or headquarters buildings).

Maneuver Training. Maneuver training would increase under this alternative; however, impacts to energy use and costs are expected to be less than significant. During maneuver training units power generation is typically self-contained (generators) and does not tap into existing power infrastructure.

4.2.13 Land Use Conflict/Compatibility

4.2.13.1 Affected Environment

Although federal land uses are not subject to state and county regulation, this section identifies possible conflicts between the proposed action and other federal, regional, state and local land use plans, policies and controls (40 CFR Part 1502.16(c). For informational purposes, the descriptions of existing land uses in this section include the State Land Use District designations. These designations list all lands in one of four districts: Conservation, Agriculture, Urban, or Rural (State of Hawaii 2002a). Conservation District Subzone designations, regulated by HDLNR, are Protective, Limited, Resource, General, and Special. The state designations for Agricultural Lands of Importance to the State of Hawai`i (ALISH) categorize agricultural land as Prime, Unique, or other.

A range of recreational activities is available on lands within the ROI including surfing, hunting, fishing, mountain biking, and visiting national monuments. Additional recreational opportunities are available on some of the lands adjacent to or near the Army installations. Existing land uses and recreational opportunities are summarized in the following subsections for each of the Army installations within the ROI and surrounding lands.

Soldier and Family housing and other support facilities are located (or planned) at SBMR and South Range, SBER, and WAAF; no Soldiers are permanently stationed at KTA, DMR, or KLOA. The Garrison currently has plans for upgrading and constructing facilities and infrastructure at SBMR and KTA; and constructing or renovating runways or roadways at WAAF.

SBMR has 9,880 acres of land (fee simple, leased, and ceded), and has a cantonment area, conservation land, training ranges, an impact area, supply and storage, and outdoor recreational facilities (limited hinting, skeet shooting, and archery). Lands there are classified as agricultural, state-designated urban, and the installation has conservation districts. Land uses surrounding SBMR are urban, forest, military, and agricultural. Westward of the main post lies the Wainae Kai Forest Reserve. To the east of SBMR is the town of Wahiawa (and reservoir). WAAF lies to the southeast of the main post. North of SBMR is the Kaala Natural Area

Reserve. To the south lies South Range, the Honouliuli Preserve, Military Field Station Kunia, and the Naval Magazine Pearl Harbor Lualualei Branch. A land use plan for Schofield Barracks is illustrated in Figure 4.2-7.

South Range (located below Schofield Barracks in Figure 4.2-7) consists of 1,402 acres and provides for small-arms live-fire qualification. Currently sited at South Range is a qualification training range and a motorpool. The land there includes parcels within the Conservation District Resource Subzone and 100 acres of Forest Reserve land. Recreational hiking occurs there. Schofield Barracks is located to the north of South Range; pineapple agriculture continues to the south; the Honouliuli Preserve to the west; and Field Station Kunia and WAAF is located to the east. As a result of permanently stationing the 2/25th SBCT, one new maneuver area would be utilized at South Range to accommodate 2/25th SBCT and would be available to support other training activities. Additionally, approximately 535 acres of actively cultivated pineapple land within South Range is to be converted to training land.

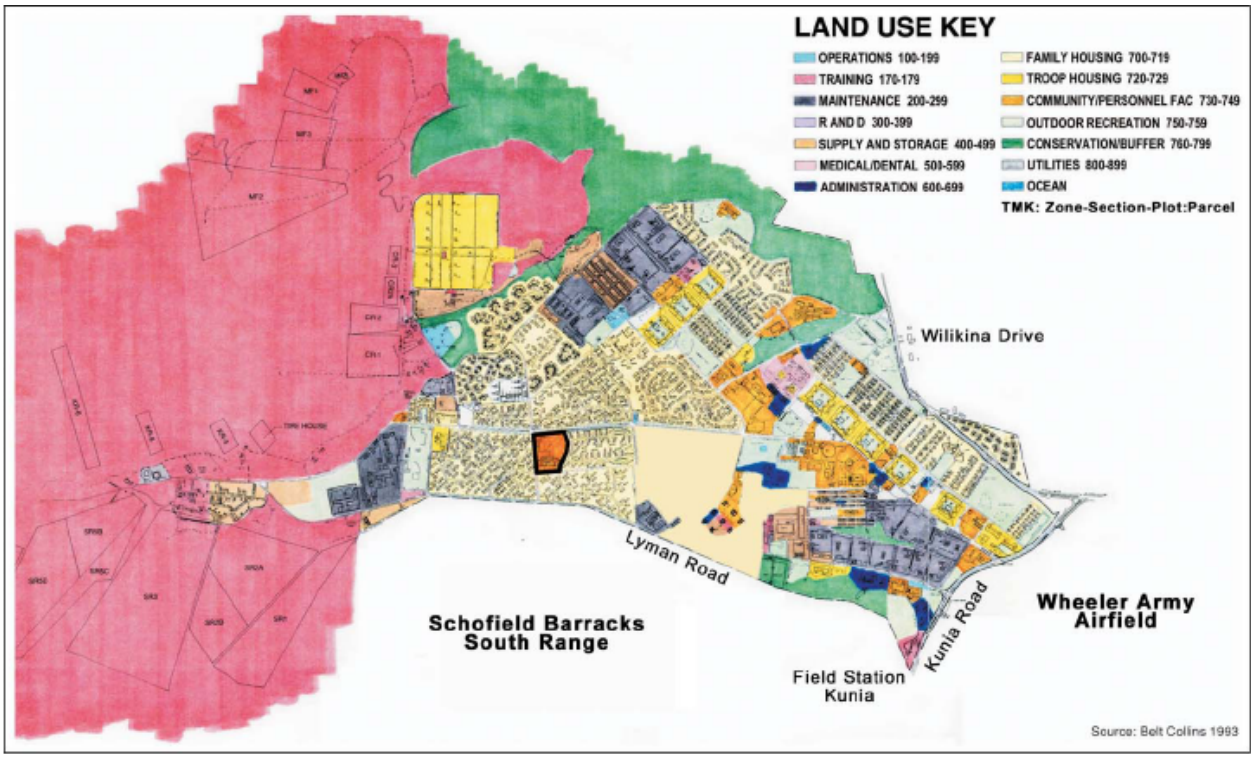


Figure 4.2-7. Land use plan for SBMR (August 2006)

WAAF has 1,369 acres and provides for housing and administration (provided at both Wheeler and SBMR), maintenance, and training and flight facilities. Parts of WAAF have been designated agricultural and urban districts. The installation allows no hiking or hunting there. A land use plan for WAAF is depicted as Figure 4.2-8 on the next page.

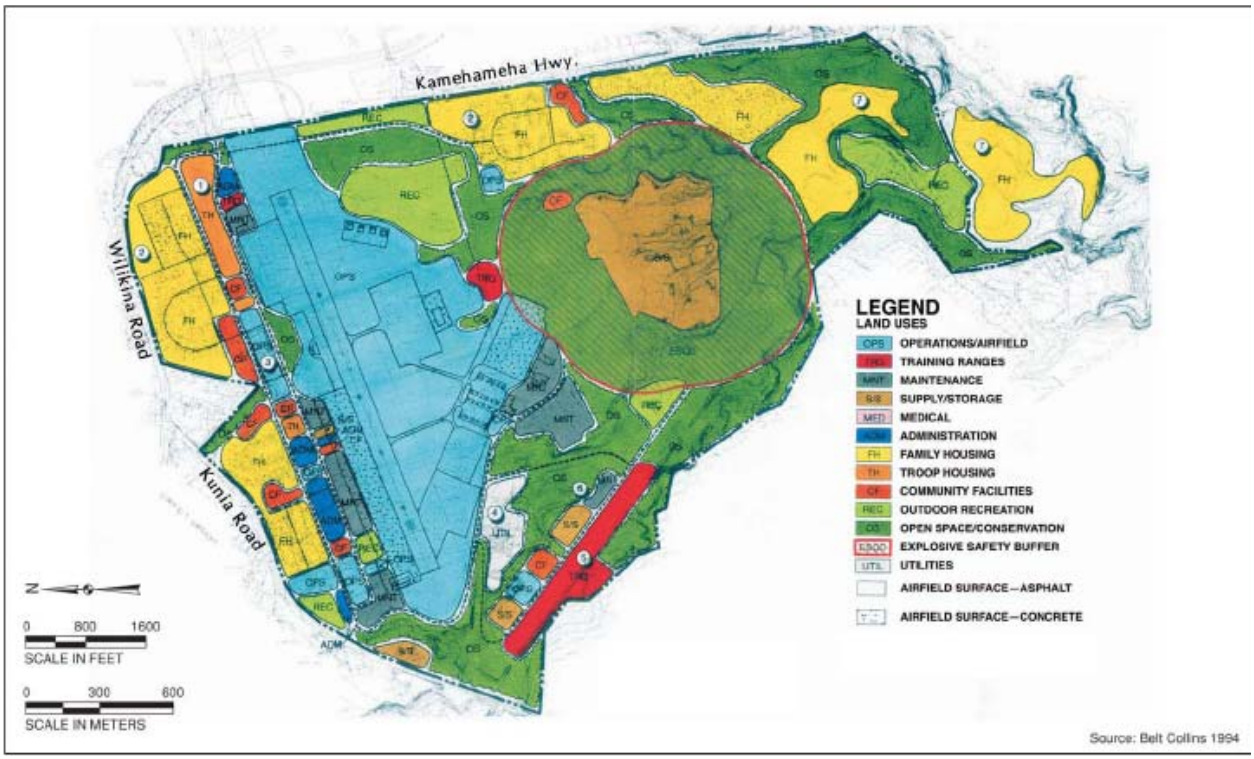


Figure 4.2-8. Land Use Plan for Wheeler Army Airfield (August 2006)

The Garrison's SBER facility is comprised of 5,154 acres of fee simple, leased, and ceded lands; and provides training and education, warehouses and storage, maintenance, and the U.S. Army Non-Commissioned Officers Academy. The training areas there are within the state-designated Conservation District Resource and Protective Subzones. The installation training area's western portion is adequate for a variety of training purposes; however, no live-fire activities occur there.

KTA consists of 9,480 acres of training areas parachute drop zones, and helicopter landing zones. The northern portion of KTA supports all tactical maneuver training, pyrotechnics, air support training, and including jungle warfare. Some of the lands there are within state-designated Conservation District Resource Subzone and much of the rest lie within the agricultural district. Recreational uses include hunting, biking, and hiking. Located to the south and southwest of KTA is KLOA; agricultural land and forest to the southeast; Pupukea Paumalu Homesteads, Camp Paumalu, and the Pupukea Paumalu Forest Reserve to the west; and agricultural land, rural communities, and park lands to the northwest.

Access to KTA may be affected by additional fencing and signs restricting access, which are necessary due to the proposed live-fire use of the area. SRTA has a maximum range of approximately 2,300 feet and an effective range of approximately 246 feet. When the range is in use, any traffic (on foot or in unprotected vehicles) within the SDZ would be prohibited. Presently, traffic (such as unauthorized public access) is not strictly controlled at KTA. Access to training lands would be restricted during fires and to when SDZs are active.

KLOA has 23,348 acres of land that is used for helicopter training, maneuver, mountain and jungle warfare, and small infantry maneuver. Approximately only 5,310 acres of the training area is adequate for maneuver training; and lease agreements promote conservation of

resources by preventing the use of live-fire, incendiary devices, tracer ammunition, explosives use, and pyrotechnics throughout the training area. KLOA is also included in the state-designated Conservation District Resource and Protective Subzones. KLOA is bordered by SBER to the south and Ahupuaa Kahana State Park to the southeast; private lands, Sacred Falls State Park and Hauula Forest Reserve to the east; private agricultural lands to the west; and the Helemano Military Reservation in the southwest.

DMR has 664 acres and includes an airfield (used primarily by private aircraft), bunkers, and earthen airplane hangars; approximately 354 acres suitable for maneuver and field training; 107 acres are developed within the cantonment area; and the remaining lands are located on steep slopes of the Waianae Mountains. Most of DMR is within the state-designated Agricultural District but is not used for agriculture. The airfield portion of DMR is within the Special Management Area (SMA). SMAs are lands within the shoreline setback, which is currently 40 feet from the shoreline, although some setback boundaries extend farther inland. SMAs are designated for more intensive management and actions within the SMA may require an SMA use permit from the local planning commissions. DMR supports no live-fire activities and therefore has no designated impact areas or associated surface danger zones. Ammunition is restricted to the use of blanks, and non-aerial smoke is allowed in designated areas. Public recreational uses at DMR include hunting, glider plane operation, parachuting, sky diving, hang gliding, and hiking. The land surrounding DMR is generally undeveloped and includes state-designated Prime agricultural land to the east, beaches to the north, and some residences to the northeast. Land south of DMR is mountainous and includes a state hunting area to the southwest. Land uses to the west include an inactive quarry, the YMCA's Camp Erdman, and the military's Camp Kaena. The Pacific Ocean is to the north.

4.2.13.2 Environmental Consequences

No Action Alternative: (Less than Significant)

Under the no action alternative, the current uses of the affected environment would not change from the conditions described in 4.2.13.1, other than as discussed as a part of pre-existing trends and the ongoing actions discussed below.

The use of Army lands would continue as they are currently designed and authorized. No changes or additions to Army lands would occur; therefore, impacts to surrounding land uses would remain less than significant. Continued coordination with the public and implementation of regulatory and administrative mitigation measures would reduce land use conflicts.

Cantonment Construction. Under the No Action Alternative, no additional cantonment construction is required in USAG-HI. With existing, on-going and limited currently planned non-GTA projects, the garrison has critical facilities available to support existing units' living, administrative, and vehicle maintenance requirements. Additionally, some construction renovation may occur at SBMR on as needed basis in the future. These activities do not affect new land or the use of the land, and no impact would occur.

Range Infrastructure Construction. No new ranges would be constructed, and range maintenance would continue as needed. This would include berm, trail and targetry maintenance and would temporarily restrict access to certain range sites. Maintenance of range areas could potentially limit access to range areas during maintenance activities. Continued

coordination with the public and implementation of regulatory and administrative mitigation measures would reduce the impacts to less than significant.

Live-Fire Training. Live-fire training, which is one of the primary factors contributing to indirect effects to surrounding land uses, would continue. Continued use of Army land for training would result in additional land disturbances. With continued implementation of current Army SOPs to minimize potential noise and safety impacts, impacts are expected to be less than significant.

Maneuver Training. Maneuver training, which is one of the primary factors contributing to indirect effects to surrounding land uses, would continue. Maneuvers would prevent access to Army training and maneuver areas by the public to ensure training maneuvers are conducted in a safe and controlled environment. The Army would continue to implement restricted access during maneuver training to ensure there are no safety risks to the public. Limiting access to maneuver training lands during Army training could restrict hunting and recreational use. This impact would be made less than significant by installation coordination with the state to provide access to hunting areas and with the general public as appropriate to address other access issues.

CSS (1,000), CS (1,000): (Less than Significant).

Cantonment Construction. Long-term effects are anticipated. As indicated previously, part of South Range was actively cultivated pineapple land or open land. While a part of the South Range is used as training land, the Army would need to plan construction of Soldier and Family housing, supply/storage, and administrative facilities to accommodate growth at Schofield Barracks. The area identified that may accommodate growth at South Range would be dependent on the number and size of the units being stationed at USAG-HI. As indicated in Chapter 4.1 (Scenarios), the requirements for 1,000 Soldiers may be 80 to 100 acres. There may be short-term effects to surrounding land uses from construction noise and activities that create dust.

Construction of a new barracks at SBMP would have only temporary effects to surrounding land uses due to construction noise and dust. Because the duration of construction may last only 12-24 months, the effects are expected to be less than significant.

Training Range Infrastructure Construction. No range construction is expected to accommodate 1,000 CS or CSS Soldiers. Therefore, no effects are anticipated.

Live-Fire Training. Long-term minor effects are anticipated. The increase in Soldiers training on live-fire ranges at South Range and SBMR may drive the need to schedule some training activities at night, which could effect nearby Soldier and Family housing.

Increased noise, dust, or other indirect effects associated with this alternative are not expected to affect off-post land uses. The increase in live-fire activities would increase restrictions on public access to the training area. As other areas on- and surrounding the installation would remain available for recreational access, the effects are anticipated to be less than significant.

Maneuver Training. Similar to live-fire training, there would be an increase in Soldiers utilizing maneuver areas across O'ahu training sites; which would result in an increase in maneuver training events. The increased training may result in additional restrictions on recreational access. As other areas on- and surrounding the installation would remain available for

recreational access, the effects are anticipated to be less than significant. Implementation of these stationing scenarios is not anticipated to have direct effects to off-post land uses.

CSS (3,000), CS (3,000): (Less than Significant).

Cantonment Construction. Under these stationing scenarios the amount of Soldiers requiring housing and facilities would, in-turn, increase the amount of land at South Range that would be required for construction. The installation may anticipate construction in an area of South Range of between 200 and 300 acres. Short-term compatibility effects from construction noise and dust may occur to nearby land uses (recreational, training, or other).

Long-term effects are also anticipated. Soldier and Family housing, and other facilities that would be constructed at South Range could be located near training areas at South Range. Proper siting of housing units would strive to minimize compatibility conflicts with existing training activities. Planning, combined with the use of noise mitigation measures against training activities is anticipated to result in less than significant long-term effects.

Training Range Infrastructure Construction. No range construction is anticipated to support these stationing scenarios; therefore, no effects are expected.

Live-fire Training. Long-term effects may occur. There would be an expected appreciable increase in training on existing ranges. The installation would continue to ensure protection of human safety by restricting access to live-fire areas during training events. Military activities, training, and restriction areas would be confined within the boundaries of existing ranges and would not affect land uses outside the installation boundary. Disturbed areas (agricultural fields and roads) would continue to be used for walking and driving between locations.

Maneuver Training. Maneuver training would continue to occur within the boundaries of existing Army lands. The frequency of these events would increase; however these uses would continue to be compatible with adjacent land uses. Public access to maneuver areas would be limited to the increased extent that the land is utilized for training.

Short- or long-term changes in ambient conditions, such as increased noise, dust or odors, or adverse effects on public views, may result in direct or indirect effects to land uses or quality of recreation in the vicinity of the maneuver training area. Smaller unit training would continue to be supported at sites on O'ahu; however larger-scale training events would occur at PTA, those effects may be discussed in Chapter 4.4.

Combat Aviation Brigade (2,800): (Significant but Mitigable to Less than Significant).

Cantonment Construction. Construction to accommodate Soldiers at South Range and SBMR would have similar effects to CS or CSS (3,000 Soldier) stationing scenarios. Short-term effects may occur from construction noise and dust; and long-term effects may occur due to siting of facilities in relation to training activities at South Range. The amount of land at South Range required for construction is estimated to be between 200 and 300 acres. The installation would need to ensure proper siting of housing to minimize compatibility conflicts.

Due to the lack of available space (e.g., hangars or equipment storage) at WAAF (Figure 4.1-3), construction may be considered at an area within the footprint of existing facilities. This may

require USAG-HI to consider relocating activities from WAAF to Schofield Barracks or South Range in order to accommodate aviation facilities at WAAF. Further analysis and planning studies would be required. Siting new CAB facilities at WAAF and relocating some existing functions/facilities to Schofield Barracks may reduce potential land use conflicts at WAAF to less than significant.

Training Range Infrastructure Construction. No range construction may be required to support these stationing scenarios; therefore, no effects are anticipated.

The reinforcement of tactical landing zones supporting tactical flight training at SBER or KLOA would be minor in nature, resulting in no additional effects to land use at these areas.

Live-fire Training. Long-term effects would occur. There would be an expected appreciable increase in training on existing ranges. The installation would continue to ensure protection of human safety by restricting access to live-fire areas during training events. Military activities, training, and restriction areas would be confined within the boundaries of existing ranges and would not affect land uses outside the installation boundary. Disturbed areas (agricultural fields and roads) would continue to be used for walking and driving between locations.

Activities involving aerial gunnery will be discussed in Chapter 4.4 PTA.

Maneuver Training. Maneuver operations (tactical flight operations) would continue to be supported as needed at the SBER or KLOA training areas. The frequency of maneuver operations would increase, but no new maneuver uses would cause any additional land use or recreation conflicts.

Impacts to airspace under this scenario were discussed in Chapter 4.2.2.

4.2.14 Hazardous Material/Hazardous Waste

4.2.14.1 Affected Environment

The ROI for hazardous materials and wastes is the area on and surrounding the potentially affected Army installations. Because fences or mountain ranges cannot always confine or reduce impacts from spills or releases of hazardous materials or wastes, areas immediately adjacent to these project locations are considered part of the ROI.

Specific regulations generally govern the use, storage, and disposal of hazardous materials and wastes. The U.S. Army Pamphlet 200-1 governs all aspects of managing hazardous materials and regulated waste by military or civilian personnel and on-post tenants and contractors at all Army facilities. The Army maintains site-specific spill prevention, control, and countermeasure (SPCC) plans and pollution prevention plans that regulate the storage and use of petroleum products and hazardous materials, respectively. Hazardous material and waste management continues to follow Army, federal, and state regulations in order to minimize potential impacts to human health or the environment.

According to the Comprehensive Environmental Responsibility, Compliance, and Liability Act (CERCLA), a hazardous substance can be defined as any substance that, due to its quantity, concentration, or physical and chemical characteristics, poses a potential hazard to human

health and safety or to the environment. CERCLA has created national policies and procedures to identify and remediate sites contaminated by hazardous substances.

The following specific hazardous materials and wastes are addressed:

- Ammunition, Live-Fire, and Unexploded Ordnance (UXO);
- Petroleum, Oils, and Lubricants (POLs) and Storage Tanks;
- Contaminated and Installation Restoration Program (IRP) Sites;
- Lead;
- Asbestos;
- Polychlorinated Biphenols (PCBs);
- Pesticides/Herbicides;
- Radon; and
- Hazardous Wastes.

The Army maintains updated material safety data sheets for all hazardous materials used. The hazardous materials and wastes used and generated within the ROI in Hawai'i are summarized in the following subsections.

Ammunition, Live-fire, and UXO: Live-fire training associated with these stationing scenarios could include spent cartridges, shell casings, and munitions, including the generation of dud and unexploded ordnance (UXO); and creates explosive (and propellants) residue; which, for SBMR and South Range (the only live-fire areas on O'ahu), are stored at satellite hazardous waste storage facilities. Each training area is restricted from public access and maintains surface danger zones (SDZ) that establish the limits to which Soldiers or range operators may approach detonation points during training. SBMR's SDZs exist roughly within an arc formed by Area X (the eastern boundary), Trimble Road (the southern boundary), and the Waianae Mountain Range (the western boundary). The direction of fire is generally west to north. The area supports small arms, mortar, and artillery training. No live tube-launched, optically tracked, wire-guided missile, air-to-ground, or ground-to-air firing is conducted at the SBMR ranges (Belt Collins 1993). In recent years, there have been no problems involving the public and the storage, transportation, and use of ammunition for training at SBMR (USAG-HI 2004). Unused ammunition is turned back into the ammunition storage point for later use.

There are no live-fire areas at WAAF; however, the airfield has an ammunition storage point with an established explosive safety quantity-distance arc. The safety arc around the ammunition storage point is in the south-central portion of the installation. Explosives quantity distance regulations (TM 9-1300-206) are imposed on ammunition storage facilities for the safety of personnel and supplies. All explosives and ammunition are stored within the ASP (Ammunition Supply Point) on WAAF under the supervision of the US Army Support Command, Hawai`i Directorate of Logistics (DOL). During 8 or 9 months of the year, ammunition is brought from WAAF or Lualualei to PTA via boat or helicopter (USAG-HI 2004). If boats are used, the ammunition is driven from Kawaihae Harbor to PTA. There have been no accidents involving the transport of ammunition in the last 5 years.

In addition, non-live-fire training occurs on SBER, South Range, DMR, KTA, and KLOA. Exercises at SBER use pyrotechnics and blank ammunition, and no live-fire exercises occur at

SBER; therefore, no surface danger zones exist because the range is used for bivouac, maneuver, and dummy fire training activities.

Results from recent soil sampling of SBMR ranges produced some samples with levels above Environmental Protection Agency (USEPA) Region IX residential and industrial PRGs (Preliminary Remediation Goals). At SBMR, two samples for RDX and one sample for nitroglycerin slightly exceeded the industrial PRG, but the level of exposure on a range (days or weeks) compared with the level of exposure used to calculate an industrial PRG (25 years) minimizes the concern. Although metals such as aluminum and iron occur naturally in Hawaiian soils, byproducts of munitions, such as lead and RDX, contribute contaminants that could create health and safety concerns in the natural environment. Hazardous waste is transferred to the SBMR transfer and accumulation point facilities, as appropriate, for proper storage until disposal contractors and the defense reutilization and marketing office (DRMO) coordinate to ensure proper disposal.

DOD 6055.9 Standard defines UXO as "explosive ordnance that has been primed, fused, armed, or otherwise prepared for action, and that has been fired, dropped, launched, projected, or placed in such a manner as to constituted a hazard to operations, installations, personnel, or material and remains unexploded either by malfunction or design or for any other cause." Grenades, mortars, and artillery weapons used in live-fire training can produce UXO; all other ammunition is inert. When a live-fire training range is closed, all UXO is normally is destroyed where it is found. No known dud rounds are left in place at the conclusion of a training exercise. UXO is suspected in various training areas and presents a potential threat to Army personnel. UXO is not cleared before maneuvers commence because there is a low level of suspected UXO. Soldiers are taught how to identify UXO and how to handle it properly.

Petroleum, Oils, Lubricants (POL), and Storage Tanks: POLs include engine fuels (gasoline, diesel, and jet fuel), motor oils and lubricants, and diesel and kerosene heating fuels. Vehicle and heating fuels include a mixture of aliphatic hydrocarbons and such aromatic organic compounds as benzene, toluene, ethylbenzene, and xylene (BTEX). CERCLA definitions of hazardous substances (42 USC 9601[14]) and pollutants exclude petroleum unless specifically listed. The USEPA interprets petroleum to include hazardous substances found naturally in crude oil and crude oil fractions, such as benzene, and hazardous substances normally added to crude oil during refining. Petroleum additives or contaminants that increase in concentration in petroleum during use are not excluded from CERCLA regulations.

Most industrial operations for the Army installations in Hawai'i use the "Super Station" centralized motor pool southwest of Lyman Road at Building 2805 on SBMR. All fuel for industrial use is transported from the Hickham Air Force Base Fuel Farm via Tesoro and stored in aboveground storage tanks (ASTs) at the Super Station (USAG-HI 2004). Two Army and Air Force Exchange Service (AAFES) retail filling stations are located on SBMR at buildings 80 and 1167. Each distributes different grades of unleaded gasoline, with diesel fuel also sold at the first station.
Both underground storage tanks (USTs) and ASTs are used to store petroleum products and fuels at locations throughout the project area. POL storage is summarized in the following paragraphs by location including USTs, ASTs, and oil-water separators.

Underground Storage Tanks: There are a number of in-use and permanently out-of-use USTs and underground storage tanks at SBMR and WAAF. USTs at DMR and KTA are no longer in use.

Aboveground Storage Tanks: There are 18 motor pools at SBMR. Some motor pools use ASTs to store diesel fuel or used oil in conjunction with vehicle maintenance. All fuel for industrial use is transported from the Hickam AFB Fuel Farm via Tesoro and stored in four ASTs at the Super Station (USAG-HI 2004). Additionally, ASTs are used by many buildings on base to store liquid petroleum gas (LPG), also known as propane, to fuel hot water heaters.

Several ASTs on WAAF in the area of the aircraft runway contain diesel or aviation gas. Emergency generators can be found throughout SBMR, SBER, and WAAF. Many of these units contain integrated tanks to store fuel as opposed to being connected to separate ASTs. A list of these units is maintained by the DPW (USAG-HI 2004). There are no known ASTs on DMR. There is one AST at KTA that is used to store diesel fuel and supports an emergency generator.

Oil-Water Separators, Wash Racks, and Grease Traps: Oil/water separators (OWSs) separate oil, fuel, and grease from water by gravity because these substances have a specific gravity that is lower than that of water (i.e., gasoline floats on water). OWSs can create environmental issues similar to those associated with USTs. Oils are skimmed from the surface of these OWSs or USTs and recycled or disposed of; sediments are removed every 6 months or more frequently, if needed, by a service contractor. The DPW maintains a list of all OWSs, grease traps, and wash racks on SBMR and these facilities are inspected regularly. The DPW is responsible for maintaining these devices (USAG-HI 2004). There are no known OWSs on DMR, or KTA.

Installation Restoration Program (IRP) Sites: There are several sites identified on SBMR and WAAF. No sites are identified at KTA. Explosive compounds have been found in surface soil and water samples at SBMR, as have metals including iron, lead, antimony, and aluminum, and semi-volatile organic compounds. Trichloroethylene (TCE) had previously been discovered in four wells supplying potable water to SBMR. The TCE exceeded regulatory limits and thus SBMR was placed on the EPA's National Priorities List (NPL); which has since been remediated (and removed from NPL in 2000).

The last fully recorded surface soil investigation (to establish baseline conditions for human health assessments for range exposure) was conducted by the U.S. Army Corps of Engineers (USACE) between November 8 and November 10, 2002; and covered the following areas: SBMR, KTA, KLOA, and DMR. Soil samples were taken during this time from a variety of locations across the Garrison. The USACE compared soil constituent concentrations with EPA PRGs for industrial soils with the goal of identifying current soil conditions and to determine if these conditions are consistent with acceptable exposure rates. It was noted that most personnel use the training ranges in Hawai`i for only brief periods of time, totaling approximately days or weeks (over the course of one year), therefore it is assumed that exposures to potential contaminants there are far lower than what would be assumed in the industrial soil PRGs. The study revealed that three classes of materials were generally present as soil constituents; these were metals, explosives, and semi-volatile organic compounds (SVOCs).

Depleted Uranium (DU) was found in August 2005 during the cleanup of unexploded ordnance (UXO) from a range located on SBMR. Follow-up surveys identified other locations where DU was found. The source of this DU was determined to be tail fin sections of Spotting Rounds for the Davy Crockett Weapons System. The Army is continuing to work with the State of Hawai`i to fully investigate this issue. This action will not involve any use of Depleted Uranium ammunition.

Lead: Lead sources include lead-based paints and lead from ordnance and ammunition. Lead was a major ingredient in house paint used throughout the country for many years. Lead-based paint (LBP) is defined as any paint or surface coating that contains more than 0.5 percent lead by weight. Buildings constructed before 1978 are considered to be a risk for LBP. LBP is a hazard because it can slough off as dust or chips that children can easily inhale or ingest.

The Army environmental department maintains a database of lead surveys. The most recent version of the lead survey database for SBMR, WAAF, KTA, and DMR is available through the Army DPW. As of 2005, structures on PTA have not been surveyed for lead.

Lead is also used in manufacturing ordnance/ammunition, such as that used for small arms training. The Army recognizes the potential health threats associated with lead. The Army document, "Prevention of Lead Migration and Erosion from Small Arms Ranges" (USAEC 1998) provides management practices to minimize adverse impacts on human health and the environment from small arms ranges. The Army implements general cleanup procedures following training events to remove shell casings and other munitions residue from the ranges, and explosive ordnance disposal (EOD) specialists destroy all UXO.

Asbestos: Upon identification of renovation or demolition projects all buildings are surveyed for asbestos-containing material.

PCBs: PCBs may be found in the cooling fluid of electrical equipment, including transformers and capacitors, particularly if such equipment was manufactured before the early 1970s. PCBs are also found in fire retardants and other solid materials. The Army is committed to removing or retrofilling all electrical equipment containing regulated amounts of dielectric fluid containing PCBs.

A survey was conducted in 1991 to determine the concentration of PCBs in the electrical distribution equipment on military installations in Hawaii. The survey results indicated that there were PCB-containing transformers and electrical equipment throughout SBMR and in a few transformers at DMR and KTA. PCB concentrations in soil samples from PTA were below the listed PRG. Devices that were found to contain regulated levels of PCB have been either removed and upgraded with non-PCB devices, or were retrofilled or removed, drained, packaged, and disposed of in accordance with 40 CFR Part 761 (PRC Environmental Management, Inc. 1995).

Pesticides and Herbicides: These materials are commonly used throughout the army at USAG-HI installations to prevent and mitigate pest-related health problems and maintain grounds and structures. These materials are currently stored in approved containers.

Due to the agricultural nature of South Range, there is suspected pesticides persisting within the soils. Further evaluation is pending.

Radon: Radon is naturally occurring in low concentrations in the Hawaiian Islands and has been evaluated in both Honolulu and Hawai`i Counties. Though radon has been associated with an increase risk of lung cancer, current samples throughout the Hawaiian Islands are lower than EPS's recommended action level of 4 picocuries per liter, and thus there is not much concern at this location.

Hazardous Wastes: The primary function of the motor pool facilities on SBMR is vehicle maintenance. Although motor fuels were previously stored and distributed at these motor pools

for military vehicles, all fueling for industrial purposes now takes place at the Super Station. Most of the motor pool facilities have a designated waste storage/holding areas with both primary and secondary containment for wastes generated by shop and vehicle servicing. Normally, the waste products are temporarily collected and stored in containers at a far corner of each motor pool, which is surrounded with sandbags for secondary containment of potential leaks, and cordoned with barbed wire (Belt Collins 1993). The waste is separated into hazardous waste such as lithium batteries or Resource Conservation and Recovery Act (RCRA) chemicals, and non-regulated waste such as recyclable oil. The hazardous waste is brought to the hazardous waste shope storage point (HWSSP), while the recyclable materials are brought to the Recyclable Material Shop Storage Point (RMSSP) (USAG-HI 2004). Hazardous wastes collected at HWSSPs are then transeferred to EPA-approved 90-day storage points on the installation before being properly disposed of.

Biomedical Waste: The Army follows strict guidelines according to AR 200-1 in the handling, use, and disposal of medical, dental, and veterinary supplies. Most medical waste within the project vicinity is produced and temporarily stored outside of the project area at Tripler Army Medical Center. The medical clinics on SBMR and PTA produce small amounts of regulated chemical and medical waste. The medical waste is combined and temporarily stored before being disposed of at a regulated off-base disposal site. Emergency medical training medics accompany units on deployment at KTA and DMR, and biomedical waste is shipped back to SBMR with the units.

4.2.14.2 Environmental Consequences

No Action Alternative: (Minor)

Under the no action alternative, the current uses of the affected environment would not change from the conditions described in 4.2.14.1, other than as discussed as a part of pre-existing trends and the ongoing actions discussed below.

The production and handling of hazardous materials and hazardous wastes would continue at current levels. The types and quantities of wastes would remain the same, and the existing identification and disposal methods are sufficient to minimize impacts to human health and safety.

Cantonment Construction. Under the No Action Alternative, no additional cantonment construction is required in USAG-HI. With existing, on-going and limited currently planned non-GTA projects, the garrison has critical facilities available to support existing units' living, administrative, and vehicle maintenance requirements. Additionally, some construction renovation may occur at SBMR on as needed basis in the future. No impacts would be expected from asbestos, LBP, PCBs, pesticides/herbicides, biomedical waste, or radon under the No Action. There are minimal impacts to human health or safety that would result from the renovation of barracks or completion of other projects.

Range Infrastructure Construction. No new ranges would be constructed under the No Action alternative. Hazardous materials would be generated through range maintenance activities. Soils contaminated with lead would be properly handled and reused to maintain berms. Hazardous materials and wastes would continue to be managed in accordance with existing federal, state, installation-wide hazardous materials management plans, the current Army protocols, and SOPs.

Ongoing action to address issues related to depleted uranium would continue under implementation of the No Action Alternative. The Army would continue to provide information and any necessary training to the State Department of Health in a timely manner and partner with the State in the planning and execution of a survey and monitoring effort and a mutually agreed upon response.

Live-Fire Training. Live-fire exercises would continue as a part of meeting the training requirements of units training on Oahu. Training would occur on existing ranges. Continued use of munitions during training could affect the training lands through the addition of lead to the soils and creating UXO. Under the No Action alternative, ammunition handling, storage, and disposal would continue at current levels. Existing weapons would continue to be used as part of current force training. Range contamination would continue to accumulate until range closure and remedial cleanup, but there would be no increase in ammunition used, so there would be only consistent levels of ongoing increased contamination. It is not likely that general training would result in any significant impacts. Current force training would continue to follow existing USAG-HI protocol. As the amount of ammunition used would not change, no increases in potential impacts from the presence of UXO are expected.

Maneuver Training. The Army would continue to follow federal, state, and Army protocols. Wheeled vehicles would continue to be used by current forces in maneuver training on SBMR, DMR, and KTA. Consequently, the potential exists for spills during maneuver training. However, continued implementation of regulatory and administrative mitigation measures is expected to limit the potential impacts to human health and safety to minor.

CSS (1,000), CS (1,000), Combat Aviation Brigade (2,800), CSS (3,000), CS (3,000): (Less than Significant).

Cantonment Construction: **1,000 CS/CSS (Minor) / 3,000 CS/CSS and CAB (Less than Significant**

No asbestos or lead would be used in the construction of new facilities, and the installation would ensure mitigations are in place for radon. Under these scenarios, the requirement for motorpools would be coupled as hazardous materials collection sites for POLs. The additional tactical and fleet vehicles may require additional ASTs/USTs, wash racks, and thus oil-water separators. Similar effects would occur at WAAF to accommodate the additional helicopters and equipment associated with the Combat Aviation Brigade.

Pesticides that may exist in soils at South Range could adversely affect nearby waterbodies during construction due to stormwater runoff. Implementation of BMPs and mitigations to minimize runoff from construction sites would be required.

For housing, child development centers, and other community support or recreational facilities, the use of pesticides and herbicides used to control insects, rodents, and plants (such as poison ivy) may pose long-term minor effects (because direct exposure to these materials is unlikely) and because the use and storage of these materials would likely be limited, and its application would be compliant with all relevant regulations.

Additional short-term and long-term effects could occur from an increase in construction equipment (short-term) and Soldier fleet vehicles and POVs (long-term). More vehicles would increase the potential for spills or releases of hazardous materials to the environment.

Additionally, the amount of recyclable waste (from petroleum products) would increase throughout the Garrison.

The aircraft associated with the CAB scenario would generate more POLs than would vehicles associated with other stationing scenarios, however, the quantities is not anticipated to exceed thresholds under the Garrison's hazardous waste permits, resulting in minor effects.

Additionally, demolition activities associated with in-fill construction at SBMR and WAAF under 3,000 person CS/CSS and CAB stationing scenarios would result in the need to dispose more hazardous wastes.

Training Range Infrastructure Construction: **No Impact (All CS/CSS stationing scenarios) / Combat Aviation Brigade (Minor Impact)**

These stationing scenarios would not require construction of new range infrastructure. USAG-HI existing facilities would be able to meet these units' training needs through the use of existing or planned range projects.

Range expansion supporting the Combat Aviation Brigade is discussed in the analysis for PTA.

Additionally, reinforcement of landing zones supporting aircraft tactical maneuver may occur at SBER or KLOA. These reinforcement measures could involve potential POL spills during construction.

Live-fire Training: **Less than Significant** (All scenarios)

All of these scenarios would increase the frequency of Soldier live-fire training on ranges at SBMR and South Range; thus increasing the amount of lead bullets and other munitions expended in the range area. Live-fire small arms ranges would retain their berms to stop projectiles fired at the ranges. Although more lead from live-fire activities would be fired into impact berms, the installation has mitigation measures in place to ensure berms are well maintained and re-graded as needed. Due to the fact that there would be no new munitions or UXO generating events, and an increase in live-fire training on designated facilities would not exceed a 15 to 20% increase in firing activities (primarily small arms and machine gun) less than significant impacts are anticipated.

DUD items may be produced from the use of the MK-19 grenade machine gun on the SBMR QTR, however only training rounds are used on this facility. Activities supported by combat engineers or EOD units may train with explosive material. The use of explosive material would be consistent with current uses, and would not pose a significant impact to human health or the environment.

No new weapon types are anticipated to be introduced to training areas at USAG Hawai'i. The amount of ammunition required however is not expected to exceed the ammunition storage capacity in these areas.

The ammunition for weapons would continue to be maintained and managed in accordance with federal and USAG-HI protocol, therefore creating no additional impact. Handling and storage methods, disposal protocols, and safety procedures would continue to be conducted in accordance with existing regulations.

When Soldiers train at the ranges, safety protocol must be followed in order to protect the public from injury or accidents. SDZs are set up in accordance with Army Pamphlet 385-64, Ammunition and Explosive Safety Standards. In addition, in order to prevent conflict with recreational activities in areas near the training ranges, land use restrictions are set up to limit access to the areas during range training times. SDZs are included in the design configuration for all ranges.

Additionally, similar safety protocol must be implemented to protect Army personnel during range training. Soldiers are given safety manuals with a complete discussion of safety procedures while training. In addition, before training, Soldiers are briefed on range-specific safety measures that may be necessary during the special exercise. Finally, Soldiers and officers are provided with field manuals for each specific operation and exercise that give more detailed procedures and protocol to be followed in order to prevent accidents.

Maneuver Training. Maneuver training associated with these scenarios would continue to be conducted in existing training locations including KTA, KLOA, DMR, SBER, SBMR and South Range. Transportation of personnel and use of flammable or combustible materials, such as fuel or ordnance (i.e., weaponry or equipment), could increase the potential for spills or releases of hazardous materials, especially in areas not previously used frequently. Best management practices would be practiced at each of these proposed facilities, and project area personnel would follow USEPA and USAG-HI protocol for using and handling hazardous materials, such as POLs. Each facility maintains strict SOPs and spill contingency plans for hazardous materials and waste, identifying specific operating responsibilities and procedures. Spill prevention control countermeasure plans would be updated to reflect changes implemented as part of stationing scenarios.

4.2.15 Traffic and Transportation

4.2.15.1 Affected Environment

Traffic on O'ahu extends largely from urban development in southern coastal areas from Ewa on the west of the island to Hawai'i Kai to the east. The Island of O'ahu has four freeways, State Road 78, H-1, H-2, and H-3. State Road 78 (aka Moanalua Road) functions as a bypass for H-1 (Lunalilo Freeway), which spans the south portion of the island connecting the Ewa area with Hawai'i Kai. H-2 connects the Ewa area with the central portion of the island (where Schofield Barracks is located) and connects with H-1 to east of Honolulu. H-3 connects Pearl Harbor with Kaneohe Bay Marine Corps Airfield at the northeast portion of the island. The other state highways make up roughly 200 lane-miles of roadway; and the city and county of Honolulu contain approximately 1,200 lane-miles of roadway.

Very few roads connect the northern and southern portions of O'ahu (separated by the Koolau Mountains); these are Pali Highway, Likelike Highway, and H-3. The Kalanianaole highway traverses through the east coastline between Hawai'i Kai and Kailua. H-2 and Kamehameha Highway traverses the western portion of the Koolau Range and connects Honolulu with Mililani, Wahiawa, Schofield Barracks, and Haleiwa. The training areas around Schofield Barracks are primarily accessed through the Kamehameha Highway and Kunia Road (from Ewa), and Kamananui Road and Wilikina Drive (from the North Shore). Vehicle traffic on Schofield Barracks is contained primarily through Trimble and Lyman Roads, and Kolekole Avenue. Circulation routes through KTA are contained primarily through Drum Road and Kamehameha Highway.

There is already a loss-of-service on- and off-post due to current local and commuter traffic. Mornings and afternoon commutes tend to experience the heaviest traffic flow. There is also an increased flow of traffic around noon, when installation personnel travel to various on-post dining facilities for lunch. Additionally, a key existing traffic circulation issue for SBMR is excessive traffic through housing areas, which degrades the quality of life and increases the risk to pedestrians and cyclists.

The ROI for Schofield Barracks and the O'ahu Training Sites are as follows:

SBMR – within the perimeter of SBMR and WAAF, and Kunia Road, Kamehameha Highway, and Wilikina Road;

DMR – the corridor between SBMR and DMR, which includes the area from central O'ahu to DMR (northwest area of the island);

KTA – this consists of Drum Road, the corridor extending from SBMR (central O'ahu) to KTA (the windward side of O'ahu).

Levels of Service for Highway 99, which passes in front of SBMR is currently the lowest level of service designation for traffic used by the Hawaii Department of Transportation (Level F).

4.2.15.2 Environmental Consequences

No Action Alternative: (Less than Significant)

Under the no action alternative, the current uses of the affected environment would not change from the conditions described in 4.2.15.1, other than as discussed as a part of pre-existing trends and the ongoing actions discussed below.

No additional Soldiers or vehicles would be stationed on Oahu under this alternative. Traffic on Army installations would remain at existing acceptable levels. Convoys of military vehicles associated with maneuver training would continue to affect civilian traffic on public roads. Coordination and public notification will maintain this impact to less than significant.

Cantonment Construction. Under the No Action Alternative, no additional cantonment construction is required in USAG-HI. With existing, on-going and limited currently planned non-GTA projects, the garrison has critical facilities available to support existing units' living, administrative, and vehicle maintenance requirements. Additionally, some construction renovation may occur at SBMR on as needed basis in the future. These activities are not anticipated to affect traffic patterns or volume of traffic flow, and they would not require adjustments to existing roadways and transportation networks.

Range Infrastructure Construction. No new ranges would be constructed under the No Action alternative. There would be no anticipated impacts to traffic with the maintenance of existing ranges to include maintenance of targetry, berms, trails and stream crossings.

Live-Fire Training. Under the No Action alternative, there would be no change to the frequency of live-fire training. Continued live-fire range use would not affect traffic or transportation resources away from the training areas. A majority of military traffic would be designated on military roads and trails, therefore military traffic would not interfere with civilian traffic.

Consequently, impacts to traffic and transportation resources caused by live-fire training would not be expected.

Maneuver Training. Under No Action, there would continue to be traffic impacts on public roadways associated with current force activities. This would include convoy traffic on public roads that may periodically cause traffic congestion. Traffic conditions are currently operating at acceptable levels. However, during certain periods, traffic congestion occurs on roads to WAAF and SBMR. Under this alternative, the traffic volumes along the public roadways would remain at current levels, and the level of service would not change.

Military vehicles traveling between the Army installations would continue to cross public roadways. Guidance regarding convoys has been established. Examples include, per command guidance, USAG-HI convoys normally maintain a gap of 15 to 30 minutes between serials (a group of military vehicles moving together), 330 feet between vehicles on highways, and 7.5 to 15 feet while in town traffic. Per state regulation, military convoys are not authorized movement on state highways during peak-hour conditions (between 6:00 AM and 8:30 AM and 3:00 PM and 6:00 PM, Monday through Friday). The maximum number of vehicle per convoy would be 24, and convoy traffic would yield to public traffic at road crossings. These measures will continue to be followed to minimize convoy impacts to traffic.

CSS (1,000), CS (1,000): (Significant but Mitigable) / Combat Aviation Brigade (2,800), CSS (3,000), CS (3,000) (Significant Adverse)

With each of these stationing scenarios, anticipated impacts would include an increase in traffic from construction equipment; transportation of Soldiers between their home station and training areas. Traffic would also increase from Soldier (and Family) POVs and commuters. During peak commuter hours (including the noon lunch hour) the roads on- and around SBMR and South Range would need to accommodate an estimated 800 to 2,400 additional vehicles as approximately 50 percent of Soldiers and their Families are estimated to use these roads during these times. Traffic conditions on Highway 99 are currently classified as level F. While traffic levels from the stationing of up to 1,000 additional Soldiers and their Families are viewed as an increase below significant adverse levels, stationing of 3,000 additional Soldiers would perceptibly increase traffic congestion and is anticipated to have a significant adverse impact.

Cantonment Construction: **Less than Significant**

Short-term effects are anticipated. Impacts would include additional traffic from worker vehicles and trucks and a possible reduction in available parking adjacent to the construction site (for construction at SBMP). These effects are anticipated to last the duration of construction projects. The project-related construction traffic is not anticipated to significantly affect operations at post intersections and street segments in the project vicinity. Traffic may generally remain free flowing. Due to the temporary nature of the project, impacts from construction traffic at SBMP are anticipated to be less than significant.

Construction at South Range would consist of Soldier and Family housing, administrative buildings, and other facilities. To support new facilities, South Range would require the development of new access and egress routes to the new facilities; improvements to the existing cantonment area road network; an extension of roads and streets in the existing cantonment area; and emergency access and fire-break gravel roadways. Although the construction projects would be many, these would be temporary, lasting only the duration of

construction. Due to the nature of construction, large equipment would enter, stay on-site (as needed), and leave or be transported from the construction site(s) in phases. Because of the current lack of activity at South Range (relative to SBMP), coupled with the effects from construction traffic to on-post activities, the anticipated level of impact from construction is less than significant.

Construction at WAAF to accommodate CAB equipment and helicopter hangars is also expected to have short-term effects during the planned construction period. The level of impact would be determined by the location of proposed facility siting, whether existing facilities would need to be re-located (resulting in an increased demolition/construction time), and the scale of the construction site.

The long-term effects would be expected from an increase in Soldiers stationed at SBMR and South Range, which would have direct effects to traffic conditions on- and off-post. The addition of new barracks on-post would be beneficial to off-post conditions by minimizing movement of traffic from new personnel (and Families) to off-post locations. The added Soldiers and Family members may result in significant impacts to on- and off-post locations. A new traffic study may be required by the installation to more accurately determine the level of impacts, and identify mitigations to lessen the potential affects of stationing new Soldiers at SBMR.

The Army currently operates a public web site (http://www.25idl.army.mil) that lists a schedule of upcoming USAG-HI activities including training and public involvement projects. Subject to force protection measures and other security measures, the site would contain USAG-HI training and convoy schedules, community projects in which the USAG-HI is involved, USAG-HI activities and functions, general USAG-HI news that might be of interest to the public, and USAG-HI services available to the public.

Off-post traffic construction projects are listed in Chapter 4.7 Cumulative Effects.

Training Range Infrastructure Construction: **No Impact**

No new range construction is anticipated to support these stationing scenarios. No effects are anticipated.

Live-fire Training: **Minor Impact**

Each of these scenarios would equate to an increased number of Soldiers training on O'ahu training ranges. A majority of military traffic would be designated on military roads and trails, therefore military traffic would not interfere with civilian traffic.

Maneuver Training: **Less than Significant**

Less than Significant impacts would occur. Primary impacts to civilian traffic would occur when CS/CSS vehicles would depart to PTA to support combat maneuver unit training. The frequency of these CS/CSS convoy maneuvers would represent more than a marginal increase as CS/CSS unit stationing would not drive increased PTA deployment requirements. Frequency of convoys woud be expected to be consistent with existing deployments.

An increase in Soldiers stationed at O'ahu would result in an increase the amount of travel required between the Soldier's home station SBMP and training areas. Soldiers may travel in

convoys to be transported to and from training areas. Soldiers are required to follow the guidelines for convoy travel as directed by USAG-HI.

Regulatory and Administrative Mitigation 1: Convoys would move in serials, or groups, some as small as 6 vehicles or as large as 24 vehicles; and would travel at gaps of 15 to 30 minutes between serials to lessen the impact to on- or off-post traffic. State regulations prohibit convoys to travel on highways during peak commuter hours (Mondays through Fridays between 6:00 and 8:30AM, and 3:00 and 6:00PM).

Regulatory and Administrative Mitigation 2: SBMR Installation master planners are being trained and looking for opportunities to incorporate multi-use traffic saving planning concepts on SBMR. Concepts would be designed to provide services with desired services on post to limit the number of off-post trips as well as limit the need for vehicle traffic on-post. Training discussions and sessions are on-going with USAG-HI DPW master planners, Headquarters Department of the Army, and master planning professionals.

4.2.16 Socioeconomic

4.2.16.1 Affected Environment

The ROI associated with the proposed stationing scenarios includes the Counties of Honolulu, located on O'ahu where Schofield Barracks and its designated training areas (South Range, East Range, KTA, and KLOA) reside, and includes Hawai`i (the Island of Hawai`i), where PTA is located (as discussed in Chapter 4.4.14). It should be noted that one county covers each island. Honolulu County covers O'ahu and parts of the smaller islands, and Hawai`i County covers the Island of Hawai'i. Honolulu County is further divided into seven Census County Divisions (CCDs) which are Ewa, Honolulu, Koolauloa, Koolaupoko, Wahaiwa, Waialua, and Waianae; each is a permanent statistical area established cooperatively by the state and local governments with the U.S. Census Bureau. KTA is located within the Koolauloa CCD; DMR resides within the Waialua CCD; and Schofield Barracks resides within the Wahiawa CCD..

The population surrounding DMR represented (in the 2000 Census) approximately 1.6 percent of the population of Honolulu County, and by the year 2000, grew to an estimated 14,027 residents. Approximately 69.6 percent of the area (Waialua CCD) is made up of minority ethnic groups, the largest percent of which is Asian/Pacific Islander (37.3 percent of the population). No military or civilian personnel are permanently stationed or reside at DMR.

For KTA, the population within the Koolauloa CCD represents approximately 2.2 percent of Honolulu County. In the year 2000 nearly 18,900 residents resided in this region. Approximately 68 percent of the population was comprised of minority ethnic groups, the largest percent of which is Asian/Pacific Islander (38.9 percent of the population). No military or civilian personnel are permanently stationed or reside at KTA.

For KLOA, the population is made up of the demographics described for the Waialua and Koolauloa CCDs (as previously described). No military or civilian personnel are permanently stationed or reside at KLOA.

According to 2006 data provided by the U.S. Census Bureau the population of the County of Honolulu is estimated at 909,863 and the average household size is approximately 2.93 persons per household. Of the total population, more than 472,000 (age 16 and over) is estimated to contribute to the workforce. The average per capita income is $27,478 and the

median household income is estimated at $63,372. The unemployment rate in Honolulu County is 3.8 percent, which is below the state average. The total number of housing units on the island is 332,718, of those approximately 125,411 are renter occupied.

According to the Hawai`i Department of Business, Economic Development and Tourism (HDBEDT), the Federal government expenditures in Hawai`i totaled approximately $9 billion in the year 2000; 39 percent of that was defense expenditures, which were down nearly 54 percent from 1990. The amount of money expended by the Defense Department has increased by 33 percent from 1990 to 2000. By 2002, the defense spending in Hawai`i reached $3,045 per capita, second only to that of Virginia among the 50 United States. Nonetheless, defense spending in Hawai`i is an economic driver covering goods and services both on- and off-post, and for the off-post housing market.

The school enrollment rates for Honolulu and Hawai`i Counties can be found in Appendix C of this document. The information analyzed for Oahu School Districts was provided by the State of Hawai`i Department of Education, Office of School Facilities and Support Services (July 2008).

Due to the spatial distribution of military personnel residing off-post, this information is relevant for the analysis of School impacts at both Schofield Barracks and Fort Shafter. Hawai`i County Schools are not anticipated to be impacted by potential Army growth in Hawai`i. No units are being considered for stationing on the Island of Hawai`i; under each stationing scenario the units analyzed in this SPEIS are considered for stationing in Oahu only. Soldiers home-stationed at SBMR or Fort Shafter either live on-post, or live in off-post housing, within commuting distance from the installation. Due to the size of Oahu (approximately 44 miles long and 30 miles wide[3]) Soldiers stationed at either Fort Shafter or Schofield Barracks may reside off-post virtually anywhere on Oahu; therefore, stationing new units on Oahu has the potential to influence school enrollment throughout the island of Oahu.

The State of Hawai`i Department of Education operates four School Districts on Oahu; these are Honolulu District, Central District, Leeward District, and Windward District.

The Honolulu District oversees 55 schools within six complexes; these are the Farrington, Kaimuki, Kaiser, Kalani, McKinley, and the Roosevelt Complexes. The Farrington complex operates twelve (12) schools; of those, only Farrington High School is operating above capacity. School enrollment estimates from 2008-2013 projects continued excess capacity for each school in the Farrington complex with the exception of Farrington High School, which is projected to remain at above capacity attendance. Of the seven (7) schools operated within the Kalani Complex, one school is projected to operate above capacity from 2007-2013. Of the ten (10) schools operated in the Roosevelt Complex, one school is projected to operate above capacity from the 2007-2008 school year to 2013.

The Central School District operates 42 schools within 6 complexes; these are the Aiea, Leilehua, Mililani, Moanalua, Radford, and Waialua Complexes. Of the seven (7) schools within the Aiea Complex, presently one school is operating above capacity. Projections through 2013 suggest that school may remain at above capacity enrollment, while most of the other schools gain excess capacity. Of the ten (10) schools operated in the Leilehua Complex, one school is presently operating above capacity and is projected to remain operating above capacity through 2013. Of the seven (7) schools operating within the Miliani Complex, two schools are operating above capacity; and only one of those schools is projected to remain operating above capacity

[3] Information found at www.gohawaii.com, 16 July 2008.

through 2013. Of the six (6) schools operating in the Moanalua School Complex two schools are presently operating above capacity and both are projected to remain operating above capacity through 2013; although enrollment numbers are anticipated to decrease for one of those schools alleviating some capacity concern. All schools within the Radford and Waialua Complexes are currently operating with excess capacity and are projected to remain that way through 2013.

The Leeward District operates 44 schools within 6 complexes; these are the Campbell, Kapolei, Nanakuli, Pearl City, Waianae, and Waipahu Complexes. Of the ten (10) schools operating in the Campbell Complex, three are at above-capacity enrollment and are projected to continue to operate above-capacity through 2013. Of the seven (7) schools within the Kapolei Complex one school is presently operating above capacity and is projected to remain that way through 2013. All of the schools within the Nanakuli Complex are operating with excess capacity. Of the ten (10) schools in the Pearl City Complex, one school is operating above capacity and is projected to remain above capacity through 2013; however enrollment is projected to decrease throughout that time. Of the seven (7) schools in the Waipahu Complex, four schools (more than 50 percent) are operating at above capacity enrollment presently; of those, only two schools are projected to remain operating at above capacity through 2013.

The Windward District operates 31 schools among four Complexes; these are Castle, Kahuku, Kailua, and the Kalaheo Complexes. All of the schools within the Windward School District are operating with excess capacity and are projected to remain with excess capacity through 2013.

4.2.16.2 Environmental Consequences

No Action Alternative: (Less than Significant)

Under the no action alternative, the current uses of the affected environment would not change from the conditions described in 4.2.16.1, other than as discussed as a part of pre-existing trends and the ongoing actions discussed below.

No additional Soldiers or vehicles would be stationed on Oahu under this alternative. Ongoing and planned construction projects will continue to have a beneficial impact to the local economy. The need for local goods and services would remain the same, and no shortages or changes in demand are expected. Schools surrounding SBMR would continue to project having extra capacity for 200-300 additional spaces for elementary and middle school aged children while schools surrounding Fort Shafter would continue to operate at or under capacity with existing student populations.

Cantonment Construction. Under the No Action Alternative, no additional cantonment construction is required in USAG-HI. With existing, on-going and limited currently planned non-GTA projects, the garrison has critical facilities available to support existing units' living, administrative, and vehicle maintenance requirements. Additionally, some construction renovation may occur at SBMR on as needed basis in the future. These activities are not anticipated to have negative impacts, but rather a long-term positive effect resulting from military spending on Oahu.

Range Infrastructure Construction. No new range construction projects would occur under the No Action alternative. Range maintenance would continue to occur at the various training areas

and ranges. These actions would have less than significant impacts on the local population, economy, and employment.

Live-Fire Training. Under the No Action alternative, there would be no change to the nature of live-fire training on Oahu. There are no socioeconomic impacts anticipated from continued use of existing live-fire ranges in their current configuration.

Maneuver Training. Under the No Action alternative, there would be no change to the nature of maneuver training on Oahu. There are no socioeconomic impacts anticipated from continued use of existing maneuver ranges in their current configuration.

CSS (1,000), CS (1,000), CSS (3,000), CS (3,000), Aviation Brigade (2,800): (Less than Significant and Beneficial Impact).

Preliminary analysis as sited in Appendix A (Economic Impact Forecasting System (EIFS) Analysis) suggests that the addition of 1,000 Soldiers may add approximately 225 school-aged children to school systems throughout Oahu. These estimates apply to grades K-12. The addition of up to 3,000 Soldiers may add approximately 745 school-aged children to school districts throughout Oahu, also spaced from grades K-12. Soldiers stationed at either Fort Shafter or Schofield Barracks may reside off-post virtually anywhere on Oahu; therefore, stationing new units on Oahu has the potential to influence school enrollment throughout the island of Oahu. Of the 172 Schools operating on Oahu, seventeen (17) schools are presently operating above capacity. Without any available information in existence on where Soldiers with Families may choose to reside, at this time it is not feasible to determine specific impacts to individual school enrollment numbers. Given the number of schools operating with excess capacity presently on Oahu, it is feasible to suggest that the addition of approximately 225 to 745 school-aged children will not have a significant impact to classroom size and school capacity.

The Army is aware of concerns regarding the potential effects from Army growth to classroom size and school capacity; and the Army will continue to work with the Department of Education to provide more accurate information to the school system regarding potential growth in Hawai`i.

Cantonment Construction. Beneficial effects are anticipated. For all scenarios, the construction of new facilities at SBMR (potential barracks) and SRAA will have a short-term beneficial effect from an increase in military spending on commercial goods and construction services; therefore resulting in a positive influence to employment and income. A long-term positive effect would result from military and dependent spending on the Island of O'ahu.

Training Range Infrastructure Construction. No additional effects are anticipated. The existing range infrastructure is adequate to meet the needs of any of these stationing scenarios. Therefore, no impacts are anticipated.

Live-fire Training. No impact.

Maneuver Training. No impact.

Environmental Justice: None of the Army's proposed stationing scenarios would disproportionately adversely affect lower income segments of the population. A majority of

impacts to the civilian population would be perceived by Department of the Army Soldiers, Civilians and there Families.

4.2.17 Global Warming

Scientists have concluded that human activities are changing the composition of the atmosphere, and that increasing the concentration of greenhouse gases will change the planet's climate. There is uncertainty as to how much it will change, and at what rate it will change. This action contributes greenhouse gases to the earth's atmosphere by adding vehicles and their associated carbon emissions to Alaska and Hawai'i. It could also remove vegetation, which would otherwise absorb carbon dioxide. This is not a significant cumulative impact when taken in context of the global situation and the Army's efforts. To begin, the new units would be stationed somewhere in the United States and the decision to create them is driven by Army mission requirements. Even if the units were not stationed in Alaska and Hawai'i, they would be somewhere else in the United States and the net addition to global carbon dioxide emissions would be the same. It is also important to place these carbon emissions in the context of the federal government's overall plan to reduce carbon emissions. Executive Order 13423 sets as a goal for all federal agencies the improvement of energy efficiency and the "reduc[tion] of greenhouse gas emissions of the agency, through reduction of energy intensity by (i) 3 percent annually through the end of fiscal year 2015, or (ii) 30 percent by the end of fiscal year 2015, relative to the baseline to the agency's energy use in fiscal year 2003." The U.S. Army Energy Strategy for Installations (U.S. Army Energy Strategy for Installations, 8 July 2005, available at http://army- energy.hqda.pentagon.mil/docs/strategy.pdf) also contains strategies to reduce energy waste and improve efficiency. USAG-HI is in the process of developing a master planning approach to limit the need for vehicular travel on and off-post to limit carbon emissions. In addition the installation is looking for opportunities to expand renewable energy sources while at the Army level efforts to acquire equipment requiring less fuel consumption have been underway for several years. Taking these policies into account, this action does not represent a net incremental addition to the global climate change problem.

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4.3 Fort Shafter, Hawai`i

Fort Shafter Summary

This section provides an overview of the actions the Army would take to implement the Proposed Action under each stationing scenario at Fort Shafter, HI. The Army would undertake only one primary type of action to support new unit stationing at Fort Shafter. This action involves cantonment construction. Although these Soldiers scenarios would involve maneuver training and live-fire training, these actions would be accommodated by a combination of the O'ahu Training Sites and Pohakuloa Training Area. Discussion of impacts from live-fire training and maneuver training are discussed in Chapter 4.2 and 4.4. The discussion of environmental consequences to each resource discusses the impacts of each type of activity and assesses the combined impact of these activities on a given resource. Table 4.3-1 below lists the environmental impacts which are anticipated to occur if the Army were to implement the different unit stationing assignments to Fort Shafter to support growth of the Army needed to support operations in the Pacific Theater. Stationing scenarios possible at Fort Shafter include the stationing of 1,000 additional Combat Support (CS) or Combat Service Support Soldiers (CSS). If the impacts of two scenarios are identical, then discussion of impacts for those scenarios has been consolidated to one section. A summary of the symbology which discusses intensity of anticipated environmental impacts is provided below:

Description of VEC Impact Ratings

○	No impact, minimal or minor impacts are anticipated
⊙	Less than Significant
⊘	Significant but Mitigable
⊗	Significant Adverse impacts
+	Beneficial Impact
N/A	Not Applicable

Table 4.3-1. Fort Shafter VEC Ratings

Fort Shafter, Hawai`i			
VEC	Combat Service Support (1,000 Soldiers)	Combat Support (1,000 Soldiers)	No Action Alternative
Air Quality	⊙	⊙	⊙
Air Space	○	○	○
Cultural	⊙	⊙	⊙
Noise	⊗	⊗	○
Soil Erosion Effects	⊘	⊘	⊙
Biological Resources	⊘	⊘	○
Wetlands	○	○	○
Water Resources	⊙	⊙	○
Facilities	⊗	⊗	⊙
Energy Demand/ Generation	⊘	⊘	○
Land Use Conflict/ Compatibility	⊗	⊗	○
Haz Mat/ Haz Waste	⊙	⊙	⊙
Traffic and Transportation	⊘	⊘	⊙
Socioeconomics	⊙ +	⊙ +	⊙

Fort Shafter Introduction

Fort Shafter is located on the south-central coast of O'ahu, and the site of the USARPAC command headquarters and the US Army Engineer Division. The 590-acre installation extends up the interfluve (ridgeline) between Kalihi and Moanalua valleys, as well as onto the coastal plain (as Shafter Flats) at Māpunapuna, and is approximately three miles northwest of downtown Honolulu. Moanalua Freeway is aligned east-west through the installation, dividing it into two areas. North of the freeway is Main Post and south is Shafter Flats. Fort Shafter is also the oldest military base on O'ahu.

4.3.1 Fort Shafter Proposed Actions to Support Army Stationing Scenarios

As discussed in Chapter 4.0 (Methodologies) the Army is evaluating several stationing scenarios in USAG-HI that could result in impacts. Due to buildable space constraints, however, the Army is assessing two stationing scenarios at Fort Shafter. This involves the stationing of either 1,000 additional combat support or combat service support troops. The administrative functions of these scenarios are similar, and therefore are discussed under the same stationing scenario below.

Impacts from the training of these units would primarily occur at SBMR. Units stationed at Fort Shafter are anticipated to be associated with Theater headquarters units and would have minimal training impact other than to qualify with their individual and crew served weapons semi-annully at SBMR. A majority of unit training would be battalion and BCT simulations conducted from within the USAG-HI simulations center. These units would conduct some field training, but this would primarily involve setting up communications equipment at static field sites to exercise unit command and control. A description of activities that would be implemented as part of each scenario is provided below. This description focuses on cantonment construction impacts that would be realized at Fort Shafter. Training impacts of stationing 1,000 CS or CSS Soldiers are captured in the live-fire discussion of SBMR and these impacts can be referenced in Section 4.2 and summary tables 4.0-1 and 4.0-2.

Stationing Scenarios: Growth by 1,000 Additional Combat Support or Combat Service Support Soldiers

Cantonment Construction: As part of this alternative, additional Garrison infrastructure such as company operations facilities (COFs), Headquarters buildings, storage buildings, motor pools for military vehicle parking, and other maintenance facilities would be sited on Fort Shafter, HI. To accommodate the construction of these facilities the Army would demolish existing or temporary facilities and build on previously disturbed land. Ft. Shafter has existing water, sewer and power to accommodate this level of Army growth and would not need to upgrade utilities.

No training range construction, live-fire exercises, or maneuver exercises would take place at Fort Shafter. Units stationed here would conduct individual weapons qualification and live-fire training on existing ranges at SBMR and at South Range. Discussion in Chapter 4.2 provides details related to the environmental impacts caused by training infrastructure construction, live-fire training and maneuver training activities for these 1,000 Soldier stationing scenarios at training sites on O'ahu. Impacts these Soldier stationing scenarios would have on PTA are provided in Chapter 4.4. Because discussion of the affected environment and environmental consequences from training and training infrastructure construction are provided in other sections for these stationing scenarios, discussion of potential impacts from implementing stationing scenarios at Fort Shafter is limited to cantonment construction. Live-fire and non live-fire exercises and maneuver training would occur as discussed in Chapter 4.2 and 4.4 at SBMR, South Range, SBER, PTA, KTA, and KLOA.

Baseline description for Fort Shafter No Action Alternative

The No Action alternative baseline for Fort Shafter consists of impacts related to units presently stationed at Fort Shafter. Fort Shafter would remain the headquarters of the United States Army Pacific Command and the home for the units presently stationed there. No additional units or Soldiers would be stationed at Fort Shafter, and the Soldier population would remain

approximately 1,780. Ongoing and planned cantonment construction projects would proceed, including the Command and Control Center (C2C) and barracks associated with modular force restructuring. Fort Shafter would remain a primarily administrative facility, and units stationed there would continue to perform required training at other USAG-HI sites. Regulatory and administrative mitigation measures, BMPs, and other programs (e.g. INRMP, ICRMP, IFWMP, ITAM, DuSMMoP) would continue to be implemented to reduce impacts associated with Army activities.

A map illustrating the location of Ft. Shafter on the Island of O'ahu can be found in Figure 4.3-1.

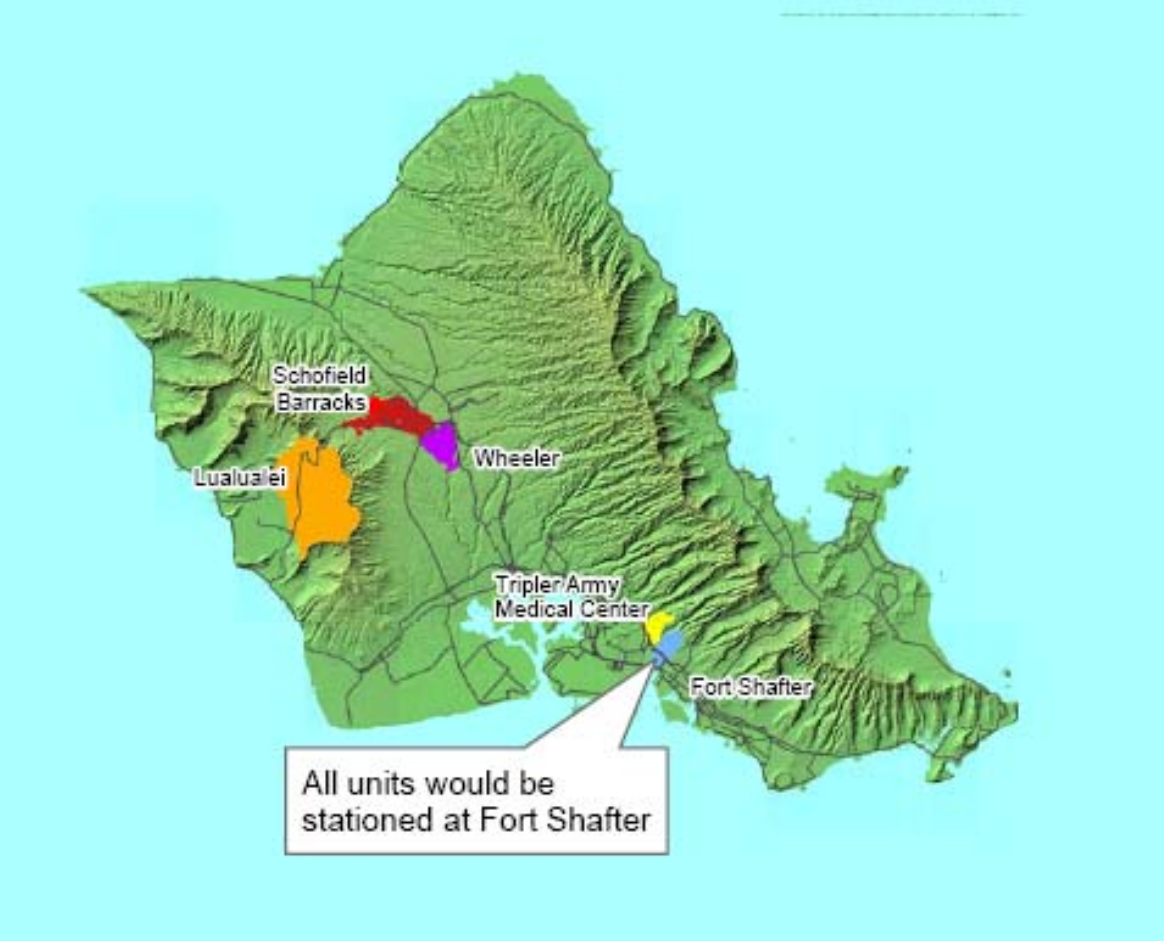

Figure 4.3-1. Map of Fort Shafter (in relation to the Island of O'ahu)

4.3.2 Fort Shafter Affected Environment and Environmental Consequences

This section discusses the existing baseline conditions for each environmental resource as well as the anticipated consequences to Fort Shafter should the Army implement one of the stationing scenarios discussed in Chapter 4.3.1.

4.3.3 Air Quality

4.3.3.1 Affected Environment

Fort Shafter has a very limited annual temperature range with a high of 81.4°F in august, and a low of 72.9°F in January (a difference of only 8.5°F). The average annual precipitation is approximately 119.58 inches; with the lowest amount of precipitation occurring from June to September, and the highest occurring from October to March (Wai'anae Ecological Characterization Web Site, n.d.)

Major air emission conditions that influence and are influenced by Schofield Barracks also can be found at Fort Shafter. Pollution emission levels and ambient air quality concentration are well below federal and state ambient air quality standards. The most significant sources of air pollutants from Fort Shafter are vehicle emissions and fugitive dust. There are no air quality monitoring stations close to the installation and the region is in attainment for all criteria pollutants. Table 4.2-2 lists the state and national ambient air quality standards that are applicable to Hawai`i.

Air pollution levels in Hawai`i are generally low due to the state's small size and location. Therefore upwind areas do not significantly contribute to background pollution levels, and locally generated air pollutants are generally transported offshore and away from land areas. Intermittent high concentrations of suspended particulate matter can occur in some areas, primarily due to agricultural burning or fireworks use during holiday celebrations. The entire state is classified as being in compliance with federal ambient air quality standards, and thus is designated as an attainment area.

4.3.3.2 Environmental Consequences

No Action Alternative: (Less than Significant)

Cantonment Construction. Under the no action alternative, the current uses of the affected environment would not change from the conditions described in 4.3.3.1, other than as discussed as a part of pre-existing trends and the ongoing actions discussed below.

Under the No Action Alternative, no additional cantonment construction is required at Fort Shafter and no additional Soldiers would be stationed at the base. With existing, on-going and limited currently planned non-GTA projects, the garrison has critical facilities available to support existing units' living and administrative requirements. Additionally, some construction renovation may occur at Fort Shafter on as needed basis in the future. Therefore, current levels of impacts to air quality, which are less than significant, would continue.

CSS (1,000), CS (1,000): (Less than Significant).

Cantonment Construction. Short-term impacts are possible under each of these stationing scenarios. Impacts to air quality would be temporary, occurring during the 12-24 months of facilities construction. Vehicle emissions and fugitive dust generated by heavy construction equipment and materials transport may have short-term impacts which are anticipated to be less than significant. Construction contractors would comply with the provisions of Hawai`i Administrative Rules on fugitive dust (§11-60.1-33) as part of their construction contracts (USAG-HI Teleconference, February 2008). It is expected that these impacts would be less than significant.

Further, in addition to the military vehicles and generators accompanying unit equipment, the added Soldiers and their Families would increase the number of POVs at Fort Shafter. It is also expected that the number of government- and contractor-owned vehicles would increase, thereby increasing the amount of particulate matter, nitrogen oxides, and other emissions released into the air. Because mobile source emissions would be widely distributed across the ROI It is expected that these impacts would be less than significant.

4.3.4 Airspace

4.3.4.1 Affected Environment

The airspace above O'ahu is generally controlled airspace and is subject to Air Traffic Control. Air Traffic Control airspace is classified with a designation of A, B, C, D, or E. The area around Honolulu International Airport is Class B airspace; while other airports on the island are covered by Class D airspace. Uncontrolled (Class G) airspace exists from the surface to up to either 700 or 1,200 feet above mean sea level (MSL) in few areas over O'ahu. There is no military airspace above Fort Shafter. The installation lies within the terminal control area (TCA) of the Honolulu International Airport, meaning that Fort Shafter is in the vicinity (or in this case the flight path) of one of the airports' runways. A map of the Honolulu International Airport illustrating air traffic direction over Fort Shafter is provided in Figure 4.3-2 below. Fort Shafter is located at the upper northeast quadrant of this map.

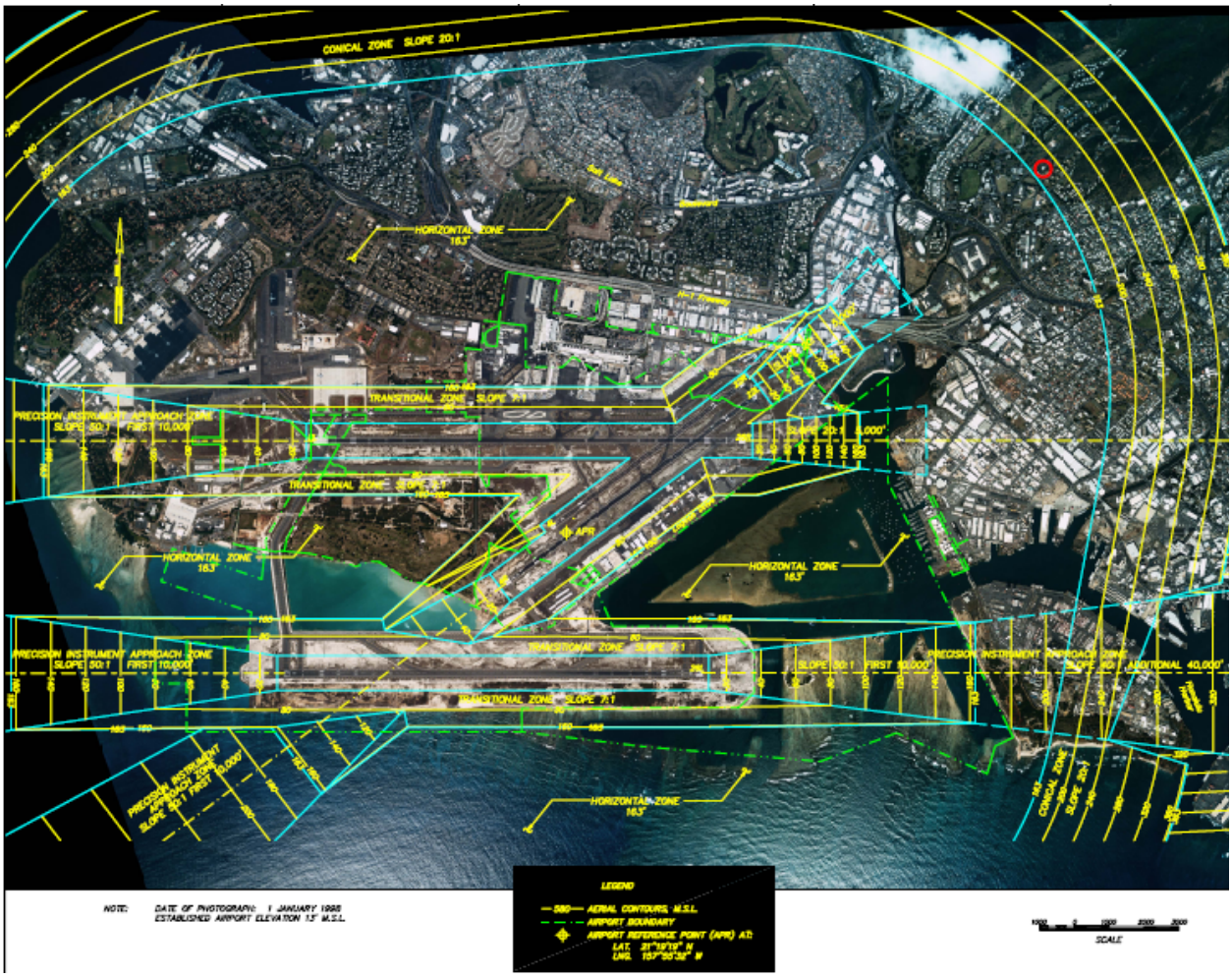

Figure 4.3-2. Map of the Honolulu International Airport illustrating air traffic direction over Fort Shafter

4.3.4.2 Environmental Consequences

No Action Alternative: (No Impacts)

Cantonment Construction. Under the no action alternative, the current uses of airspace would not change from the conditions described in 4.3.4.1, other than as discussed as a part of pre-existing trends and the ongoing actions discussed below.

Under the No Action Alternative, no additional cantonment construction is required at Fort Shafter. With existing, on-going and limited currently planned non-GTA projects, the garrison has critical facilities available to support existing units' living and administrative requirements. Additionally, some construction renovation may occur at Fort Shafter on as needed basis in the future. As there is no military, airspace above Fort Shafter, no impacts are expected.

CSS (1,000), CS (1,000): (No Impact).

Cantonment Construction. No effects are anticipated. Construction at Fort Shafter is not expected to require modifications to controlled or special use airspace as these units do not require even a moderate amount of airspace. Any construction or alteration of greater height than imaginary surface extending outward and upward at a slope of 1 to 1 for horizontal distance of 20,000 feet from the nearest point of the nearest runway of each airport (in this case) an airport available for public use would need to be coordinated with Honolulu Airport and the FAA (FAA Form 7460-1 (2-99) Notice of Proposed Construction of Alteration, §77.13 Construction or alteration requiring notice). Therefore, any construction that may occur at Fort Shafter, within the flight path of Honolulu International Airport, may need to be coordinated with the airport prior to construction.

4.3.5 Cultural Resources

4.3.5.1 Affected Environment

Much of Fort Shafter is located in the Kahauiki ahupua'a, which is the second westernmost ahupua'a in Honolulu District and Kona District. Kahauiki has traditional significance and includes special uses such as religious ceremonies and burial. Resources throughout Fort Shafter and Shafter Flats consist of 30 documented archaeological and historical sites and 11 additional unnumbered rockshelters. Additionally, a total of 158 historical and architectural resources have been documented at Fort Shafter and Shafter Flats. USAG-HI completed a historical buildings survey at the installation in 1995 and in 2006. All buildings and other historical structures built before 1951 have been documented and evaluated for significance and integrity, following the criteria of the NRHP and the Army criteria. The Fort Shafter cultural resources management plan summarizes resource eligibility for nomination to the NRHP and presents specific preservation recommendations. Maps illustrating locations of the recorded Historic resources throughout the installation can be found in Figure 4.3-3 (Historic Buildings/Structures and National Register Status) (Final Environmental Assessment for Restructuring of U.S. Army Pacific Elements to a Modular Force Structure, O'ahu, Hawai`i (Tetra Tech, August 2006).

Figure 4.3-3. Historic Buildings/Structures and National Register Status

4.3.5.2 Environmental Consequences

No Action Alternative: (Less than Significant)

Cantonment Construction. Under the no action alternative, the current uses of the affected environment would not change from the conditions described in 4.3.5.1, other than as discussed as a part of pre-existing trends and the ongoing actions discussed below.

Under the No Action Alternative, no additional cantonment construction is required at Fort Shafter. With existing, on-going and limited currently planned non-GTA projects, the garrison has critical facilities available to support existing units' living and administrative requirements. Additionally, some construction renovation may occur at Fort Shafter on as needed basis in the future. Existing cantonment areas have been surveyed for cultural and historic resources, and known sites have been avoided or mitigated. The Army continues to inventory cultural properties and to evaluate them as to NRHP eligibility, in compliance with Section 110 of the NHPA. Project planners will comply with Section 106 and its implementing regulations. Impacts to cultural resources would be mitigated in compliance with these regulatory requirements. Continued adherence to Section 106 and the NHPA will minimize impacts to less than significant.

CSS (1,000), CS (1,000): (Less than Significant).

Cantonment Construction. Short- and long-term effects may occur. Dust and vibration from demolition or generated from construction equipment may have direct effects to nearby historic sites. Design and construction plans would need to consider the locations of important cultural and historic resources when siting new facilities. The construction of structures to accommodate growth, depending on their size and location, may cause visual impact to the Palm Circle National Historic Landmark. Any potential impacts that are identified would require USAG-HI to enter into Section 106 consultations. The Army would need to maintain adequate construction buffers around potential affected sites, and may need to ensure a qualified archaeologist or cultural resources specialist monitor all ground modifications prior to and during construction. Any temporary facilities located there would need to be sited away from important resources such that construction or use of heavy equipment would not adversely impact them. Further, any construction would require plans to be consistent with the architectural integrity of the installation and with the developed nature of the area; including any temporary buildings that may be utilized during construction.

4.3.6 Noise

4.3.6.1 Affected Environment

Hawaii has adopted statewide standards related to construction and fixed noise sources, and impulse and non-impulse noise. These standards are located in Table B-4 of the Environmental Assessment for Transformation of U.S. Army Hawai'i Units to a Modular Force Structure (TetraTech, 2005). Each of these noise levels should not be exceeded by more than 10 percent of the time in a 20-minute period.

There are no activities at Fort Shafter that generate significant noise levels. Ambient noise at the installation is generated from intermittent aircraft flybys from Honolulu International Airport, street traffic, and natural sounds such as heard from wind and birds. Sensitive noise receptors located near the installation include civilian housing and a child development center and playground.

4.3.6.2 Environmental Consequences

No Action Alternative: (Minor)

Cantonment Construction. Under the No Action alternative, the current levels of noise created by Army activities would not change from the conditions described in 4.3.6.1, other than as discussed as a part of pre-existing trends and the ongoing actions discussed below.

Under the No Action Alternative, no additional cantonment construction is required at Fort Shafter. With existing, on-going and limited currently planned non-GTA projects, the garrison has critical facilities available to support existing units' living and administrative requirements. Additionally, some construction renovation may occur at Fort Shafter on as needed basis in the future. No current activities at Fort Shafter generate significant noise levels. Traffic moving through Fort Shafter is the primary noise-generating source. Minor impacts from noise are expected under the No Action alternative.

CSS (1,000), CS (1,000): (Significant Adverse).

Cantonment Construction: **Less than Significant**

Temporary increases in noise generated from construction would be minor. Noise associated with construction equipment will generally produce levels of 80 to 90 dBA at a distance of 50 feet. Permissible noise exposures identified by the OSHA (29 CFR 1910.95) for an 8-hour work day is 90 dBA. Therefore construction noise in the cantonment area would likely be compliant with these levels. The zone of relatively high construction noise may extend to distances of 400 to 800 feet from major equipment operations; and those locations that are more than 1,000 feet from construction sites generally do not experience significant noise levels. Given the nearby location of civilian housing and the childhood development center, the Army would have to obtain a noise permit from the Hawai`i Department of Health. This permit would likely restrict construction activities to daytime hours, reducing any noise impacts to less than significant levels.

Further, the added traffic, largely the use of POVs and additional fleet vehicles, would be consistent with current noise levels.

Maneuver and live fire training impacts would be similar to those discussed as part of section 4.2.6 for 1,000 person CS and CSS stationing scenarios. Increase in live-fire training for 1,000 additional personnel would be projected to be a significant adverse impact as discussed in section 4.2.6 while maneuver impacts would represent less than significant impacts from this stationing scenario. It should be noted that while this significant adverse impact rating is reflected under the Ft. Shafter stationing scenario, the proposed home station for the units, the potential impacts would be experienced at SBMR.

Discussion of mitigations for live-fire and maneuver impacts from section 4.2.6 are applicable to this stationing scenario.

4.3.7 Soil Erosion

4.3.7.1 Affected Environment

Fort Shafter is underlain by Ko`olau basalts and in some areas by the younger Kalihi basalt member of the Honolulu basalts. Most of Shafter Flats is underlain by artificial fill used to fill two large former fish ponds. The material overlies fine-grained marine sediments and alluvial and coastal deposits. The northeast area of Shafter Flats, however, is underlain by Honouliuli clay.

Soils at Fort Shafter and Shafter flats are characterized as Makiki stony clay loam and Manana silty clay. Makiki soil has moderately rapid permeability and low erosion hazard. The soil has high shear strength and moderate shrink-swell potential. The Manana soil also has high shear strength, but the erosion hazard is moderate to severe. A nonporous panlike sheet up to about one-quarter inch thick occurs at a depth of about 30 to 50 inches.

Earthquake activity in the Hawaiian Islands is centered in the volcanically active southern part of the island of Hawai`i. The intensity of ground shaking that may occur at Fort Shafter would depend not only on the magnitude of an earthquake, but also on the nature of the geologic materials at Fort Shafter. Fill soils beneath Shafter Flats are likely to magnify ground motion, and loose sandy soil with a high water table may be susceptible to liquefaction. Liquefaction is a rapid loss of soil strength caused by an increase in pore water pressure during ground shaking. This loss of strength causes the soil to behave as a liquid, which can result in damage to foundations, roads, and other structures. Clay soils are not as susceptible to liquefaction, although all unconsolidated sediments tend to amplify seismic waves to some extent, relative to bedrock. While projected peak accelerations in bedrock are expected to be moderate over most of the upland areas of Fort Shafter where soils are thin, some low-lying areas may undergo more intense ground shaking.

Hazards from earthquakes are relatively low throughout O`ahu. Past earthquakes have resulted in minor superficial structural damage to some structures, including cracked walls in older buildings. The thin soils that occur on steep slopes within areas mapped as rock land are susceptible to sliding.

4.3.7.2 Environmental Consequences

No Action Alternative: (Less than Significant)

Cantonment Construction. Under the No Action alternative, the Army activities contributing to soil erosion would not change from the conditions described in 4.3.7.1. No additional cantonment construction is required at Fort Shafter. With existing, on-going and limited currently planned non-GTA projects, the garrison has critical facilities available to support existing units' living and administrative requirements. Additionally, some construction renovation may occur at Fort Shafter on as needed basis in the future. Mitigation measures and BMPs are followed to minimize soil loss and mitigate impacts to a less than significant level.

CSS (1,000), CS (1,000): (Significant but Mitigable).

Cantonment Construction. Short-term effects may occur. Much of the impacts may be localized to the construction area providing adequate BMPs and mitigations are in place. While much of the construction anticipated may occur on previously disturbed soils, or in the footprint of existing structure (to be demolished), those soils exposed may be denuded of vegetation from digging and excavation, increasing the potential for erosion. Runoff carrying sediments away from the construction sites may directly affect Moanalua Stream and/or Kahauki Stream depending on the siting of construction. The installation may also consider upgrading its storm water pollution prevention plan (SWP3) to minimize soil erosion and loss. The use of a SWP3 and BMPs would be anticipated to mitigate any significant impacts to soil erosion and sedimentation.

Long-term effects may occur as a result of the daily activities of permanently stationed units. Due to the nature of Fort Shafter (largely administrative post with no maneuver or training land) all traffic from the added POVs or fleet vehicles would remain on roads and in parking areas. No added impacts to soils would be anticipated; therefore the long-term effects to soils may be relatively minor. As discussed in section 4.2.7, live fire and maneuver training of these CS and CSS units would occur as discussed in section 4.2.7 and the impacts are conservatively estimated to be significant but mitigable, though CSS and CS units stationed at Fort Shafter would likely serve an administrative headquarters function with less live-fire and maneuver requirements.

Regulatory and Administrative Mitigation 1: The Army would require contractors to implement BMPs to limit exposed soils during construction and sedimentation as a result of water erosion.

Mitigation measures for 1,000 CS and CSS stationing scenarios from Section 4.2.7 are applicable to mitigate impacts from training of these units on Oahu training sites.

4.3.8 Biological Resources

4.3.8.1 Affected Environment

Approximately 25% of all listed threatened and endangered species within the United States are located in Hawai`i. Currently, 329 threatened and endangered species are known to exist in Hawai`i. Of these, over 75 are recorded onsite at USAG-HI properties, and designated critical habitat also occurs on three Army sites. A map of O'ahu illustrating critical habitat areas can be found in the biological resources section for Schofield Barracks, Figure 4.2-4 (Elepaio & Critical Habitat on O'ahu).

The majority of the listed species are plants. Many of the plant species are severely threatened by habitat degradation and loss resulting from invasive species (i.e., invasive/exotic plants, feral hogs, feral sheep, and feral goats) and wildfire. The population numbers of some species are very low and require significant effort to control the threats and stabilize them. USAG-HI has implemented aggressive conservation and management efforts to stabilize and enhance populations of listed plants and animals. USAG-HI participates in seed banking programs in partnership with state and federal conservation programs.

Disturbance from human activity, noise, habitat fragmentation, introduction and spread of alien and invasive species, and anthropogenic fire are the primary causes of impacts to flora and fauna on Hawai`i. The Army seeks to minimize and offset its detrimental effects on Hawai`i's flora and fauna through conservation and preservation of federally listed plants on lands under its management. The Army's pest management and endangered species management programs overlap and reduce the negative impacts of introduced species on the landscape. As part of their pest management regulations, the Army seeks to control noxious weeds as required by the State of Hawai`i Noxious Weed Rules. The INRMP for O'ahu outlines current and proposed management plans and specific actions for natural resources stewardship of Army lands. The Army uses up to date scientific information, past achievements, and adaptive management when developing the programs outlined within the INRMPs. In addition, to pest and endangered species management, INRMPs address: biodiversity and ecosystem integrity; watershed management; wildland fire management; and recreation, education and outreach. The number and type of funded programs varies by USAG-HI priority. These and other management initiatives have led to innovative strategies for conservation and sustainable

management of Army landholdings. Such management is necessary in Hawai`i to preserve the integrity of the natural surroundings while maintaining a high standard of military excellence (Final Environmental Assessment for Restructuring of U.S. Army Pacific Elements to a Modular Force Structure, O'ahu, Hawai`i (Tetra Tech, August 2006)).

4.3.8.2 Environmental Consequences

No Action Alternative: (Minor)

Cantonment Construction. Under the No Action alternative, the Army activities contributing to impacts to biological resources would not change from the conditions described in 4.3.8.1. No additional cantonment construction is required at Fort Shafter. With existing, on-going and limited currently planned non-GTA projects, the garrison has critical facilities available to support existing units' living and administrative requirements. Additionally, some construction renovation may occur at Fort Shafter on as needed basis in the future. These impacts would occur in disturbed or non-native habitats. No additional impacts to sensitive species or their habitats would occur. Minor impacts to biological resources are expected under the No Action alternative.

CSS (1,000), CS (1,000): (Significant but Mitigable).

Cantonment Construction: **Less than Significant**

As part of these stationing scenarios, construction and modernization efforts would be limited to within the confines of Fort Shafters previously disturbed cantonment area. Direct effects from construction equipment would have a less than significant impact because the proposed site is highly disturbed land and does not provide high quality habitat for plants or animal species or significant forage, nesting, or cover habitat for wildlife species. There is no critical habitat or ecologically sensitive habitat that would be affected. The areas immediately surrounding the construction sites consist of similarly developed lands. Due to development, ongoing human activity, and sparse discontinuous habitat, any plant or wildlife species residing in this area would consist chiefly of tolerant species that have adapted to the human-influenced landscape.

Under these stationing scenarios it is unlikely that Orangeblack Hawaiian Damselfly (*Megaloagrion xanthomelas*) habitat would be disturbed. Planning/siting would avoid known Damselfly habitat / populations to the greatest extent possible in order to prevent potential adverse effects that may result in the need to list the species as threatened or endangered in the future. USAG-HI would continue to consult with the US Fish and Wildlife Service regarding any future construction and the status of this species.

Construction can introduce invasive species and other weeds through the use of sand and gravel that contains nonnative plant seeds. Impacts from facilities construction in existing disturbed footprints is anticipated to be less than significant. No sensitive species occur within the proposed construction footprints. Transport of construction equipment and materials has the potential to transport noxious weeds, but given the highly disturbed nature of the footprints and high percentage of non-native vegetation components in the existing construction footprints proposed for construction this is not anticipated to be a less than significant impact.

Impacts to general wildlife and habitats. Human presence and elevated noise levels would displace various wildlife species during construction; however, impacts from range construction to wildlife would not be different than the impacts from normal operations and activities occurring in the anticipated construction footprints. Increased noise as a result of construction is not expected to affect terrestrial wildlife because field surveys have shown that it is not a significant factor in behavior and does not affect reproductive success (U.S. Army Engineering District Honolulu 2000). Impacts to general wildlife and habitats from range construction would be less than significant, and no mitigation is necessary.

Training impacts and mitigations of live-fire and maneuver training are discussed in Section 4.2.8 and would be the same as those that would be implemented for 1,000 CS and CSS scenarios discussed in that section. Units stationed at SBMR and Fort Shafter would both conduct live-fire and maneuver training using the same training infrastructure.

4.3.9 Wetlands

4.3.9.1 Affected Environment

According the Army Environmental Database-Environmental Quality (2007) no jurisdictional wetlands or habitats of special interest occur at Fort Shafter. Kahauiki Stream and Manalua Stream are found on or within the vicinity of Fort Shafter.

4.3.9.2 Environmental Consequences

No Action Alternative: (No Impacts)

Cantonment Construction. Under the No Action alternative, the current facilities and training as described in 4.3.9.1, other than as discussed as a part of pre-existing trends and the ongoing actions discussed below. No additional cantonment construction is required at Fort Shafter. With existing, on-going and limited currently planned non-GTA projects, the garrison has critical facilities available to support existing units' living and administrative requirements. Additionally, some construction renovation may occur at Fort Shafter on as needed basis in the future. No wetlands are present on Fort Shafter. Though no wetlands are present at Fort Shafter, SOPs and BMPs designed to minimize impacts to wetlands and other water bodies through stormwater and erosion control would continue to be followed for future construction projects.

CSS (1,000), CS (1,000): (Minor).

Cantonment Construction. No adverse effects are anticipated. Although small waterbodies exist on Fort Shafter, and may experience some impacts from construction runoff, the installation would ensure mitigation measures are employed to minimize impacts. Surveys would be conducted prior to any construction to delineate any potential wetlands in the vicinity of the construction sites. The Army would attempt to avoid impacts to wetlands through siting and design of its projects at Fort Shafter if they were identified.

4.3.10 Water Resources

4.3.10.1 Affected Environment

Watershed

Water resources in the ROI include the Moanalua watershed, the Moanalua aquifer, and surface waterbodies as the Moanalua Stream and Kahauiki Stream. Fort Shafter is located within the Moanalua watershed. Fort Shafter is specifically considered within the watershed of Kahauiki Stream which is a subunit to the larger watershed. The stream discharges to the Moanalua Canal (north of State Route 92). Figure 4.3-4 depicts a map of the watershed areas on the Island of O'ahu.

Water Supply

Fort Shafter is underlain by the Maonalua aquifer, which in some locations can flow to within 25 feet of the ground surface, but generally flows at a greater depth. At one time the elevation of the confined groundwater there was reported at 28 feet amsl, increase water use from a growing population has resulted in retreat to a greater depth. There are two water supply wells that feed the area. These are located near Kahauiki Stream and draw from a depth of approximately 330 feet below ground surface and 279 feet below ground surface. Water demand has been steadily growing in the region.

Fort Shafter is supplied by two groundwater extraction wells with an estimated pumping capacity of 3.3 MGD and a reported sustainable yield of approximately 18 MGD. Water is pumped to two storage reservoirs located at the western portion of the installation and is fed through a water supply system where it is treated with fluoridates and chlorinates and distributed throughout Fort Shafter, Shafter Flats, and the Nagorski Golf Course. Figure 4.3-5 is a map of the water distribution and collection system at Fort Shafter.

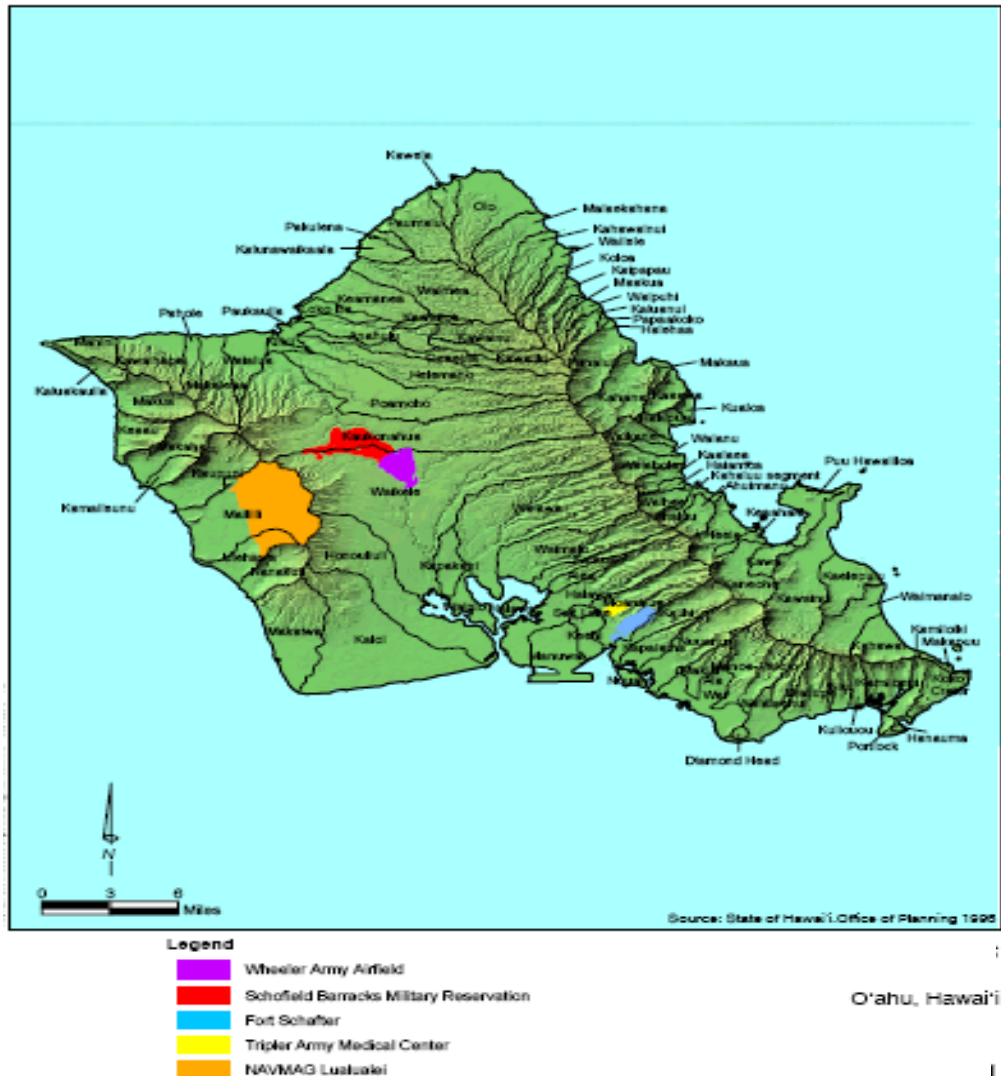

Figure 4.3-4. Watershed units on O'ahu

Wastewater

The Fort Shafter sanitary sewer system has not been studied or analyzed since it was privatized. The Directorate of Public Works indicated the area has no recurring complaints that would imply capacity restrictions. Flow monitoring has not been performed within the Fort Shafter system as it has not been problematic. The Fort Shafter Flats Waste Water Lift Station has been upgraded multiple times throughout its existence. It currently consists of one (1) 2,000 gpm standard use pump, three (3) 2,145 gpm wet weather pumps, and one (1) 3,000 gpm diesel-driven emergency pump with a total design capacity of 9.82 MGD. Average flow is recorded at 1.7 MGD, with the peak recorded flow at 7.7 MGD.

The connection point for the wastewater collection system is at the Fort Shafter Flats Water Lift Station. The pumping station sends the flow through the City and County of Honolulu wastewater system to its Sand Island Treatment Plant (E-mail from USAG-HI Staff, dated 19 February 2008). A map of the wastewater collection system (including the water distribution system) is included as Figure 4.3-5 above.

Stormwater

A portion of the south edge of the Fort Shafter is in the drainage area of Kalihi Stream, which discharges to the Ke'ehi Lagoon south of Highway 92. Stormwater and runoff from the installation influences flow of the Kahauki Stream, which can also impair the waterbody by increasing nutrient load and turbidity. The Moanalua Stream is listed by the State as a Class 3 perennial stream and Clean Water Act Section 303(d) impaired waterbody.

Figure 4.3-5. Map of Fort Shafter's water distribution and collection system

4.3.10.2 Environmental Consequences

No Action Alternative: (Minor)

Cantonment Construction. Under the no action alternative, the current uses of the affected environment would not change from the conditions described in 4.3.10.1, other than as discussed as a part of pre-existing trends and the ongoing actions discussed below.

Under the No Action Alternative, no additional cantonment construction is required at Fort Shafter. With existing, on-going and limited currently planned non-GTA projects, the garrison has critical facilities available to support existing units' living and administrative requirements.

Additionally, some construction renovation may occur at Fort Shafter on as needed basis in the future. No additional Soldiers would be stationed at Fort Shafter, and the existing water and wastewater infrastructure would not require modifications other than routine maintenance. Water demand is not expected to rise above supply capacity. Water supply and wastewater facilities are adequate and only routine upgrades and maintenance would occur. SOPs and BMPs designed to minimize impacts to surface and groundwater through stormwater and erosion control would continue to be followed. No impacts would occur.

CSS (1,000), CS (1,000): (Significant but Mitigable).

Cantonment Construction. **(Less than Significant)**

The increase in Soldiers (excluding Families) is projected to increase wastewater flow by approximately 40,000 GPD. The existing wastewater collection system may not have the capacity for the additional flow, an issue that may result in spills. If either stationing scenario were to be implemented at Fort Shafter, further modeling would determine capacity and steps may need to be taken to minimize potential flow issues (E-mail from USAG-HI Staff, dated 19 February 2008). The addition of 1,000 Soldiers would draw more water from the underlying aquifer; however, this level of growth would not place any considerable demand on the water supply and therefore is anticipated to have only less than significant effects.

Construction and facility modification to support either of these stationing scenarios would likely be spread throughout the installation. Demolition and new construction would result in ground disturbance that may increase the potential for soil erosion and for sediments to be washed overland into the nearby Moanalua Stream at Fort Shafter. Construction site discharges not related to storms are prohibited under the Clean Water Act. Because the construction would involve disturbance of more than one acre of land, the Army would update the installation stormwater pollution prevention plan to incorporate these new site parameters, including BMPs, to minimize potential impacts associated with increased runoff. Implementation of the BMPs would reduce the potential for erosion impacts to less than significant levels and would ensure less than significant adverse impacts on receiving waters at Fort Shafter.

Furthermore, because of Moanalua Stream's listing as a Class 3 perennial stream, an impaired water body, it's assumed that the restructuring and stationing activities and associated construction would be planned to prevent further degradation of the streams. The installation would implement BMPs at locations where motorpool or other activities could have impacts to water quality from spills of petroleum, oil, or lubricants.

Training Impacts: **Significant but Mitigable**

Training impacts and mitigations of live-fire and maneuver training are discussed in Section 4.2.10 and would be the same as those that would be implemented for 1,000 CS and CSS scenarios discussed in that section. Units stationed at SBMR and Fort Shafter would both conduct live-fire and maneuver training using the same training infrastructure. Maneuver and live-fire training would not be conducted at Fort Shafter.

4.3.11 Facilities

4.3.11.1 Affected Environment

Facilities

The installation consists of 590 acres in the Kahauiki Valley positioned approximately three miles northwest of Honolulu. The Moanalua Freeway divides the installation in two, running east to west; the north side of the freeway is considered the main post, the south is Shafter Flats. The installation has principally administrative, residential, and community support facilities. Shafter Flats supports industrial, maintenance, classroom and parking, and provides Family housing.

Currently there is a shortfall in facilities to accommodate the installations' present force structure though many previously planned facilities remain to be constructed. These facilities when constructed would alleviate some of the facilities shortfalls at Fort Shafter. Construction is needed to meet standard facilities requirements to fulfill Army Transformation and Modularity obligations[4].

Public Services

In most instances, emergency fire and medical services are provided by the U.S. Naval Station Pearl Harbor, and is augmented by the Honolulu Fire Department. Medical services are provided to all Soldiers and their Families from Tripler Army Medical Center. Military Police are provided through the Provost Marshall's Office.

Infrastructure

Water demand has been steadily growing in the region. Fort Shafter is supplied by two groundwater extraction wells with an estimated pumping capacity of 3.3 MGD and a reported sustainable yield of approximately 18 MGD. Water is pumped to two storage reservoirs located at the western portion of the installation and is fed through a water supply system where it is treated with fluoridates and chlorinates and distributed throughout Fort Shafter, Shafter Flats, and the Nagorski Golf Course.

4.3.11.2 Environmental Consequences

No Action Alternative: (Minor)

Cantonment Construction. Under the no action alternative, the current uses of the affected environment would not change from the conditions described in 4.3.11.1, other than as discussed as a part of pre-existing trends and the ongoing actions discussed below. No additional cantonment construction is required at Fort Shafter. With existing, on-going and limited currently planned non-GTA projects, the garrison has critical facilities available to support existing units' living and administrative requirements. This includes the construction of barracks and the Command and Control Center. Additionally, some construction renovation may occur at Fort Shafter on as needed basis in the future. The use of Army facilities would continue as they are currently designed. Demand for public services would not change from existing levels. These projects are expected to meet the facility needs of units presently stationed there, and only minor impacts are expected as they are completed.

[4] Construction identified to accommodate Transformation decisions is outlined in the Final Environmental Assessment for Restructuring of US Army Pacific Elements to a Modular Force Structure, O'ahu, Hawai'i (Tetra Tech, August 2006).

CSS (1,000), CS (1,000): (Significant Adverse).

Cantonment Construction. The installation does not currently have adequate space to support this level of growth without deconstructing/demolishing a considerable number of existing aging facilities. With a baseline population of less than 1,800 Soldiers, an addition of 1,000 more Soldiers would represent more than a 50% increase. Available buildable space at Fort Shafter is extremely limited. Temporary modular structures may need to be used to meet the requirements of units until construction is complete. Any temporary facilities located there would need to be sited away from documented and suspected sites such that construction or use of heavy equipment would not result in adverse impacts. Further, any construction would require plans to be consistent with the architectural continuity of the installation and with the developed nature of the area; including any temporary buildings that may be utilized during construction.

If construction were to occur in the Ft. Shafter flats area, due to the location's proximity to surface waterbodies, the installation would need to develop flood control measures to ensure surface water is not significantly impacted and further degraded. The increased demand on the water supply and distribution would continue to be adequate (and still maintain reserve capacity). Upgrades to existing infrastructure would be required and would drive up the cost of construction.

4.3.12 Energy Demand/Generation

4.3.12.1 Affected Environment

HELCO provides two 46 kV (kilovolt) transmission lines to Fort Shafter. Each line has a separate transformer feeding the Fort Shafter distribution system. One line feeds a 10 MVA (megavolt ampere) 46 kV-12.47/7.4 kV transformer, and the other line feeds a 5/6.25 MVA, 46 kV-12.47/7.4 kV transformer.

The main overhead lines use 2/0 CU (copper) conductor, which has a normal continuous line rating of 360 amps (amperes) (4.49 MVA at 12.47 kV) and an emergency rating of 500 amps (6.24 MVA at 12.47 kV). The main underground cables use a 500 MCM (multichip module) CU conductor, with a rating of 500 amps. In a 2006 electrical infrastructure study, Electrical Power Systems personnel evaluated the case of all feeders in service at Fort Shafter and for several single feeder outages. Based on the power flow results of the evaluated case, there are no voltage violations or line overloads for outages within the 12.47 kV distribution systems. An outage of either substation transformer does create an unacceptable response. After the loss of the 10 MVA substation transformer, there is not sufficient capacity on the 6.5 MVA transformer to serve all of the Fort Shafter loads during peak loading conditions.

4.3.12.2 Environmental Consequences

No Action Alternative: (Less than Significant)

Cantonment Construction. Under the no action alternative, the current uses of the affected environment would not change from the conditions described in 4.3.12.1, other than as

discussed as a part of pre-existing trends and the ongoing actions discussed below. No additional cantonment construction is required at Fort Shafter. With existing, on-going and limited currently planned non-GTA projects, the garrison has critical facilities available to support existing units' living and administrative requirements. Additionally, some construction renovation may occur at Fort Shafter on as needed basis in the future. Presently, no voltage violations or line overloads for outages currently exist within the distribution systems. An outage of either substation transformer does create an unacceptable response. After the loss of the 10 MVA substation transformer, there is not sufficient capacity on the 6.5 MVA transformer to serve all of the Fort Shafter loads during peak loading conditions. The condition would persist, and is considered less than significant.

CSS (1,000), CS (1,000): (Significant but Mitigable).

Cantonment Construction. Power distribution servicing Fort Shafter and is inadequate and would likely need to undergo upgrades to accommodate this level of Soldier growth. Stationing of an additional 1,000 Soldiers associated with Combat Support and Combat Service Support units would essentially double the impact identified in the 2006 FEA for Restructuring of US Army Pacific Elements to a Modular Force Structure, essentially requiring the installation to recommended improvements (discussed above), enabling increased distribution capacity and minimizing any adverse effects that may occur from a loss of service from the current primary power infrastructure.

Regulatorty and Administrative Mitigation: As part of this stationing scenario the installation would upgrade its power distribution systems to accommodate 1,000 additional Soldiers.

4.3.13 Land Use Conflict/Compatibility

4.3.13.1 Affected Environment

The land uses on Fort Shafter's main post are predominantly administrative, residential, and community support. Barracks facilities are centrally located along Bonnie Loop, and Family housing is located in the upper areas of the Main Post. Within Shafter Flats, land uses are generally industrial, maintenance, educational, and parking; this area also includes a Family housing area, Funston Family Housing, in the northwestern portion. The Fort Shafter 2002 Land Use Plan is shown on Figure 4.3-6 (Final Environmental Assessment for Restructuring of U.S. Army Pacific Elements to a Modular Force Structure, O'ahu, Hawai`i (Tetra Tech, August 2006)). Potential land uses associated with the proposed action at Fort Shafter include administrative, vehicle storage and maintenance (motor pool), and housing (unaccompanied personnel and Family housing). The administrative requirement of the proposed action could be met, in part, by consolidating administrative uses within existing administration buildings.

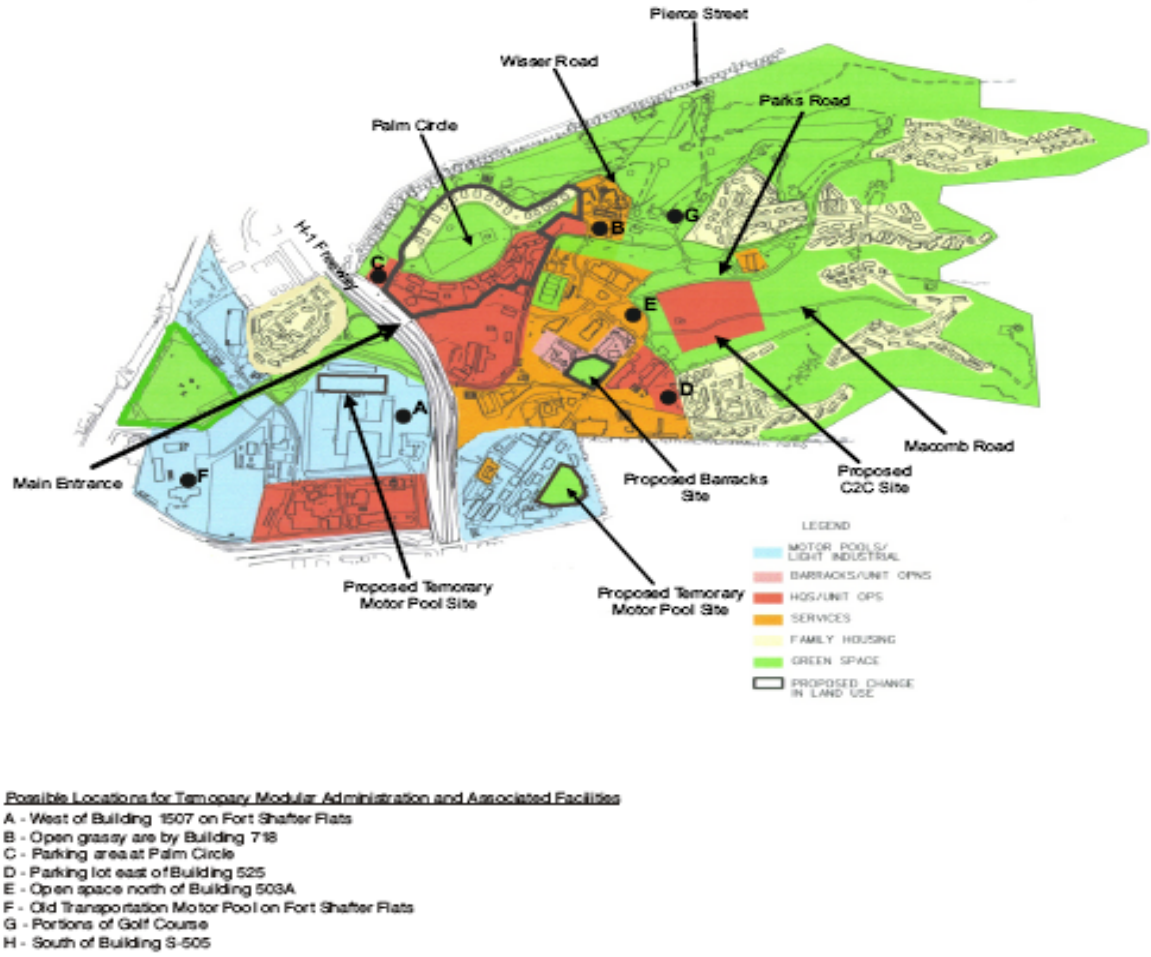

Figure 4.3-6. Fort Shafter Land Use Plan

4.3.13.2 Environmental Consequences

No Action Alternative: (Less than Significant)

Cantonment Construction. Under the no action alternative, the current uses of the affected environment would not change from the conditions described in 4.3.13.1, other than as discussed as a part of pre-existing trends and the ongoing actions discussed below.

The use of Army lands would continue as they are currently designed and authorized. No additional cantonment construction is required at Fort Shafter. With existing, on-going and limited currently planned non-GTA projects, the garrison has critical facilities available to support existing units' living and administrative requirements. Additionally, some construction renovation may occur at Fort Shafter on as needed basis in the future. Continued use of Fort Shafter is not expected to significantly impact surrounding land uses. No changes or additions

to Army lands would occur; therefore, impacts to surrounding land uses would remain less than significant. The Army would continue to coordinate with the public regarding any issues that may arise.

CSS (1,000), CS (1,000): (Significant Adverse).

Cantonment Construction. Housing on the installation is at or near capacity. The land available for construction outside the main post is primarily mountainous with little topographic relief, which poses a challenge to construction planning. Other parcels of land that is available for construction are located within the main post at Shafter Flats. In addition to the need for demolition of existing structures at Shafter Flats, that location would require construction of a flood control structure because this portion of the installation is subject to tsunami run-up and driving an increase in construction costs.

Fort Shafter would employ the use of modular facilities in locations that may be in close proximity to cultural or historic resources, and further, would not be compatible with the current land uses in those areas. Facilities planned as part of previous decisions for Army Transformation and Modularity would help to alleviate land-use conflicts when completed.

4.3.14 Hazardous Material/Hazardous Waste

4.3.14.1 Affected Environment

Hazardous waste at the USAG-HI is tracked and grouped into the following categories lumped by how they are generated: Ammunition, Live-fire, and UXO; Petroleum, Oils, Lubricants (POL), and Storage Tanks; Contaminated and Installation Restoration Program (IRP) sites; Lead; Asbestos; PCBs; Pesticides and Herbicides; Radon; and Hazardous Wastes.

Ammunition, Live-fire, and UXO: Fort Shafter has no live-fire ranges, impact areas, ammunition storage, or surface danger zones; and the Soldiers that are stationed there are transported elsewhere within the Garrison to conduct training activities.

Installation Restoration Program (IRP): Investigations at Fort Shafter were initially conducted in 1983 through 1984 as part of the Army's subinstallation assessment program. No significant sources of contamination were identified and no further action was recommended. Subsequently, a series of other investigations into sites at Fort Shafter were initiated between 1990 and 1994. Underground storage tank removals were completed in 1994. An investigation was initiated in 1992 for eight areas located at Fort Shafter Flats. The report identified five sites within the eight areas that require additional investigation. All other sites were determined to need no further remedial actions. Future action for the five sites is proposed; these include remediation of the former pesticide storage Building 225 (FTSHF-01) and plating shop, Building 1507 was completed in March 1998. At the pesticide storage building (Building 225) approximately 290 tons of pesticide (chlordane) contaminated soil was excavated from the site. A subsequent risk assessment determined that there were no unacceptable risks present at the site. At the former plating shop Building 1507 (FTSHF-23), a sump and surrounding soil were removed. No further remedial actions are planned for the site (USAG Hawai'i, August 7, 2006)..

Petroleum, Oils, Lubricants (POL), and Storage Tanks: Facilities containing oil-water separators, grease traps, and wash racks are inspected regularly by the USAG-HI Environmental Compliance Office, and DPW is responsible for maintaining these devices.

Lead: The results of lead surveys at USAG-HI are available through the Garrison's Department of Public Works. Lead was a major constituent of household paint throughout the country on both interiors and exteriors of houses and other structures. Since the ban of its use in 1978, lead management practices have been established throughout the Army. The USAG-HI has established an installation lead hazard management program to ensure the health and safety of Soldiers and civilians throughout the Garrison. Army policy, like USEPA policy, is to manage LBP in place unless it presents an imminent health threat, as determined by the installation medical officer, or unless operational, economic, or regulatory requirements dictate its removal. Army policy also imposes requirements to reduce the release of lead, lead dust, or LBP into the environment from deteriorating paint surfaces, building maintenance, or other sources on Army installations or on Army-controlled property. Lead is also present in military munitions and bullets. Since Fort Shafter has no live-fire facilities lead contamination from training is not present there.

Asbestos: The USEPA and the Occupational Safety and Health Administration regulate asbestos-containing material (ACM) removal and cleanup and the State of Hawai`i Department of Health administrative rules apply. The Toxic Substances Control Act, the Asbestos Hazardous Emergency Response Act, and OSHA regulations provide protection for employees who encounter or remove and clean up ACM. The NESHAP regulates the renovation, demolition, and disposal of ACM. Asbestos is managed uniformly across the installations in the ROI. An installation asbestos management program has been established by the Army Directorate of Public Works to ensure the health and safety of Soldiers and civilians. Upon identification of renovation or demolition projects all buildings are surveyed for asbestos-containing material. ACM can be found, for example, in the floor tiles of housing units.

PCBs: PCBs are found in cooling fluid of electrical equipment, fire retardants, and other solid materials. The USAG-HI has a proactive program for removing and retrofilling electrical equipment containing regulated amounts of dielectric fluid containing PCBs. Devices that are found to contain regulated levels of PCB are being removed and upgraded with non-PCB devices, or are being retrofilled or removed, drained, packaged, and disposed of in accordance with 40 CFR Part 761.

Pesticides and Herbicides: Various types of pesticides, including insecticides, herbicides, fungicides, avicides (bird poison), and rodenticides, have been used at Army properties to maintain the grounds and structures and to prevent pest-related health problems. These materials are commonly used throughout the Army at USAG-HI installations to prevent and mitigate pest-related health problems and maintain grounds and structures. These chemicals are stored at controlled locations that are convenient to their intended use and that are equipped with ventilation and secondary containment and do not contain floor drains. Typically an entomologist oversees the pest management program at larger installations, maintains pesticide inventories, approves pesticide application procedures, and reviews pesticide use documents. Pesticides were applied in and around housing and buildings on Fort Shafter in the past. Buildings to be renovated may include pesticides in the support beams and other buildings features. Pesticides may further be present in the soils where housing previously stood. Testing would be required and proper abatement employed.

Radon: Radon is naturally occurring in low concentrations in the Hawaiian Islands and has been evaluated in both Honolulu and Hawai`i Counties. Though radon has been associated with an increase risk of lung cancer, current samples throughout the Hawaiian Islands are lower

than EPS's recommended action level of 4 picocuries per liter, and thus there is not much concern at this location.

Hazardous Wastes: Motorpools may also be designated as waste storage and holding areas, with primary and secondary containment for wastes generated by vehicle servicing and shop areas. Wastes are temporarily collected and stored in areas of the motorpools with secondary containment and separated out. Disposal of such waste is accomplished in accordance with AR 200-1.

4.3.14.2 Environmental Consequences

No Action Alternative: (Minor)

Cantonment Construction. Under the no action alternative, the current uses of the affected environment would not change from the conditions described in 4.3.14.1, other than as discussed as a part of pre-existing trends and the ongoing actions discussed below. No additional cantonment construction is required at Fort Shafter. With existing, on-going and limited currently planned non-GTA projects, the garrison has critical facilities available to support existing units' living and administrative requirements. Additionally, some construction renovation may occur at Fort Shafter on as needed basis in the future. No impacts would be expected from asbestos, LBP, PCBs, pesticides/herbicides, biomedical waste, or radon under the No Action. There are minor impacts to human health or safety that would result from the construction of barracks or completion of other projects.

CSS (1,000), CS (1,000): (Less than Significant).

Cantonment Construction. Short-term and long-term less than significant effects would occur.

POLs. The temporary motor pools proposed for Fort Shafter and Fort Shafter Flats would likely result in small amounts of gasoline, oil, and other automobile fluids being spilled onto the ground. Given the temporary nature of these motor pools, the normal amount of spilled petroleum and other fluids to be expected with such use would likely be absorbed by the base course, the geotechnical fabric, and the sub-base which would be included in standard design plans. These protective features may likely be installed on top of the native soil at Fort Shafter; and existing pavement at Shafter Flats would serve as a barrier for much of the expected fluid spills at that location. Operations at these facilities would follow best management practices and USEPA and USAG-HI protocol for use and handling of hazardous materials, such as POLs. The Army DPW maintains a spill contingency plan and standard operating procedures that outline proper operating and emergency response procedures and responsibilities. Additionally, the Army conducts routine inspections of all facilities containing hazardous materials to ensure compliance. Therefore, the effects from an increase in POLs at modular facilities are likely to result in less than significant impacts at Fort Shafter.

Long-term effects would occur from activities such as from motorpools and the medical center, which are associated with the permanent stationing of units at the installation. The Army has an installation-wide program for hazardous waste management and disposal. The installation would be required to manage and dispose of hazardous waste generated by operations through DRMO in accordance with regulations and installation-wide protocol regarding storage, use, and

disposal. Therefore, the proposed action would have a less than significant impact on hazardous waste management.

The installation may experience substantial POL storage, use, and handling demands. The POVs of the new Soldiers and Family members would use the on-post facilities for fueling and maintenance. These facilities are designed to withstand the increased POL needs without requiring the installation of new tanks or fueling stations. The existing underground storage tanks would be refueled as needed to support the increased population needs.

A historical use may need to be performed to determine if additional cleanup will need to occur.

Lead/Asbestos. There could be exposure to lead and asbestos through old construction materials (during demolitions). Abatement procedures would be employed to identify LBP and friable ACM and to contain the material during renovation activities. All construction personnel would be notified of the possibilities of these materials and would be trained in how to properly handle and dispose of it without exposure to themselves or the surrounding environment. By employing these management practices, no significant impact is anticipated. The Army would continue to inform Soldiers about lead and asbestos in housing units and to survey for lead and asbestos.

IRP. There would be no change in the management of IRP sites. Any hazardous waste found during any phase of construction would be remediated in accordance with applicable local, state, and federal rules and regulations. These sites would continue to be monitored and managed, and no impacts are anticipated.

Herbicides and Pesticides. This increased use around new facilities would not affect the way pesticides and herbicides are managed at the installation and would result in a less than significant impact. Pesticides may remain in the soils from past usage. Appropriate consideration, testing, and abatement measures should be completed prior to and during excavation of known sites.

4.3.15 Traffic and Transportation

4.3.15.1 Affected Environment

Traffic and circulation refer to the movement of vehicles and pedestrians along and adjacent to roads. Freeways and major roads are under the jurisdiction of the state through the Hawai`i Department of Transportation (HDOT). Other public streets and roads are under the jurisdiction of the counties, and streets and roads within the installations are under the jurisdiction of the military. Roadway types range from paved multi-lane road networks to unpaved plantation roads. Traffic conditions in Hawai`i vary depending on location but are typically over capacity during peak hours, resulting in significant traffic delays. These traffic delays occur in urban areas with multi-lane roads as well as in less developed areas with only two-lane roads. This section defines traffic terms, describes the regional transportation agencies in the ROI, and provides an overview of adopted transportation goals and policies that guide transportation development in the ROI. The ROI for each component of the proposed action is as follows:

Fort Shafter: The ROI for Fort Shafter includes the installation and its perimeters and the roadways found adjacent to the installation; construction areas; Buckner and Patch gates, which are the points of entry and exit at Fort Shafter; and areas adjacent to the installation that an

influx of 1,000 Soldiers and their Families may potentially influence. Roadways adjacent to the installation include Moanalua Freeway, Kaua Street, Notley Street, and Meyers Street.

Traffic on O'ahu extends largely from urban development in southern coastal areas from Ewa on the west of the island to Hawai`i Kai to the east. The island of O'ahu has four freeways, State Road H-201, H-1, H-2, and H-3. State Road 78 (aka Moanalua Road) functions as a bypass for H-1 (Lunalilo Freeway), which spans the south portion of the island connecting the Ewa area with Hawai`i Kai. H-2 connects the Ewa area with the central portion of the island (where SBMR is located) and connects with H-1 to east of Honolulu. H-3 connects Pearl Harbor with Kaneohe Bay Marine Corps Airfield at the northeast portion of the island. The other state highways make up roughly 200 lane-miles of roadway; and the city and county of Honolulu contain approximately 1,200 lane-miles of roadway. Figure 4.3-7 illustrates the important intersections and roadways on Fort Shafter. Figure 4.3-8 illustrates important roadways surrounding Fort Shafter. These were provided within the Final Environmental Assessment for Restructuring of U.S. Army Pacific Elements to a Modular Force Structure, O'ahu, Hawai'i (Tetra Tech, August 2006).

The Level of Service on many of the roads surrounding Fort Shafter is D or F during peak traffic times.

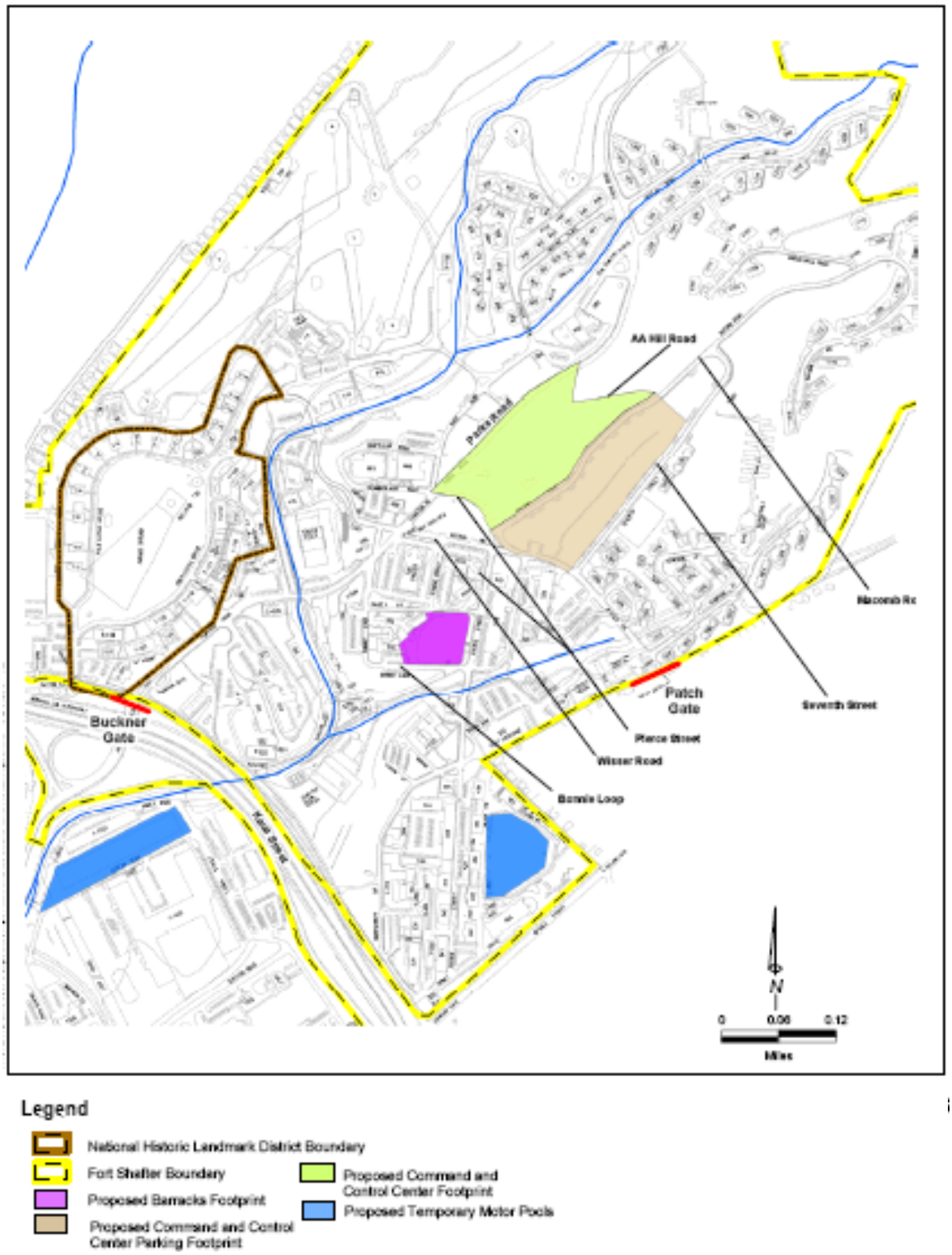

Figure 4.3-7. Important intersections and roadways on Fort Shafter

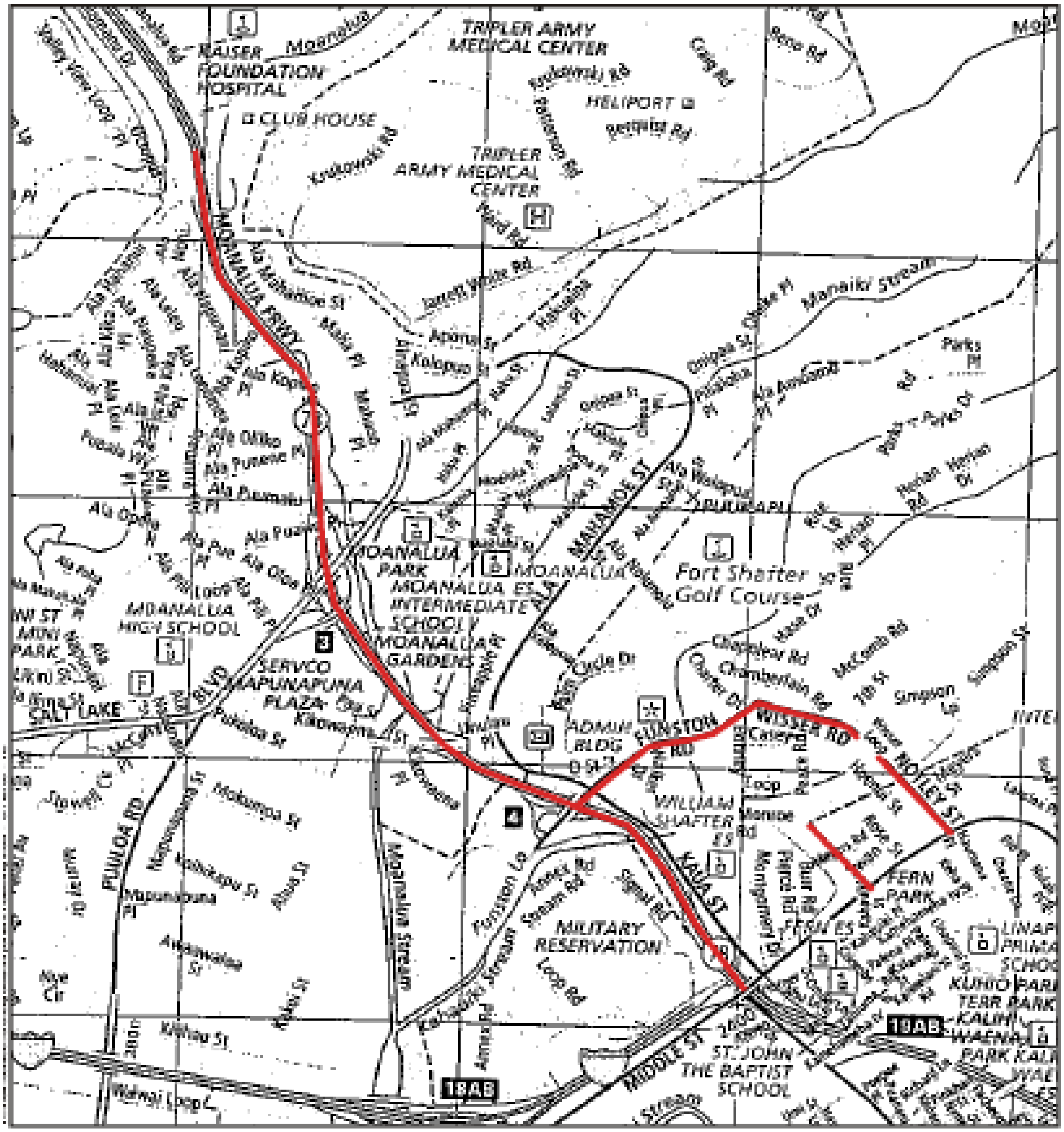

Figure 4.3-8. Important roadways surrounding Fort Shafter

4.3.15.2 Environmental Consequences

No Action Alternative: (Less than Significant)

Cantonment Construction. Under the no action alternative, the current uses of the affected environment would not change from the conditions described in 4.3.15.1, other than as discussed as a part of pre-existing trends and the ongoing actions discussed below. No additional cantonment construction is required at Fort Shafter. With existing, on-going and limited currently planned non-GTA projects, the garrison has critical facilities available to support existing units' living and administrative requirements. Additionally, some construction renovation may occur at Fort Shafter on as needed basis in the future. These activities are not anticipated to affect traffic patterns or volume of traffic flow, and they would not require adjustments to existing roadways and transportation networks. Traffic conditions on and around Fort Shafter have a few areas prone to congestion. The on-ramps and off-ramps from Moanalua Freeway lead directly to and from Fort Shafter, allowing for easy and convenient access for entering and leaving post. Traffic would remain at existing acceptable levels.

CSS (1,000), CS (1,000): (Significant but Mitigable).

Cantonment Construction. Short- and long-term effects would occur.

Short-term effects from construction. Construction would likely result in the redirection of- and increase in traffic within the affected area. These traffic pattern changes would take place within the installation and at the main gate entering the installation. It was indicated by Garrison staff (February 2008) that traffic is already experiencing some degree of congestion on the Moanalua Freeway (H-201) dividing Fort Shafter from Shafter Flats.

Currently, the guards keep traffic flowing at an acceptable rate through Buckner gate (the main gate); the addition of 1,000 Soldiers and Family members may considerably increase flow, resulting in further congestion and back-ups. The number of parking spaces required to accommodate these scenarios would be substantial. Assuming that each Soldier may operate a POV, as would a percentage of Family members; there may be an increase of 1,200 to 1,500 POVs operating on the installation.

Within Fort Shafter, the potential impact on base intersections is expected to be significant, and may require mitigations to minimize adverse effects. Long-term effects may include increased congestion at the Funston Road/Wisser Road intersection; however the intersection would be still functional. There could be an increase in traffic delays at this intersection. There may also be a possibility for light congestion at the Pierce Street and Wisser Road intersection, with occasional backups with average traffic delays. Speed limits and traffic signals are enforced by the MP, and traffic entering and leaving post are monitored by Soldiers or Department of Defense officers at each gate.

It is expected that traffic flow on the freeway would worsen, possibly requiring additional traffic studies as part of this stationing scenario. The Army currently operates a public Web site (http://www.25idl.army.mil) that lists a schedule of upcoming USAG-HI activities.

The effects from convoys would be short-term as these activities are intermittent and are usually mitigated through standard operating procedures for convoy maneuver. A convoy is normally defined as six or more military vehicles moving simultaneously from one point to another under

a single commander, ten or more vehicles per hour going to the same destination over the same route, or any one vehicle requiring a special haul permit. Per command guidance, USAG-HI convoys normally maintain a gap of 15 to 30 minutes between serials (a group of military vehicles moving together), 330 feet between vehicles on highways, and 7.5 to 15 feet while in town traffic. Per state regulation, military convoys are not authorized movement on state highways during peak-hour conditions (between 6:00 AM and 8:30 AM and 3:00 PM and 6:00 PM, Monday through Friday). Movements on Saturday, Sunday, and holidays are by special request only.

Regulatory and Administrative Mitigation 1: Convoys would move in serials, or groups, some as small as 6 vehicles or as large as 24 vehicles; and would travel at gaps of 15 to 30 minutes between serials to lessen the impact to on- or off-post traffic. State regulations prohibit convoys to travel on highways during peak commuter hours (Mondays through Fridays between 6:00 and 8:30AM, and 3:00 and 6:00PM).

Regulatory and Administrative Mitigation 2: The Army has programmed traffic mitigation control points for funding to upgrade post access to Fort Shafter and decrease traffic problems outside the installation resultant from delays at security gates.

Regulatory and Administrative Mitigation 3: Fort Shafter Installation master planners are being trained and looking for opportunities to incorporate multi-use traffic saving planning concepts on post at Fort Shafter. Concepts would be designed to provide services with desired services on post to limit the number of off-post trips as well as limit the need for vehicle traffic on-post. Training discussions and sessions are on-going with USAG-HI DPW master planners, Headquarters Department of the Army, and master planning professionals.

4.3.16 Socioeconomic

4.3.16.1 Affected Environment

The ROI associated with stationing Soldiers at Fort Shafter would include only the region where Fort Shafter resides, and the designated training areas that Soldiers may use for live-fire or maneuver exercises. Depending on the type(s) of units that may potentially be stationed at the installation, these training areas could include KTA, KLOA, the South Range Acquisition Area, or East Range.

Fort Shafter and these training areas are located within the county of Honolulu (on the Island of O'ahu). As discussed in Chapter 4.1.14.1 (Socioeconomics for stationing scenarios affecting Schofield Barracks), Honolulu County is divided into seven CCDs. These are Ewa, Honolulu, Koolauloa, Koolaupoko, Wahaiwa, Waialua, and Waianae; each is a permanent statistical area established cooperatively by the state and local governments with the U.S. Census Bureau. There are twelve (12) districts within Hawai'i County; these are Hilo, Honokaa-Kukuihaele, Kau, Keaau Mountain View, North Hilo, North Kohala, South Kohala, North Kona, South Kona, Paauhau-Paauilo, Pahoa-Kalapana, and Papaikou-Wailea.

According to 2006 data provided by the U.S. Census Bureau the population of the County of Honolulu is estimated at 909,863 and the average household size is approximately 2.93 persons per household. Of the total population, more than 472,000 (age 16 and over) is estimated to contribute to the workforce. The average per capita income is $27,478 and the median household income is estimated at $63,372. The unemployment rate in Honolulu County

is 3.8 percent, which is below the state average. The total number of housing units on the island is 332,718, of those approximately 125,411 are renter occupied.

Current school enrollment data together with projections for public school enrollment through 2013 are found in Appendix C of this SPEIS. A summary of the existing and projected school enrollment data are found in section 4.2.1.6 of this document.

4.3.16.2 Environmental Consequences

No Action Alternative: (Less than Significant)

Cantonment Construction. Under the no action alternative, the current uses of the affected environment would not change from the conditions described in 4.3.16.1, other than as discussed as a part of pre-existing trends and the ongoing actions discussed below. No additional cantonment construction is required at Fort Shafter. With existing, on-going and limited currently planned non-GTA projects, the garrison has critical facilities available to support existing units' living and administrative requirements. Additionally, some construction renovation may occur at Fort Shafter on as needed basis in the future. These activities are not anticipated to have negative impacts, but rather a long-term positive effect resulting from military spending on Oahu. Schools surrounding Fort Shafter would continue to operate at or under capacity with existing student populations. The need for local goods and services would remain the same, and no shortages or changes in demand are expected.

CSS (1,000), CS (1,000): (Less than Significant / Beneficial).

Cantonment Construction. Construction of new facilities at Fort Shafter may have both short-term adverse and beneficial effects.

Construction would be temporary, but would directly affect on-post activities through noise and dust; and directly and indirectly affect off-post traffic and the flow of commuter traffic heading on-post. Local schools or daycare facilities may be indirectly affected due to a temporary increase in traffic flow or noise. Construction may also have a beneficial effect to the local commercial construction contractor market from an increase in military spending on commercial construction services. These effects would be less than significant.

Housing would be provided in available units at Fort Shafter and other O'ahu military housing, though due to existing shortfalls most housing would be obtained off-post. There would be a mild economic benefit from increased housing rentals. Hawai`i rental rates are among the highest in the nation, and available rental housing has been decreasing in the past five years.

The stationing of additional Soldiers would have beneficial effects on the local economy, with minor increases in employment, income, and business sales volume indirectly due to expenditures that would stimulate the local economy. These beneficial impacts would be less than significant because the changes to these factors would be within the capacity of society and the economy to absorb.

Appendix A indicates through preliminary EIFS analysis that the addition of 1,000 Soldiers at Fort Shafter may add approximately 225 school-aged children to the school system on Oahu.

Although the State of Hawai`i and members of the community have expressed concerns with the current capacity of public schools, current year enrollment data suggest that of the 172 Schools operating on Oahu, just 17 schools are presently operating above capacity. The remaining 155 schools are operating with excess capacity and should be able to adjust and accommodate Army growth. Specific projections of school-aged children associated directly with Army growth are not available. More accurate information will only become available if the Army decides to station more Soldiers in Hawai`i, and will be a result of the number of school-aged dependents associated with those Soldiers. Without any available information on where Soldiers with Families may choose to reside, at this time it is not feasible to determine specific impacts to individual school enrollment numbers.

The Army is aware of concerns regarding the potential effects from Army growth to classroom size and school capacity; and the Army will continue to work with the Department of Education to provide more accurate information to the school system regarding potential growth in Hawai`i.

4.3.17 Global Warming

Scientists have concluded that human activities are changing the composition of the atmosphere, and that increasing the concentration of greenhouse gases will change the planet's climate. There is uncertainty as to how much it will change, and at what rate it will change. This action contributes greenhouse gases to the earth's atmosphere by adding vehicles and their associated carbon emissions to Alaska and Hawai'i. It could also remove vegetation, which would otherwise absorb carbon dioxide. This is not a significant cumulative impact when taken in context of the global situation and the Army's efforts. To begin, the new units would be stationed somewhere in the United States and the decision to create them is driven by Army mission requirements. Even if the units were not stationed in Alaska and Hawai'i, they would be somewhere else in the United States and the net addition to global carbon dioxide emissions would be the same. It is also important to place these carbon emissions in the context of the federal government's overall plan to reduce carbon emissions. Executive Order 13423 sets as a goal for all federal agencies the improvement of energy efficiency and the "reduc[tion] of greenhouse gas emissions of the agency, through reduction of energy intensity by (i) 3 percent annually through the end of fiscal year 2015, or (ii) 30 percent by the end of fiscal year 2015, relative to the baseline to the agency's energy use in fiscal year 2003." The U.S. Army Energy Strategy for Installations (U.S. Army Energy Strategy for Installations, 8 July 2005, available at http://army- energy.hqda.pentagon.mil/docs/strategy.pdf) also contains strategies to reduce energy waste and improve efficiency. USAG-HI is in the process of developing a master planning approach to limit the need for vehicular travel on and off-post to limit carbon emissions. In addition the installation is looking for opportunities to expand renewable energy sources while at the Army level efforts to acquire equipment requiring less feul consumption have been underway for several years. Taking these policies into account, this action does not represent a net incremental addition to the global climate change problem.

4.4 Pohakuloa Training Area

Pohakuloa Training Area Summary

This section provides an overview of the actions the Army would take to implement the Proposed Action under stationing scenarios at Schofield Barracks or Fort Shafter. Pohakuloa Training Area (PTA), is the Army's primary large unit maneuver training area for units stationed within USAG-HI. PTA would continue to accommodate Soldier training activities as part of the No Action and proposed action stationing scenarios. The Army would undertake three primary types of actions at PTA in support of new unit stationing on O'ahu. These actions include training range infrastructure construction (only considered for the Combat Aviation Brigade), live fire training, and maneuver training activities. No cantonment infrastructure projects are proposed at PTA. The discussion of environmental consequences to each resource discusses the impacts of each type of activity and assesses the combined impact of these activities on a given resource. Table 4.4-1 below lists the environmental impacts which are anticipated to occur if the Army were to implement various different unit stationing assignments to O'ahu, supported by training at PTA to support operations in the Pacific Theater. Stationing scenarios addressed include 1,000 additional Combat Support (CS) or Combat Service Support Soldiers (CSS), 3,000 additional CS or CSS Soldiers, or a new Combat Aviation Brigade. A summary of the symbology which discusses intensity of anticipated environmental impacts is provided below:

Description of VEC Impact Ratings

○	No impact, minimal or minor impacts are anticipated
⊙	Less than Significant
⊘	Significant but Mitigable
⊗	Significant Adverse impacts
+	Beneficial Impact
N/A	Not Applicable

Table 4.4-1. Pohakuloa Training Area VEC Ratings

Pohakuloa Training Area, Hawai`i						
VEC	Combat Service Support (1,000 Soldiers)	Combat Support (1,000 Soldiers)	Combat Aviation Brigade (2,800 Soldiers)	Combat Service Support (3,000 Soldiers)	Combat Support (3,000 Soldiers)	No Action Alternative
Air Quality	⊘	⊘	⊘	⊘	⊘	⊘
Air Space	○	○	⊙	○	○	○
Cultural Resources	⊗	⊗	⊗	⊗	⊗	⊗
Noise	⊘	⊘	⊗	⊘	⊘	⊘
Soil Erosion Effects	⊘	⊘	⊗	⊘	⊘	⊘
Biological Resources	⊘	⊘	⊗	⊘	⊘	⊘
Wetlands	○	○	○	○	○	○
Water Resources	⊙	⊙	⊙	⊙	⊙	⊙
Facilities	⊙	⊙	○	⊙	⊙	⊙
Energy Demand/ Generation	⊙	⊙	○	○	○	⊙
Land Use Conflict/ Compatibility	⊙	⊙	⊙	⊙	⊙	⊙
Haz Mat/ Haz Waste	○	○	⊙	○	○	○
Traffic and Transportation	⊙	⊙	⊙	⊙	⊙	⊙
Socioeconomics	⊙	⊙	⊙	⊙	⊙	⊙

PTA Introduction

Located on the island of Hawai`i, PTA (Figure 4.4-1 below) is the largest Army training area in Hawai`i, totaling 132,784 acres. PTA lands are within the state-designated Conservation District General, Limited, and Resource Subzones (State of Hawai`i 2002a). Land uses at PTA include the cantonment area, BAAF, maneuver training areas, drop zones, live-fire training ranges, artillery firing points, an ordnance impact area, and areas unsuitable for maneuver. The cantonment area consists of 566 acres with 154 buildings, mostly Quonset huts (USARHAW and 25th ID [L] 2006). BAAF has a 3,969-foot runway and offers helicopter access and limited C-130 access (USARHAW and 25th ID [L] 2006). Land suitable for field maneuvers consists of

approximately 80,000 acres, and the ordnance impact area is approximately 51,000 acres (USARHAW and 25th ID [L] 2006). Recreation at PTA includes archery, biking, motor sports, and hunting on designated training areas, which the Army coordinates with the state (R.M. Towill Corp. 1997a). Lands surrounding PTA are generally within the state-designated Conservation District (USARHAW and 25th ID [L] 2006). Land uses in the areas include cattle ranching, game management, forest reserves, and undeveloped land. Land to the northwest of PTA is agricultural, primarily for cattle grazing, and also provides limited hunting opportunities for big game species and game birds. Land to the north of PTA includes the Kaohe Game Management Area, Mauna Kea State Park, Mauna Kea Forest Reserve, and the Mauna Kea National Natural Landmark. Land to the east and south is included in the Mauna Loa Forest Reserve. The Mauna Kea Forest Reserve is also critical habitat for the Palila.

The Keamuku Parcel was acquired in July 2006. It lies at the western foot of Mauna Kea and consists of approximately 23,000 acres. West PTA will be used primarily as a nonlive-fire maneuver training area. Other uses may include continued cattle grazing and/or quarry operations. This area was previously leased four to six times a year by the Army or other military entities for maneuver training (USARHAW and 25th ID [L] 2006). The Mamalahoa Highway forms the northwestern boundary, and Saddle Road forms most of the eastern boundary. Saddle Road Junction, where these roads connect, forms the northern boundary. Land uses surrounding the Keamuku Parcel include cattle grazing, military training, agriculture, residential lots, and open space. PTA is to the south-southeast of the area, and the Puu Paa Military Maneuver Area is adjacent to the northern tip, west of Mamalahoa Highway. The remaining surrounding lands are used for recreation and ranching or are undeveloped.

As a military training site, PTA provides the Army with a unique location in the Pacific Theater which allows the Army to execute large scale combined arms maneuver training tasks. PTA supports all types of live-fire training and is capable of supporting maneuver at the battalion and brigade levels. A number of collective and small arms ranges are currently sited on PTA and weapons systems fired at PTA include small arms, antitank weapons, mortars, field artillery, air defense artillery, machine guns, demolitions and rockets. PTA supports the training of not just Army units, but also U.S. Navy, Marines, Air Force, Special Operations Forces and allied armed forces from around the Pacific Region.

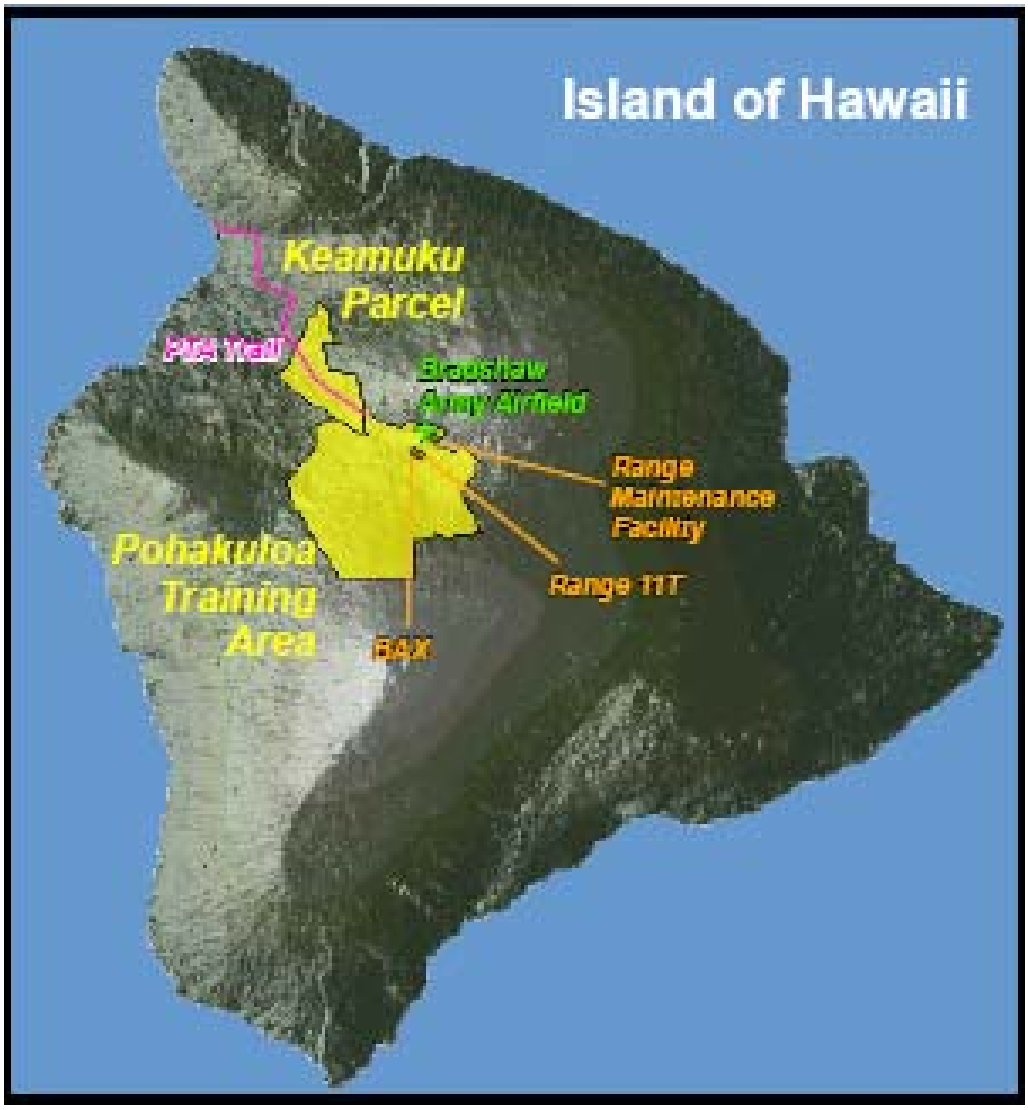

Figure 4.4-1. Pohakuloa Training Area

4.4.1 PTA Proposed Actions to Support Army Stationing Scenarios

As discussed above, the Army is evaluating several stationing scenarios in USAG-HI that could result in impacts. PTA will support training activities under all CS/CSS unit stationing scenarios at SBMR and Ft. Shafter, however, the frequency and intensity of training would not perceptibly increase (Less than 1%) under all CS/CSS stationing scenarios. Units would deploy to PTA from the island of Oahu to support integrated maneuvers of combat units. The Army is not proposing to build additional cantonment facilities at PTA under any of the stationing scenarios analyzed in this document or as part of the No Action alternative. Units stationed at part of growth and realignment would conduct Garrison operations and administrative functions at SBMR or South Range. Additional range construction activities would occur in association with

stationing an aviation brigade, where the current aviation gunnery range (Range 20) located in the impact area of PTA would be upgraded and expanded. Road and trail infrastructure, to include the PTA trail when it is built, would be used, particularly under CSS stationing scenarios, though the frequency of their use would not perceptibly increase. The same number of large unit maneuver rotations would be held at PTA under the No-Action and all CS and CSS stationing scenarios. CS units would participate in CALFEX live-fire activities and collective live-fire training at the BAX once it is built and on other ranges at PTA, though the Army estimates that the frequency of training events at PTA will remain the same, as these are primarily determined by the number of combat maneuver units within USAG-HI. Potential impacts from live-fire training at PTA are estimated to be most intensive if an aviation brigade were stationed in Hawai`i as this stationing scenario would result in an increase to the number of live-fire qualification events and aviation maneuvers at PTA. A description of activities that would be implemented as part of each scenario is provided below:

Scenario 1, 2, 3 & 4: Growth by CSS (1,000), CS (1,000), CSS (3,000), CS (3,000) Soldiers

Cantonment and Range Construction: No additional actions would take place at PTA as part of these stationing scenarios.

Live Fire and Maneuver Training: Units stationed in Hawai'i (SBMR or Fort Shafter) under these scenarios would conduct the vast majority of their small unit maneuver training (squad, platoon and company) and live-fire qualifications on the Island of O'ahu at USAG-HI training sites. CS and CSS units would deploy to PTA to support large unit maneuver events at the battalion and brigade level. CSS units would participate in limited fashion providing logistical support and other functions to combat units as they conducted live-fire training exercises. During maneuver rotations, CSS unit support would involve primarily hauling and logistical support to resupply BCT and CS units during maneuver training rotations. CS units would work directly with combat maneuver units providing engineering support, military police functions, chemical response capability, explosive ordnance detection and disposal, and other support missions. All CS and CSS units would operate in accordance with current PTA SOPs.

Under all CS and CSS stationing scenarios the number of maneuver rotations at PTA would not be anticipated to change. Both stationing scenarios would result in an increase of less than 1% (over existing activities) in the number of vehicle maneuver miles which would occur under the No-Action alternative at PTA. Live-fire training at PTA would not be projected to increase under CSS stationing scenario's and munitions use at PTA would increase imperceptibly if at all with more CS units. The frequency of live fire and maneuver exercises is not projected to change by implementing either stationing scenario. The frequency of integrated unit live-fire training exercises at PTA are also not projected to increase as CS units conduct the vast majority of unit level training in support of BCT training exercises. The primary determinant of use of these facitlities is the number of combat maneuver units in USAG-HI.

Scenario 5: Stationing of a Combat Aviation Brigade (2,800 Soldiers)

Cantonment Construction: No additional cantonment projects would be implemented to support this stationing scenario.

Range Construction: Under this stationing scenario, the Army would upgrade its existing aerial gunnery Range 20 in the impact area at PTA and expand the footprint and boundaries of the range to increase the size of the range by an additional 1,500 to 2,000 acres. To access the range, aircraft would depart from WAAF on a route approved for military flight traffic. Figure 4.4-

2 below shows the existing location of the aerial gunnery range that would be upgraded. Additional targetry and Aviation Weapons Scoring System (AWSS) technology would be added to the expanded aviation gunnery range footprint as part of this stationing scenario, in support of brigade weapons qualifications. The volume of firing activities as part of this stationing scenario would approximately double with the increased training and live fire requirements that would need to be supported as part of the stationing of a CAB.

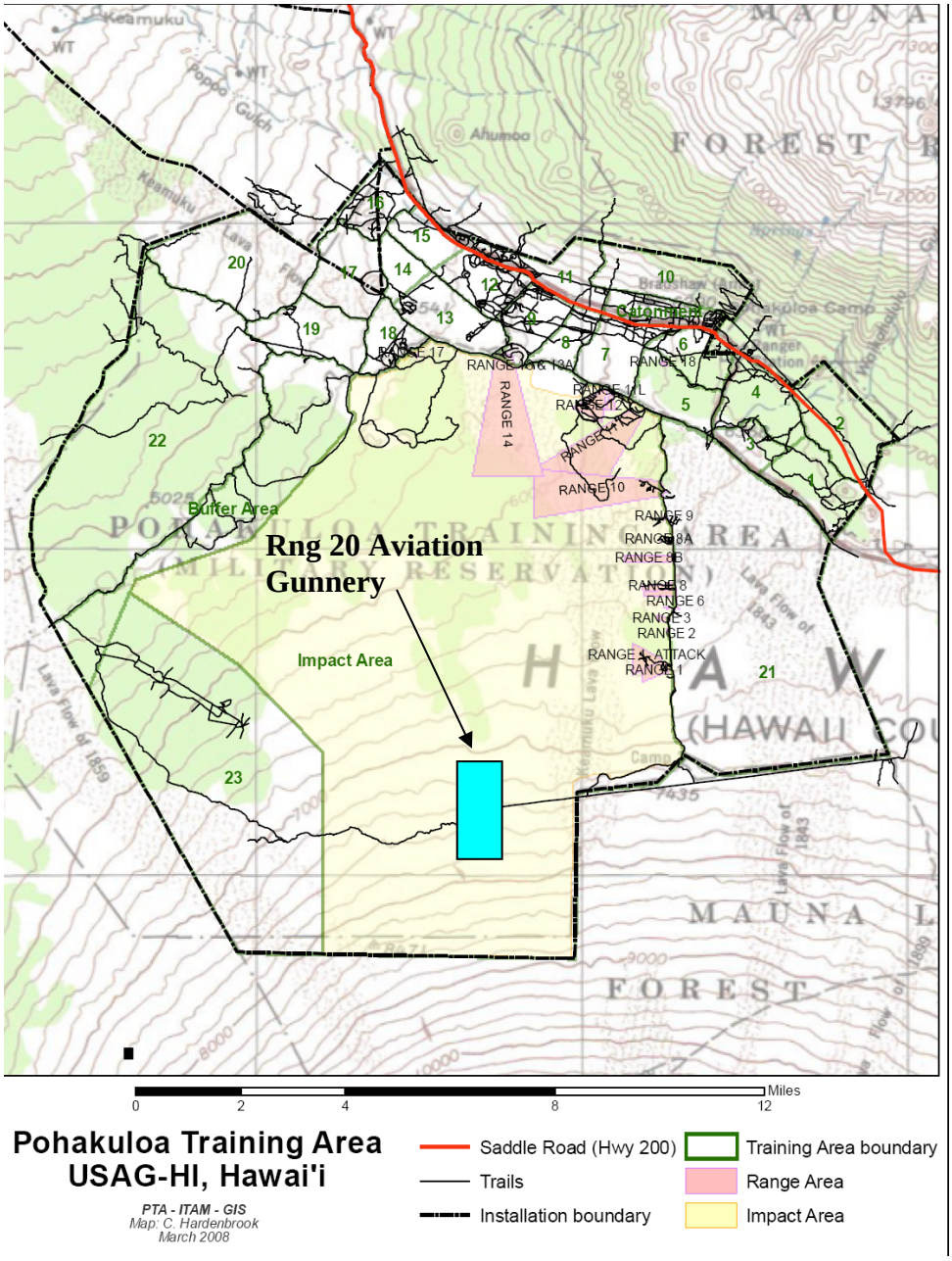

Figure 4.4-2. PTA Aerial Gunnery Range

Live Fire Activities: Helicopter crews would engage in aerial gunnery tasks on the aviation gunnery range (Range 20). Aviation crews would conduct aerial door gunnery qualification with

machine guns and crews would practice diving fire ground engagement tasks with machine guns and training ordnance rounds. An increase in volume of machine gun and training rocket fire would be anticipated on these ranges and an elevated risk for wildfires in the impact area. Range 20 is currently located within the PTA impact area. UXO is currently on this range site and the area of proposed expansion for the range site. This UXO would need to be cleared for construction expansion. The range is currently used for aviation gunnery, but the volume of live-fire and training ordnance usage would more than double on this range.

Maneuver Use: The aviation brigade would use designated routes to depart from WAAF and access training areas at PTA. The brigade would conduct a majority of its aviation maneuver tasks at PTA and would utilize airspace at PTA during maneuver and while supporting maneuver training events. Maneuver of ground equipment that accompanies the brigade would be on roads, trails and improved surfaces. Ground equipment would gather at designated locations to conduct Assembly Area operations (logistics and maintenance) in support of aviation units supporting BCT maneuver rotations. Helicopters would work with light infantry units to transport and insert Soldiers during maneuver training rotations.

No Action Alternative:

The No Action alternative baseline for PTA consists of impacts associated with the present level of training. There would continue to be no units permanently stationed at PTA. Ongoing and planned cantonment and range construction projects would proceed, including those associated with the permanent stationing of the 2/25th SBCT such as the PTA BAX, Range Maintenance Facilty and Ammunition Storage Facility, and those projects identified in the 2008 SBCT Stationing EIS as being non-SBCT specific, to include the tactical vehicle wash, PTA Trail, anti-armor live-fire and tracking range. Units would continue to train with on existing ranges as they are presently equipped. Live-fire training at ranges on PTA will continue at existing levels. Maneuver and non-live fire training at PTA and the Keamuku Parcel would also continue at current levels with existing equipment. Regulatory and administrative mitigation measures, BMPs, and other programs (e.g. INRMP, ICRMP, IFWMP, ITAM, DuSMMoP) will continue to be implemented to reduce impacts associated with Army activities.

4.4.2 PTA Affected Environment and Environmental Consequences

This section discusses the existing baseline conditions for each environmental resource as well as the anticipated consequences to PTA should the Army implement one of the stationing scenarios discussed in Chapter 4.4.1.

4.4.3 Air Quality
4.4.3.1 Affected Environment

There are no permanent air quality monitoring stations located near PTA. The closest permanent air quality monitoring station is located at Hilo and Kona. The station at Hilo primarily collects data on sulfur dioxide and PM_{10} levels; and the station at Kona primarily collects only sulfur dioxide levels (monitoring for PM_{10} was suspended in June 2000). The major activities contributing to air emissions at PTA include a package rock crushing facility (only used when needed), military vehicles, aircraft flight operations (mainly helicopters), and the use of ordnance. Data from air monitors at PTA collected from January 2006 through June 2007 suggest maneuver training itself is unlikely to result in significant impacts. The data indicate that even during maneuver training, concentrations of PM_{10} along PTA's boundary are below federal and state 24-hour and annual average standards (Army FEIS for Stationing of the 2/25th, 2008).

Precipitation data for the area is collected at BAAF and records an average rainfall of 16.9 inches per year (1.6 inches in June to 4.4 inches in March). There are four automated weather monitoring stations located at PTA (eastern, southern, north-central, and western portions of the training area); these are used in real-time to monitor for fire management purposes. Wind speed data is also collected here to evaluate the potential for wind erosion conditions. Soldier activities are generally concentrated in the eastern and western areas of PTA. After evaluating three years of data, the Army determined the average hourly wind speed in the eastern area to be 13 mph and a maximum hourly average wind speed of 33 mph. Wind speed did exceed 8.2 mph 75 percent of the time and exceeded the 15 mph threshold commonly associated with wind erosion processes approximately 35 percent of the time. Data from the western portion of PTA show an average hourly wind speed exceeding 4.7 mph 75 percent of the time. It should be noted that the soil types in this western area are primarily low-density silty soils and are subject to wind erosion at speeds of approximately 12 mph or higher (this is lower than the 15 mph threshold). The wind speed there exceeds the 12 mph threshold approximately 15 percent of the time.

Although Hawai`i is in attainment for PM10 under the CAA the area surrounding PTA has experienced discrete events in which fugitive dust from Army operations during high-wind events resulted in the temporary evacuation of residences at Waikii Ranch. Due to these conditions, the Army invested in seven air-monitoring stations around PTA to monitor Total Suspended Particulates and PM_{10}. In January 2006, the Army installed seven air-monitoring stations around PTA (Morrow 2007). TSP was included because it is more representative of fugitive dust than the finer, inhalable PM_{10}.The monitors were installed as close to PTA's boundaries as access and safety would allow. Between January 29, 2006 and June 30, 2007, the monitors sampled PM following the EPA's once-every-6-days schedule. Analysis of the data collected during the sample period indicates that concentrations of particulate matter at PTA under current activity levels are well within federal and state air quality standards (Morrow 2007). The 24-hour PM_{10} concentrations at the seven sites ranged from 0 to 72 $\mu g/m^3$ with a mean value of 7.2 $\mu g/m^3$ for all sites. The federal and state standards for PM_{10} are 150 $\mu g/m^3$

(24-hour) and 50 µg/m^3 (annual average). The 24-hour TSP levels ranged from 1.4 to 132 µg/m^3 for all sites with an annual mean of 14.4 µg/m^3. Although there are no longer federal or state standards for TSP, the former standards were the same as the PM_{10} standards cited above.

4.4.3.2 Environmental Consequences

No Action Alternative: (Significant but Mitigable)

Under the no action alternative, the current uses of the affected environment would not change from the conditions described in 4.4.3.1, other than as discussed as a part of pre-existing trends and the ongoing actions discussed below.

Under the No action alternative, the expected impacts from training range infrastructure construction at PTA are expected to remain as significant but mitigable to less than significant. The impacts associated with live-fire and maneuver training are expected to remain as less than significant.

Cantonment Construction. Under the No Action Alternative no construction projects would be considered for the cantonment area at PTA. However, routine infrastructure maintenance activities would continue.

Range Infrastructure Construction. No new range construction would occur under the No Action alternative. Ongoing and currently planned non-GTA construction projects such as the PTA BAX may result in a temporary increase in fugitive emissions from activities at construction sites. Construction contractors will continue to comply with the provisions of Hawaii Administrative Rules, Sec. 11-60.1-33 on Fugitive Dust as part of the requirements of their construction contracts. Consequently, the impact from range construction at these locations is anticipated to be less than significant. In addition, annual emissions of ozone precursors from construction vehicles at USAG-HI are expected to be too small to have a measurable effect on ozone levels (USAEC, February 2008).

Live-Fire Training. Live-fire training would continue across the training areas at present levels. Approximately 96 percent of the annual ordnance use throughout USAG-HI will consist of small arms ammunition, each item of which emits only a very small propellant charge. Ordnance items with explosive or pyrotechnic components (such as mortars, artillery, mines, demolition charges, smoke devices, flares, or blast simulators) represent only a small percent of annual ordnance use at USAG-HI.

The impact to air quality from the risk of wildfires (and thus emissions from wildfires) throughout the garrison is anticipated to be less than significant. The risk of wildfire occur at all training areas. These are the result of natural processes such as lightning; and anthropogenic activities such as live-fire and nonlive-fire training, and the accidental ignition of fuels such as from cigarette disposal. Wildfire emissions associated with increased ordnance use may result from continued live-fire training. Overall, training at all ranges increases the potential for increased frequency of wildfires. With continued implementation of the garrison's Wildfire Management Plan used in conjunction with mitigation measures such as the establishment of additional fire access roads and fire breaks, additional dip ponds, and the construction of fuel management corridors, impacts to air quality from wildfire risk are anticipated to be less than significant.

Maneuver Training. Fuel combustion in military vehicles produce criteria emissions, including NOx, CO, SOx, and PM_{10}. Because the emissions for these pollutants would not have a measurable effect on ozone levels or affect the attainment status of the area, impacts from military vehicle emissions would be less than significant. .

Maneuver training will continue to occur at PTA and will remain a combination of on-road and off-road areas. Off-road maneuver activity as a result of existing training conditions may continue to reduce or eliminate vegetation cover in some areas. Vegetation removal increases soils susceptibility to vehicle and wind erosion and PM_{10} would be generated by these actions from the affected areas. Portions of the recently acquired Keamuku Parcel will be particularly susceptible to erosion as maneuver areas are established and used. The Army's Dust and Soils Mitigation and Monitoring Plan (DuSMMoP) and ITAM program will continue to maintain these areas in order to promote a sustainable training environment, and would substantially mitigate air quality impacts. While violation of air quality standards is unlikely, given the uncertainties associated with estimated potential wind erosion conditions and public perceptions of the potential magnitude of this impact, the Army considers the impact to air quality from wind erosion on the Keamuku Parcel to be significant.

CSS (1,000), CS (1,000), CSS (3,000), CS (3,000): (Significant but Mitigable).

Under all CS and CSS stationing scenarios the number of maneuver rotations at PTA would not be anticipated to change. All CS/CSS stationing scenarios would result in an increase of less than 1% (over existing activities) in the number of vehicle maneuver miles which would occur under the No-Action alternative at PTA. Live-fire training at PTA would not be projected to increase under CSS stationing scenario's and munitions use at PTA would increase imperceptibly if at all with more CS units. The frequency of live fire and maneuver exercises is not projected to change by implementing either stationing scenario. The frequency of integrated unit live-fire training exercises at PTA are also not projected to increase as CS units conduct the vast majority of unit level training in support of BCT training exercises. The primary determinant of use of these facitlities is the number of combat maneuver units in USAG-HI.

Cantonment Construction: ***No Impact***

Range Construction: ***No Impact***

Live-fire and Maneuver Training: **Signficant but Mitigable**

As the frequency of live-fire and maneuver exercises is not projected to change at PTA through the implementation of CS/CSS stationing scenarios the impacts to air quality are not expected to change from existing baseline conditions.

Release of NOx, CO, SOx and other criteria and hazardous air pollutants from live fire and maneuver activities would not be projected to increase. There would be no anticipated or perceptible increase in particulate matter levels at or around PTA as a result of implementing these stationing scenarios. The risk of wildfires from live-fire activities would also not be projected to increase appreciably at PTA with the implementation of these stationing scenarios.

Regulatory and Administrative Mitigation 1: Although violation of air quality standards is not likely, the overall level of PM_{10} generated by wind erosion would increase. To mitigate this

potential impact, the Army would implement additional Dust and Soils Management and Monitoring Plans to reduce PM 10 inputs at helicopter landing.

Combat Aviation Brigade (2,800): (Significant but Mitigable).

Cantonment Construction: **No Impact**

Training Range Infrastructure Construction: **No Impact**

Renovation of the existing aerial gunnery range could temporarily increase fugitive emissions from activities; however, because the range is located approximately 2 miles from the installation boundary (at the closest point) (see Figure 4.4-2) there would be no expected effects to off-post locations. Construction contractors would comply with the provisions of Hawaii Administrative Rules, Sec. 11-60.1-33 on Fugitive Dust during construction.

Live-fire Training. **Less than Significant**

Live-fire training would involve the release of emissions from rockets and small munitions items at the firing point; and the release of munitions constituents at the point of impact (depending on the munition items). Impacts from ordnance detonation (depending on the munition item) may also kick-up dirt and dust temporarily. Ordnace use on the aviation gunnery range at PTA would be projected to approximately double as a result of implementing this stationing scenario.

As a result of an increase in munitions use at PTA from aviation gunnery and qualification activities, there would be an expected potential significant risk of igniting wildfires. Due to the size and function of munitions items used on these aircraft, the greater blast radius resulting from explosion would dramatically increase the risk of igniting fires. Unlike the fires that could occur on small arms ranges (where personnel would be relatively closer and could respond more quickly) the fires that could occur on an aerial gunnery range (if vegetation is not properly managed) could be unmanageable if personnel are not on-site to quickly respond. The greater the size of the burn site the more emissions (PM, PAHs, etc.) that could be released. Additionally, the smoke clouds could travel for miles (potentially off-post) resulting in air quality impacts to off-post residents. The installation would continue to utilize firebreaks and/or fuel breaks (and other fire control measures including range design features) in order to mitigate potential effects and limit the spread of wildfire. For example, the use of dip ponds would increase the availability of water for helicopter fire suppression.

There would also be emissions resulting from controlled burns that are employed to manage vegetation on ranges (where fires could result from live-fire activity) and to prepare areas for UXO clearance.

Maneuver Training. **Significant but Mitigable**

The increase in military vehicle engine emissions would add to the NOx, CO, SOx, and particulate matter released to the environment. Unit generators of the aviation units logistics support would also add to the NOx, CO, SOx during maneuver training rotations.

Particulate matter PM10 and PM 2.5 would increase from helicopter training activities and disturbance from high velocity winds generated by aviation training activity.

It is anticipated that there would be only a small net increase in ozone precursor emissions to have a measurable effect on ozone levels; they would not affect the attainment status of the area. Further analysis of air quality impacts would be needed when composition of the unit and its vehicles and equipment are further understood, if this scenario were selected.

Increased aviation maneuver and support of combat maneuver units would result in an increase loss of vegetation from "rotor wash" as helicopters approach the surface of the ground and a temporary increase in PM and fugitive dust emissions. These impacts would be temporary and would not occur near any residential areas.

Regulatory and Administrative Mitigation 1: The Army continually funds and implements USAG-HI-wide land management practices and procedures described in the ITAM annual work plan to reduce erosion and other soil and geologic impacts (USARHAW 2001a and USARHAW 2001b). Currently, these measures include implementing a TRI program, implementing an ITAM program, implementing an SRA program, developing and enforcing range regulations, implementing an Erosion and Sediment Control Management Plan,and continuing to implement land rehabilitation projects, as needed, within the LRAM program. Land rehabilitation projects would be implemented to counter the loss of vegetation and increased potential for particulate matter air pollution.

Regulatory and Administrative Mitigation 2: The Army has designated landing and pick-up zones for helicopters during maneuver training events at PTA. This mitigation is designed to limit loss of vegetation at PTA from helicopter landing operations and is also designed to reduce the amount of fugitive dust and particulate matter released into the air.

Regulatory and Administrative Mitigation 3: The Army would continue to implement its Dust and Soils Management and Monitoring program (DuSMMoP) to reduce potential for wind erosion and mitigate inputs of fugitive dust and PM 10 from aviation training.

4.4.4 Airspace

4.4.4.1 Affected Environment

Much of the airspace above the northern half of the island of Hawai`i, where PTA resides, is controlled airspace of various classes. Class G airspace extends from the surface to 700 feet, except around Kona and Hilo International Airports and BAAF, which are surrounded by Class D airspace (USAG-HI 2004). PTA has one special use airspace area that is restricted up to 30,000 feet; its use is intermittent. Restricted areas denote the existence of unusual, often invisible hazards to aircraft, such as artillery firing, aerial gunnery, or guided missiles. Consequently, flights from non-participating civilian or military aircraft are prohibited during certain training exercises. The Island of Hawai`i has no formal published military training routes.

4.4.4.2 Environmental Consequences

No Action Alternative: (Minor)

Under the no action alternative, the current uses of airspace would not change from the conditions described in 4.4.4.1, other than as discussed as a part of pre-existing trends and the ongoing actions discussed below.

Under the No action alternative, the expected impacts to airspace resources from training range infrastructure at PTA are expected to remain minor. The impacts associated with live-fire training are expected to remain minor. Maneuver training with UAVs and other aircraft will cause less than significant impacts.

Range Infrastructure Construction. No new range construction projects would occur under the No Action alternative. Ongoing and currently planned non-GTA range construction such as the PTA BAX, associated with the recent stationing of the 2/25th SBCT, would temporarily increase human presence and activity at construction sites. Construction of ranges would not require modifications to existing controlled or special use airspace and no new special use airspace would be needed. No impacts to airspace are expected.

Live-Fire Training. No changes to existing airspace use would occur under the No Action alternative and no new special use airspace would be needed. As part of overall transformation and modernization of ranges, controlled firing areas (CFAs) will be established above new or modified ranges and maintained above existing ranges. Activities within a CFA must be suspended immediately when radar, spotter aircraft, or ground lookouts detect an approaching aircraft.

Maneuver Training. No change to existing maneuver training on PTA would occur. With respect to airspace resources, the No Action alternative would include flights by UAVs associated with units presently stationed on Oahu. UAV flights primarily would be conducted within previously designated restricted areas (e.g., R-3109 and R-3103). For UAV flights that could not be conducted entirely within restricted areas, operations would occur in accordance with well-defined FAA procedures for remotely operated aircraft. These procedures include approval of the UAV flights by the FAA regional office in Honolulu at least 60 days in advance. Continued maneuver training of ground-based units (i.e. those without UAVs) will have no effect on airspace at SBMR or Oahu training sites.

CSS (1,000), CS (1,000), CSS (3,000), CS (3,000): (No Impact).

All CS and CSS stationing scenarios would not require increased use of airspace at PTA above current levels of airspace use.

Cantonment Construction: ***No Impact***

Range Construction: ***No Impact***

Live-fire and Maneuver Training: **No Impact**

As the frequency of live-fire and maneuver exercises is not projected to change at PTA through the implementation of CS/CSS stationing scenarios the impacts to airspace are not expected to change from existing baseline conditions.

Combat Aviation Brigade (2,800): (Less than Significant).

Cantonment Construction: ***No Impact***

Training Range Infrastructure Construction. No effects to airspace are anticipated from upgrading and expanding Range 20 at PTA.

Live-fire and Maneuver Training. **Less than Significant**

The frequency of aviation gunnery activities and the need to intermittently restrict civilian air-traffic in the (R-3103) air corridor would approximately double with the implementation of this stationing scenario. Training activities of the aviation brigade would be coordinated with the FAA and other state agencies as required. Given that lack of issues with utilization of airspace at PTA, the stationing of additional aviation units in Hawai`i would not be projected to significantly impact use of airspace resources at PTA. The maneuver corridor between WAAF and PTA would continue to be utilized, and no additional airspace would be required.

4.4.5 Cultural Resources
4.4.5.1 Affected Environment

PTA is part of a larger cultural landscape that includes Mauna Kea and Mauna Loa, and includes the Saddle area between them. The cultural significance of the area has been, over time, recorded and clarified by numerous researchers including Kepā Maly (1999), Charles Langlas (Langlas *et al.* 1999), and Holly McEldowney (1982). The area encompassing the lands on and between the mountains of Mauna Kea and Mauna Loa is one of the most sacred areas to Native Hawaiians; and evidence suggests the occupation and use of this area beginning in the 10th century. The heiau on the slopes of Hualalai south of PTA is said to have been built by a legendary chief in the early 17th century. This chief and his father are credited with unifying the island and creating the traditional system of land division. The chilly heights of the Saddle and the peaks are not thought to have been the locations of permanent residences, but many groups routinely embraced the natural resources there. Much of the PTA zone provided a rich resource for bird hunting (for feathers and meat), quarrying for volcanic glass, and lithic workshop areas for finish work on Hawaiian ko'i or adzes known to be produced from Mauna Kea basalt.

Archaeological studies (summarized in the Programmatic Environmental Assessment for Construction of Large-scale Fence Units at PTA (USAG-HI, May 2006)) suggest that ancient Hawaiians practiced different economic activities in the uplands area of PTA. Radio-carbon dating in caves in that region indicates occupation between the 12th and 18th centuries, and a few reports indicate the presence of burials at PTA. Some studies suggest that Native Hawaiians planted sweet potato crops in stony areas (Reinman and Schilz 1999), but more recent work supports the hypothesis that excavated pits were created to enhance economically important bird (petrel) habitat (USAG-HI, May 2006).

In the late 1800s parcels of the PTA area was owned by ranchers raising cattle and sheep. A lease to the Kaohe lands of PTA was held by John Parker II from before 1876 through 1891. The Waimea Grazing and Agricultural Company leased Humuula east of PTA around 1860 to raise sheep and hunt wild cattle. By 1891, the Humuula lease was held by the Hackfields The Hackfields also obtained the lease for the east side of Kaohe. After 1900, Parker obtained control of the Humuula Sheep Company and controlled most of the saddle.

Surveys at PTA and the Keamuku Parcel have located 383 known prehistoric and historic archaeological sites. Modified natural features such as lava tubes, lava blisters, and lava shelters make up the most common archaeological resources at PTA. Other resources include cairn sites, trails, volcanic glass quarries, excavated pits, and lithic workshops. Most of the known archaeological sites at PTA are Native Hawaiian sites reflecting traditional activities. A few sites may have ritual aspects. Seven known stone shrines remain that bear evidence to ritual activity in the area.

The DPW Buildings List includes 138 structures at PTA that are already or which will soon be 50 years old. A survey and condition assessment has been completed, and an MOA for treatment of the structures is currently being developed. These structures include Quonset huts dating from 1955 to 1958. All of the structures from the late 1950s should be treated as though they are 50 years old. Other structures in the built up area of PTA (including BAAF) date from World War II or the Cold War era.

An ethnographic study for PTA is currently underway. Several studies of the Mauna Kea area document this area, which remains significant to Native Hawaiians.

4.4.5.2 Environmental Consequences

No Action Alternative: (Significant Adverse)

Under the no action alternative, the current uses of the affected environment would not change from the conditions described in 4.4.5.1, other than as discussed as a part of pre-existing trends and the ongoing actions discussed below.

Surveys for cultural and historic resources have been conducted on many live-fire ranges, and known sites have been avoided or mitigated. Live-fire and maneuver training will continue to pose a potential significant impact to undiscovered resources. Continued adherence to Section 106 and the NHPA will minimize impacts to newly discovered sites; however, significant impacts to undiscovered resources may occur.

Range Infrastructure Construction. No new range construction projects would occur under the No Action alternative. Range maintenance would continue as needed. This would include berm, trail and targetry maintenance and would temporarily increase human presence and activity at range sites.

Though no new range construction would occur under the No Action alternative, on-going and currently planned range construction would involve grubbing vegetation, grading site surfaces, excavating subsurface, and moving heavy construction equipment. All of these activities, particularly excavation, could result in direct damage to or destruction of archaeological resources. Destruction, damage, or restricted access to previously unknown properties of traditional importance could occur. The Army has been working to mitigate adverse effects by redesigning projects to avoid cultural resources, developing and implementing cultural resource site protection plans, monitoring earth disturbing activities, and developing long-term site protection measures. These mitigation measures would continue to minimize impacts to cultural resources; however, the potential impacts would not be mitigated to a less than significant level.

Live-Fire Training. Existing conditions would continue at all of the training areas. There would be no project-related increase in frequency or intensity of training, no use of new ranges, and no

change in weapons or equipment. All sites identified in prior archeological inventory surveys have been avoided during range design where feasible and the treatment of those that cannot be avoided is subject to consultation. Despite ongoing surveys and the implementation of protective measures and post-training monitoring of known sites by cultural resource personnel, there remains a potential for impacts to undocumented sites. The use of live-fire ranges, even at existing levels, will remain a potential cause of significant impacts to cultural resources.

Maneuver Training. There would be no change to the existing type and frequency of maneuver training at PTA; however, continued impacts to maneuver areas could result in significant but mitigable impacts on cultural resources in the maneuver areas caused by ground troop activities, off-road vehicle movement, and ground disturbance. Mechanisms and procedures are in place to monitor the effects of operations, maintenance, and training exercises, and to respond to any unanticipated discoveries. The Army would continue to inventory and evaluate cultural resources in compliance with Section 110 of the NHPA, and project planning would comply with Section 106 and its implementing regulations. Despite ongoing surveys and documentation of cultural resources, there remains a potential for impacts to undocumented sites. Maneuver training, even at existing levels, will remain a potential cause of significant impacts to cultural resources. Significant impacts to archaeological sites are not mitigable to a less than significant level.

CSS (1,000), CS (1,000), CSS (3,000), CS (3,000): (Significant Adverse).

Under all CS and CSS stationing scenarios the number of maneuver rotations at PTA would not be anticipated to change. All CS/CSS stationing scenarios would result in an increase of less than 1% (over existing activities) in the number of vehicle maneuver miles which would occur under the No-Action alternative at PTA. Live-fire training at PTA would not be projected to increase under CSS stationing scenarios and munitions use at PTA would increase imperceptibly if at all with more CS units. The frequency of live fire and maneuver exercises is not projected to change by implementing either stationing scenario. The frequency of integrated unit live-fire training exercises at PTA are also not projected to increase as CS units conduct the vast majority of unit level training in support of BCT training exercises. The primary determinant of use of these facitlities is the number of combat maneuver units in USAG-HI.

Cantonment Construction: ***No Impact***

Range Construction: ***No Impact***

Live-fire and Maneuver Training: **Signficant Adverse**

As the frequency of live-fire and maneuver exercises is not projected to change at PTA through the implementation of CS/CSS stationing scenarios the impacts or potential impacts to cultural resources are not expected to increase from existing baseline conditions. The Army's rating of significant adverse impacts is based upon activities that would be implemented as part of the No Action Alternative. Mitigations and programs that the Army has in place or is establishing would remain in place. The Army would continue to provide Native Hawaiians with access to traditional religious and cultural properties, in accordance with AIRFA and executive Order 13007. No new mitigations would be implemented at PTA as a result of CS/CSS stationing scenarios.

Combat Aviation Brigade (2,800): (Significant Adverse).

Cantonment Construction: **No Impact**

Training Range Infrastructure Construction: **Significant Adverse**

Range construction involves grubbing vegetation, grading site surfaces, excavating subsurface, and moving heavy construction equipment. These activities would take place within the existing impact area at PTA to expand Range 20. All of these activities, particularly excavation, could result in direct damage to or destruction of archaeological or cultural resources. Destruction or damage to undocumented cultural resources could occur during the construction of the expanded aviation gunnery range. While the expansion of the aviation gunnery range would occur in a relatively small footprint, it could be reasonably anticipated that some cultural resources may exist and could be disturbed through the process of UXO clearance and ground disturbance. Site protection plans for both the short-term protection during UXO clearance and construction and, long-term treatments related to training would be developed in consultation with the Native Hawaiian community and other interested parties. The Garrison will avoid building on known sites, and as part of this scenario the Garrison would conduct Section 106 Consultation with the State Historic Preservation Office, the Office of Hawaiian Affairs, and appropriate Native Hawaiian organizations/individuals. Wherever possible, avoidance during design would be used to prevent any impacts to cultural resources which were identified.

Regulatory and Administrative Mitigation 1: The Army would work during the planning and design process to mitigate adverse effects to cultural resources by redesigning projects and targetry sitings to avoid cultural resources, developing and implementing cultural resource site protection plans for construction and UXO clearance, monitoring earth disturbing activities when appropriate, and developing long-term site protection measures.

Live-fire Training. **Significant Adverse**

The increase in munitions items and weapons use (rockets, missiles, machine guns) elevates the risk of damage to cultural resources. Rockets and missiles require a much larger surface danger zone than do machine guns and do more damage to soils upon explosion. In addition, fire caused by aviation gunnery activity could impact some cultural resources, and expansion of the aviation gunnery range and UXO areas could limit future access to unidentified cultural resources.

Regulatory and Administrative Mitigation 1: Cultural resource surveys would take place prior to range construction activities. Targets would be sited away from cultural resources during the planning and design process to mitigate adverse effects to cultural resources.

Maneuver Training. **Minor Impact**

Aviation maneuvers do not involve ground disturbing activity or intensive off-road maneuver use of the landscape. Potential impacts to cultural resources are not anticipated from the aerial maneuvers of helicopters or logistics support of the CABs ground vehicles which will primarily remain on roads and trails to conduct refueling and logistics resupply operations.

4.4.6 Noise

4.4.6.1 Affected Environment

There are limited noise data available for PTA. The dominant sources of existing noise include military aircraft (mostly helicopters), vehicle traffic, and ordnance use during live-fire and other training exercises. NZ III is contained within the present boundaries of the training area. NZ II affects BAAF and the western portion of the cantonment area; and it extends beyond the boundaries of PTA from BAAF westward to the northwest corner of the post. Except for the cantonment area, no noise-sensitive land uses are affected by existing NZ II noise conditions. There are few Soldiers home-stationed at PTA. Soldier housing located there is used only during training exercises (Final Environmental Impact Statement for the Permanent Stationing of the 2/25th Stryker Brigade Combat Team (USAEC, February 2008)).

4.4.6.2 Environmental Consequences

No Action Alternative: (Less than Significant)

Under the No Action alternative, the current levels of noise created by Army activities would not change from the conditions described in 4.4.6.1, other than as discussed as a part of pre-existing trends and the ongoing actions discussed below.

Under the No action alternative, the expected noise impacts from training range infrastructure construction at PTA is expected to remain minor. Noise from live-fire and maneuver training will continue to be produced at existing levels, and are expected to remain less than significant.

Range Infrastructure Construction. No new ranges would be constructed under the No Action alternative. Planned construction and maintenance projects would proceed, and would temporarily increase human presence and activity at construction sites. These include ranges planned as part of the 2/25th SBCT stationing at SBMR, including a BAX at PTA. Individual items of construction equipment typically generate noise levels of 80 to 90 dBA at a distance of 50 feet. With multiple items of equipment operating concurrently, noise levels can be relatively high during the day at locations within several hundred feet of active construction sites. The zone of relatively high construction noise levels typically extends to distances of 400 to 800 feet from the site of major equipment operations. Locations more than 1,000 feet from construction sites seldom experience significant levels of construction noise. As noise increases from range construction will be temporary and the nearest noise-sensitive receptors are generally located well over 1000 feet away from range construction projects; therefore, less than significant impacts are expected.

Live-Fire Training. There would be no change in the number or type of rounds used during live-fire training. Noise contours are not expected to extend beyond current limits. The use of blanks and other training munitions on the Keamuku Parcel will produce unweighted peak dB levels in the NZ II range at the Waikii Ranch and Kilohana Girl Scout Camp near the installation boundary. Ordnance firing and detonations at PTA may continue to produce NZ II noise conditions at the Mauna Kea State Park rental cabins. The Army has entered into a Memorandum of Agreement with the Waikii Ranch Homeowners' Association that establishes a buffer (1,000 feet during the day; 2,000 feet at night) that will substantially minimize the potential noise impacts. The Army will also continue to work with affected members of the public to address any noise issue. Thus overall, impacts are expected to be less than significant.

Maneuver Training. Maneuver training will continue to occur and will be distributed throughout the existing maneuver areas at PTA, including the Keamuku Parcel. This would include maneuver training of the 2/25th SBCT and other units. Maneuver training will remain a combination of on-road and off-road areas. Current levels of helicopter and fixed-wing aircraft flight operations would continue over PTA and between airfields and PTA. UAV flight operations also would be conducted. Significant impacts are not expected because maneuver training would occur within the boundaries of established training areas where sensitive noise receptors are fewer. Noise impacts from maneuver training would be less than significant.

CSS (1,000), CS (1,000), CSS (3,000), CS (3,000): (Significant but Mitigable).

Under all CS and CSS stationing scenarios the number of maneuver rotations at PTA would not be anticipated to change. All CS/CSS stationing scenarios would result in an increase of less than 1% (over existing activities) in the number of vehicle maneuver miles which would occur under the No-Action alternative at PTA. Live-fire training at PTA would not be projected to increase under CSS stationing scenario's and munitions use at PTA would increase imperceptibly if at all with more CS units. The frequency of live fire and maneuver exercises is not projected to change by implementing either stationing scenario. The frequency of integrated unit live-fire training exercises at PTA are also not projected to increase as CS units conduct the vast majority of unit level training in support of BCT training exercises. The primary determinant of use of these facitlities is the number of combat maneuver units in USAG-HI.

Cantonment Construction: ***No Impact***

Range Construction: ***No Impact***

Live-fire and Maneuver Training: **Signficant but Mitigable**

As the frequency of live-fire and maneuver exercises is not projected to change at PTA through the implementation of CS/CSS stationing scenarios the impacts from noise are not expected to increase from existing baseline conditions. The Army's rating of significant but mitigable is based upon activities that would be implemented as part of the No Action Alternative. Mitigations and programs that the Army has in place or is establishing would remain in place. No new noise mitigations would be implemented at PTA as a result of CS/CSS stationing scenarios.

Combat Aviation Brigade (2,800): (Significant Adverse).

Cantonment Construction: ***No Impact***

Training Range Infrastructure Construction. **Minor Impact**

Because the noise associated with construction equipment will generally produce levels of 80 to 90 dBA at a distance of 50 feet[5], and the range expansion project will occur more than two miles from the installation boundary, the effects to residences or to recreational activity would be minor. The temporary nature of construction would have only temporary effects to wildlife (as discussed in Chapter 4.4.8 Biological Resources).

[5] Permissible noise exposure identified by OSHA for an 8-hour work day (29 CFR 1910.95)

Live-fire Training. **Less than Significant**

Noise levels from weapons firing and ordnance detonations are quite variable, with noise levels influenced in part by weather conditions. Despite this fact, the location of the aviation gunnery range at PTA in relation to the installation boundary serves as a mitigation to noise impacts to receptor populations. The primary gunnery activities would take place in the center of PTA's impact area several miles from the nearest off-post residential populations. While aviation gunnery activities would more than double at PTA, the location of these activities would ensure that there are kilometers of buffer area between these activities and human populations.

Impacts to Biological Receptors: **Significant Adverse**

A number of studies have documented bird response behavior to noise. Stone (2000) conducted a study near Boulder, Colorado, and identified a decrease in species richness with increases in noise levels. He noted species composition shifted, with certain species being more common in more noisy areas.

On military installations, noise is a consequence of training activities. Rounds are fired, helicopters carry troops and supplies, and airplanes and jets support mission needs. The presence of birds is an obvious concern on runways (e.g., Bird/Wildlife Aircraft Strike Hazard or BASH),and recently, the military's impact on bird populations has been of interest.

Ward et al. (1999) examined species behavior response to aircraft. *Branta bernicla nigricans* (Pacific brant) and *B. canadensis taverneri* (Canada goose) were found sensitive to aircraft overflights. The species were more sensitive to small aircraft lateral distance than altitude. The species were more responsive to helicopters than to propeller planes for most combinations of altitude and lateral distances studied. Ward et al. (1999) concluded the spectral characteristics of the aircraft, rather than noise intensity, were the reason. Helicopters tend to produce a low frequency impulse noise from rotor blades.

In another study, Delaney et al. (1999) attributed differences in reproductive success between *Strix occidentalis lucida* (spotted owls) exposed to military helicopter over-flights and those not exposed to attrition and not to a treatment effect. Delaney et al. (1999) noted owls flushed more often to a distant stimulus compared to a close in one, and as noise levels increased over time. Owls were minimally affected by flights greater than 150 meters (492 feet) away. Aerial disturbances appeared to be tolerated because they were short in duration, noise levels increasedgradually, the source provided minimal visibility, and the disturbances were not associated withhuman activities (e.g., long lasting or abrupt ground disturbances such as with a chain saw).Delaney et al. (1999) speculated that hovering and slow maneuvers would increase flush responses.

Helicopter activities have a long history at Fort Carson Military Reservation (FCMR), Colorado, compared to Pinon Canyon Maneuver Site (PCMS), Colorado, which had no helicopter activity prior to the following study. *Buteo jamaicensis* (red-tailed hawk) response to low-level air traffic was compared between the two locations. Birds at the PCMS exhibited a stronger response behavior to overflights than did those at the FCMR, suggesting habituation had occurred at the FCMR (Anderson et al. 1990).

A second group of studies notes bird behavioral response to ground noises. Brown et al. (1999) monitored individual *Haliaeetus leucocephalus* (bald eagle) reactions to weapons testing at Aberdeen Proving Ground, Maryland, at three nests (11 individuals) and two large communal

roosts (58 birds). The nests were 0.5 to 4 kilometers (0.3 to 2.5 miles) from test ranges and multiple firings were common. Observed reactions to firing were infrequent, suggesting habituation had occurred. Similar results were documented at Fort Lewis Army Reservation, where only 8% of 1452 *Haliaeetus leucocephalus* (bald eagle) flushed during 373 weapon firing events (Stalmaster and Kaiser 1997). Flushing response was most common to automatic weapons (9%), followed by artillery impacts (6%), mortar impacts (4%), and small arms fire (3%). As distance increased between nests and weapons firing, flushing response decreased.

The noise response to military activities has been studied on a single Hawaiian species, *Chasiempis sandwichensis ibidus* (elepaio). VanderWerf (2000) recorded two responses to 238 artillery blasts. Both cases concerned an incubating male that was preening and had his head down at the time of the blast. The bird appeared to locate the source of the sound and returned to preening in seconds. When bird behavior was compared between Schofield Barrack's sites with a site without artillery blasts (Honouliuli Reserve), there was no statistical difference in incubation or nestling stages. Both attendance and hourly feeding rates were the same. Nest failure was the same between the two sites. Even with varying levels of sounds, there were no perceived effects.

Distance is often the single most important predictor of response, followed by duration of the disturbance, visibility, number of disturbances per event, and stimulus position relative to the affected individual (Grubb and King 1991). While military activities might evoke behavioral effect responses, noise probably has not excluded native species from the installation.

Noise not only has the potential to affect bird behavior, but also bat behavior. The effect of noise on bats is documented for continental United States species. *Myotis sodalis* (Indiana bat) hibernation can be disrupted by disturbances in and near hibernacula. Disturbances elicit an energetic cost (i.e., loss of fat) due to awakening that cannot be replaced (Hall 1962). When military maneuvers were conducted near a roost cave, *Myotis grisescens* (gray bat) abandoned the cave. Colonies showed strong home range fidelity, and Tuttle (1979) suggested cave abandonment could lead to the loss of an entire colony. Maternity caves are most harmed from late May through mid-July and hibernation caves from mid-August through April (Mitchell 1998).

In contrast to continental U.S. bat species, *Lasiurus cinereus semotus* (Hawaiian hoary bat) is a nonmigratory, solitary species that nests in trees (FWS 1998a). Because of favorable year-round environmental conditions, the species probably does not hibernate. Little is known about thespecies because of its solitary nature, but because the taxon is not colonial and probably does nothibernate, noise may not be as important a factor compared to its relatives.

No wildlife-based noise analysis study has been conducted at SBMR or Oahu training sites. Given the noise impacts from a large percentage increase in Helicopter maneuvers, impacts to biological noise receptors is assumed to be a significant adverse impact. Impacts to sensitive species may occur, particularly avian species. An appendix of sensitive species is listed in Appendix G.

Regulatory and Administrative Regulation 1: Although there are likely no mitigation measures that are available to reduce the identified significant impacts to a level below significance thresholds given the lack of understanding of potential impacts to biological noise receptors, certain mitigation measures may be available to reduce these identified impacts. Potential mitigation measures for identified impacts to the local noise environment include the following:

- The Army routinely evaluates training techniques, scheduling, and location to reduce overall noise impacts at PTA. In these evaluations, the Army considers the benefit of timing restrictions on training at PTA.
- The Army will continue to work with local residents to minimize impacts of noise generating training events.

Maneuver Training. **Significant Adverse**

The impacts of helicopter maneuver between WAAF and PTA is expected to be less than significant as the flight route between the two installations largely uses buffer zones within which to fly, and mainly flies over water (ocean). However, a large increase in aviation maneuvers at PTA could lead to significant adverse impacts to residential and civilian populations surrounding PTA. Standard operating procedures prescribes that overflight of residential areas is avoided to the maximum extent. Helicopters generally fly at low altitudes (approximately around 300 feet above ground level) in designated, approved training areas. An increase of an aviation brigade would result in an increase in helicopter overflights resulting in impacts to some receptors from noise, however overflight of residential areas is avoided to the maximum extent possible The effects to wildlife are discussed above and are also summarized in section 4.4.8 Biological Resources.

Regulatory and Administrative Mitigation 1: Aviation operations of helicopters are restricted at lower altitudes in the vicinity of residential areas and permitted in designated, approved areas away from noise receptors..

Regulatory and Administrative Mitigation 2: The Army has entered into an agreement with Waikii Ranch establishing a buffer zone, which serves to minimize the impacts from noise, wildfire, and dust. The Army would limit night-time training activities and continue to work with the community to mitigate the impacts of noise generating activities.

Biological Noise Receptors- **Significant Adverse**

See discussion provided in Live-Fire training above.

4.4.7 Soil Erosion

4.4.7.1 Affected Environment

PTA is in the Humuula Saddle between the two major peaks on the Island of Hawai`i; Mauna Kea lies to the northeast, and Mauna Loa lies to the south. The elevation at PTA ranges from 4,030 feet amsl to 8,650 feet amsl. The slope of the Mauna Kea volcano rises to 13,796 feet amsl, and Mauna Loa to 13,678 feet amsl. The military vehicle trail rises to an elevation of approximately 250 feet amsl to near the junction of Highway 19, and continues east to rise to an elevation of about 2,500 feed amsl over a distance of approximately 10 miles. The soils at PTA are generally thin and poorly developed. Approximately 80 percent of PTA (or 88,000 acres) is covered by lava flows and presents a low soil accumulation potential due to a combination of steep slopes and high altitude. An additional 1,400 acres of land is classified as cinder land, and about 12,500 acres is classified as rock land or very stony. The remaining 10,000 acres, located along the northern boundary of PTA near Saddle Road and within training areas 1 through 17 and training area 22, are classified as volcanic deposits. The low precipitation, rapid

runoff, and high altitude reduce the rate of weathering, and the steep slopes and wind tend to prevent soils from accumulating. The soils tend to have a moderate to high erosion potential. Other areas of PTA are composed of fine sandy loam and highly permeable soils (FEIS for the Permanent Stationing of the 2/25th Stryker Brigade Combat Team (USAEC, February 2008)).

Most of PTA is on lava flow deposits erupted from Mauna Loa, the last eruption of which (1984) covered 16 square miles of land in 3 weeks. Basalt flows (erupted from Mauna Loa and Mauna Kea) underlie lava flow deposits. The lower half of the Keamuku Parcel is within the Waimea Plains, which were formed by lava flows from Mauna Kea. Mauna Kea butted up against the Kohala Mountains that are now covered with a blanket of volcanic ash soils. The lava at PTA is predominantly pahoehoe and basalt flows, scoria (cinder), and ash deposits of the Hamakua Volcano. The topography of the Keamuku Parcel is dotted with Mauna Kea volcano cinder cones lying on the upper layer of the Hamakua basalts. Basalt is covered by a layer of up to 3 feet of Pahala ash stemming from an explosive eruption period from Mauna Kea about 39,000 years ago.

The Keamuku Parcel is underlain primarily by very fine sandy loam soils belonging to the Puu Pa-Pakini-Waiaha soil association (U.S. Department of Agriculture [USDA] 1973), which developed on volcanic ash deposits. The predominant soils are Waikaloa very fine sandy loam and Puu Pa extremely stony very fine sandy loam on the lower two-thirds of the parcel; and Waikaloa very fine sandy loam, Kilohana loamy fine sand and very stony land on the upper third of the parcel. Shallow gulches dissect the parcel; the largest of these are Waikii Gulch and Auwaiakeakua Gulch. The gulches contain soft, permeable soils, which form thicker deposits in some areas, while the Puu Pa soils in other areas contain a calcium carbonate cemented layer that impedes percolation of water. Wind and water easily erode Waikaloa and Puu Pa soils.

The USAG-HI manages soil resources at PTA as they are managed at SBMR and O'ahu training sites. Conservation programs manage the soils for natural rates of runoff, erosion, and sedimentation. The INRMP for PTA for 2002 to 2006 identifies installation-specific goals and management objectives of the ITAM Program for PTA. Erosion management strategies are similar to those implemented under the INRMP for O'ahu, with the exception that site hardening involves putting down crushed lava to allow use of the area without degradation of the surrounding area. Restoration of artillery firing points has been the major area of emphasis for the LRAM program on PTA since 1996. Some of the firing points have become denuded, resulting in vegetation loss and subsequent major erosion and dust issues. PTA soil substrates are primarily fine, volcanic ash prone to wind erosion and dust.

4.4.7.2 Environmental Consequences

No Action Alternative: (Significant but Mitigable)

Under the No Action alternative, the Army activities contributing to soil erosion would not change from the conditions described in 4.4.7.1. Construction of range projects will proceed as they are planned, and will temporarily create conditions promoting soil loss. Live-fire and maneuver training will continue to disturb soil and remove vegetation creating the potential for soil erosion.

Standard range maintenance BMPs implemented by USAG-HI include road grading, target repair, and berm recontouring. Mitigation measures, implementation of the ITAM annual work

plan, and BMPs are followed to minimize soil loss and mitigate impacts to a less than significant level.

Range Infrastructure Construction. No new ranges would be constructed under the No Action alternative. Planned construction projects would proceed, and create soil disturbance at construction sites. These include ranges planned as part of the 2/25th SBCT stationing, including a BAX at PTA. Road and trail construction projects such as the PTA Trail could also contribute to soil loss. During construction, erosion by both wind and water could occur, and is dependant upon terrain, the type of construction, and soil types. In general, soil loss from range construction projects would not be significant. Mitigation measures are followed to minimize soil loss and maintain impacts to less than significant. These measures include land management practices and procedures described in the ITAM annual work plan. Examples of erosion and sediment control measures identified in the ITAM annual work plan include stormwater runoff control structures (silt fences, hay bales, etc.) as part of standard BMPs, which would divert water from the construction sites. Standard range maintenance BMPs implemented by USAG-HI include road grading, target repair, and berm recontouring. Mitigation measures, implementation of the ITAM annual work plan, and BMPs are followed to minimize soil loss and mitigate impacts to a less than significant level.

Live-Fire Training. Under the No Action alternative, there would be no change to the nature of live-fire training on PTA. While weapons firing would typically occur in existing impact areas and the frequency of the training events would not change, surface disturbance caused by munitions impact would result in larger areas of bare ground than observed under current conditions. Munitions impact can directly create craters and remove patches of vegetation, which normally protect soil from erosion by slowing runoff, intercepting raindrops before they reach the soil surface, and anchoring the soil. Standard range maintenance BMPs implemented by USAG-HI include road grading, target repair, and berm recontouring. Implementation of erosion control measures such as stormwater runoff control structures, revegetation projects, mulching, and other measures under the ITAM annual work plan, as well as the standard range maintenance BMPs described above would minimize soil loss and mitigate impacts to a less than significant level.

Maneuver Training. Mounted and dismounted maneuver training of existing vehicles would continue. The authorized number of Maneuver Impact Miles (MIMs) would continue to be executed at designated maneuver training areas. This is expected to damage or remove vegetation and disturb soils to an extent that could increase soil erosion rates and alter drainage patterns in the training areas, which could lead to gullying, and indirectly to downstream sedimentation, particularly when the vehicles travel off-road. Mitigation measures, implementation of the ITAM annual work plan, and BMPs are followed to minimize soil loss and mitigate impacts to a less than significant level.

CSS (1,000), CS (1,000), CSS (3,000), CS (3,000): (Significant but Mitigable).

Under all CS and CSS stationing scenarios the number of maneuver rotations at PTA would not be anticipated to change. All CS/CSS stationing scenarios would result in an increase of less than 1% (over existing activities) in the number of vehicle maneuver miles which would occur under the No-Action alternative at PTA. Live-fire training at PTA would not be projected to increase under CSS stationing scenario's and munitions use at PTA would increase imperceptibly if at all with more CS units. The frequency of live fire and maneuver exercises is not projected to change by implementing either stationing scenario. The frequency of integrated

unit live-fire training exercises at PTA are also not projected to increase as CS units conduct the vast majority of unit level training in support of BCT training exercises. The primary determinant of use of these facitlities is the number of combat maneuver units in USAG-HI.

Cantonment Construction: ***No Impact***

Range Construction: ***No Impact***

Live-fire and Maneuver Training: **Signficant but Mitigable**

As the frequency of live-fire and maneuver exercises is not projected to change at PTA through the implementation of CS/CSS stationing scenarios the impacts to soil erosion are not expected to increase from existing baseline conditions. The Army's rating of significant but mitigable is based upon activities that would be implemented as part of the No Action Alternative. Mitigations and programs that the Army has in place or is establishing would remain in place. No new soil erosion mitigations would be implemented at PTA as a result of CS/CSS stationing scenarios.

Combat Aviation Brigade (2,800): (Significant Adverse).

Cantonment Construction: ***No Impact***

Training Range Infrastructure Construction. **Less than Significant**

Temporary soil impacts are projected to occur from UXO clearance and range construction activities. Expansion and modernization of the aerial gunnery range would result in clearance of surface vegetation resulting in short-term exposure to wind and water erosion. Excavated soils would be temporarily exposed to water and wind erosion on the range expansion site, however the because of a relatively dry climate significant soil loss from water erosion is not anticipated. Construction BMPs would be used to further mitigate any soil erosion effects.

Live-fire Training. **Less than Significant**

Munitions impact can directly create craters and remove patches of vegetation, which normally protects soil from erosion by slowing runoff, intercepting raindrops before they reach the soil surface, and anchoring the soil. Compaction in the craters caused by larger ordnance explosions can alter the permeability and water-holding capacity of the soils and harden silty clays affecting the ability of vegetation to recover in those areas. These direct impacts indirectly create large areas of bare ground that is susceptible to wind and water erosion, which can indirectly cause large-scale removal and redeposition of soils or unstable slopes in areas of steep slopes and rapid runoff. Although weapons training events would be periodic, long-term impacts are expected because soil disturbance typically requires time and effort to amend. The aviation gunnery range is located in an active impact area, which makes it impracticable to mitigate craters and other soil erosion impacts, though less than significant impacts would be anticipated because of the confined geographic scope of soil surface disturbance (parts of range 20 and the impact area) and the natural dry climate of the local area reducing the potential for water erosion of soils.

Vegetation removal resulting from wildland fires could result in increased soil erosion by water and wind, indirectly causing large-scale removal and redeposition of soils, gullying, or unstable

slopes in areas of steep slopes and rapid runoff. The impact would be directly proportional to the size of the fire. Under natural conditions, wildland fires occur infrequently in Hawai`i, partly due to lack of lightning. Thus, native plant species are not well adapted to fire. Fire and loss of soil could reduce native plant species and encourage fast-growing nonnative species that recover quickly after fires. Some of these species may be more susceptible, or even dependent, on fire so that the occurrence of wildland fires may help to increase the chance of future wildland fires. Although wildland fires could occur at PTA, the erosive processes on the island would have similar effects on the transport of soils as from live-fire activities (under the CS scenarios). Soil transport is somewhat limited due to a lack of surface water; therefore, less than significant effects are anticipated.

Low levels of explosive residues are associated with munitions use. Studies have shown that TNT residues are readily metabolized by soil microbes and the byproducts bind to organic matter. Areas with higher organic matter content appear to bind residues more rapidly. The explosive residues RDX and HMX do not degrade rapidly and are not very soluble; however, once dissolved in water, both can be highly mobile in soil. Missiles and rockets are fired from aviation firing points into designated range areas. The Army restricts access to these areas by Soldiers or members of the public because of the explosive risk to safety they represent. It is unlikely; therefore, that military personnel or off-post residents would come into contact with the constituents of these munitions in the downrange impact area soils. The risk to military personnel who use the ranges would be low because contact with downrange impacted soils is unlikely. There would be no risk to the general public from munitions constituents related to range use because there would be no public access to these areas. Exposure to soil contaminants during live-fire training activities is considered a less than significant impact.

Maneuver Training. **Significant Adverse**

Helicopter maneuver is expected to have significant impacts. Wind generated from helicopters at frequently used landing zones can loosen vegetation and soils. Once disturbed these soils are susceptible to wind erosion. Conditions in many parts of PTA are relatively dry and wind and aviation training could lead to significant soil erosion. To minimize the erosive effects at landing zones the Garrison anticipates the need for hardening soils there using a mixture of soil binder, gravel, and rocks, which would work to improve areas susceptible to impacts from training with attack and medium/heavy lift helicopters. The installation ITAM program would continue to analyze vegetative cover loss and implement projects to improve sustainability and vegetative cover of landing sites. The ITAM program would not be able to implement mitigation measures for aviation maneuver in the impact area where the aviation gunnery range is located.

Regulatory and Administrative Mitigation 1: The Army continually funds and implements USAG-HI-wide land management practices and procedures described in the ITAM annual work plan to reduce erosion and other soil and geologic impacts (USARHAW 2001a and USARHAW 2001b). Currently, these measures include implementing a TRI program, implementing an ITAM program, implementing an SRA program, developing and enforcing range regulations, implementing an Erosion and Sediment Control Management Plan, and continuing to implement land rehabilitation projects, as needed, within the LRAM program. Land rehabilitation projects would be implemented to counter the loss of vegetation and soil erosion from aviation training.

Regulatory and Administrative Mitigation 2: The Army has designated landing and pick-up zones for helicopters during maneuver training events at PTA. This mitigation is designed to limit loss of vegetation at PTA from helicopter landing operations and is also designed to reduce the amount of fugitive dust and particulate matter released into the air.

Regulatory and Administrative Mitigation 3: The Army would continue to implement its Dust and Soils Management and Monitoring program (DuSMMoP) to reduce potential for wind erosion and mitigate inputs of fugitive dust and PM 10 from aviation training.

4.4.8 Biological Resources

4.4.8.1 Affected Environment

PTA is on the west side of Humuula Saddle, on the Big Island of Hawai`i. It is on a plateau formed by Mauna Kea and Mauna Loa. The surrounding lands are mostly conservation districts and managed or leased by the State of Hawai`i and variety of private landowners. Approximately 38 percent of the plants found on PTA are indigenous or endemic. There are 24 vegetation communities on PTA. Numerous introduced plant species make up a significant portion of many of these habitats, and introduced plants are components in all habitats on PTA. Approximately 62 percent of the plants found at PTA are introduced species. Barren lava covers 25 percent of the installation. Lichens, such as *Stereocoulon vulcani*, and ferns, such as *Pella ternifolia*, are the first colonizers of these flows, though fountain grass is invading barren areas.

Vegetation

There are four types of Metrosideros treeland, ranging from sparse to mixed intermediate. The dominant canopy vegetation in these areas is generally ohia. There are three types of Dodonaea shrubland: open, dense, and mixed. The remainder of the native natural communities is a combination of *Chamaesyce, Myoporum*, and *Sophora* species, with divisions based on the densities of species.

PTA has federal and state listed noxious weeds. Invasive and noxious weeds that are targeted for control on PTA include banana poka *(Passiflora mollissima),* fountain grass*,* fireweed *(Senecio madagascarensis),* and Russian thistle *(Salsola k*ali). Other widespread weed species are controlled where they threaten native plants and communities (Implementation of the 2003 Biological Opinion, Pohakuloa Training Area, Hawai'i, January-December 2006 (U.S. Army Garrison Hawai`i, August 2007)).

Threatened and Endangered Species

Fifteen federally-listed plants endangered plants are found at PTA and the Keamuku Parcel. A complete list of these plants is found in Appendix B, Threatened and Endangered Species. In addition, three plant spceis of concern have been identified at PTA, these are *Chamaesyce olowaluana, Eragrostis deflexa,* and *Schiedea hawaiiensis* (Status of the Implementation of Actions identified in the 2003 US FWS Biological Opinio for PTA, January 2007).

Annual bird monitoring has detected 15 species of birds throughout PTA. Native forest bird species are found within forested areas of PTA. Five federally-listed endangered bird species historically occurred at PTA. Of these five species, only the ‘io and nēnē have been recorded in the past 5 years at PTA. Although palila have not been recorded at PTA in recent years critical habitat was designated for this species within PTA in 1977. A total of 24,356 ha (60,185 ac) of critical habitat (Figure 4.4-3) were designated for palila on the Island of Hawai`i; 1,707 ha (4,218 ac) were designated on PTA along the northeastern boundary. The primary constituent elements of the critical habitat are large and intermediate-sized māmane and naio trees, enough

space for the population to expand, and the full range of altitudinal and geographical sites needed by the palila for normal life cycle movements and response to shifting seasonal and annual patterns of flowering, seed set, and ensuing pod development of māmane (U.S. Army Garrison Hawai`i, August 2007).

Historic artifacts discovered on the east side of PTA indicate that native Hawaiians may have harvested seabirds by creating artificial nesting sites, and studies indicate that the endangered dark-rumped petrels once bred in large numbers at PTA. A study conducted in 1995 detected dark-rumped petrels flying over the eastern half of PTA and southeast of PTA, along the upper slopes of Mauna Loa. Petrels or other seabirds, have not been detected at PTA in the last eight years (U.S. Army Garrison Hawai`i, August 2007).

The endangered, ‘ōpe‘ape‘a, or Hawaiian hoary bat (*Lasiurus cinereus semotus*) is distributed throughout PTA. Hawaiian hoary bat is the only native terrestrial mammal in Hawai`i, and it is federally listed as endangered. While the bat species has historically been documented throughout the islands of Hawai`i, Moloka’i, Maui, O’ahu, Kaua’i, and possibly Kaho’olawe; resident breeding populations are now found only on the islands of Hawai`i and Kaua’i. Current and historical populations are unknown, but the population is believed to have declined over the past 100 years. During 2007, the installation conducted a full-scale, year-round installation-wide Hawaiian hoary bat monitoring program. As a result, the study found that the bats make three altitudinal migrations throughout the island of Hawai`i each year; and have been detected in three habitat types, low shrub, open high shrub, and treeland with grass or bare lava understory. To date, not enough data has been collected to calculate occupancy rates. Studies to more accurately characterize bat migrations, changes in occupancy, seasonal behavioral differences, and population estimates is ongoing. Further monitoring in the Keamuku parcel has been recommended. Further information on the Hawaiian hoary bat can be found in the “Implementation of the 2003 Biological Opinion, Pohakuloa Training Area, Hawai’i, January-December 2006” (U.S. Army Garrison, August 2007)[6].

No specific reptile surveys on PTA have been conducted because there are no native terrestrial reptiles and amphibians on the Hawaiian Islands.

Fire Management

In accordance with a 2006 Memorandum of Agreement (MOA) between the U.S. Army and the Waikii Range Homeowners’ Association, the Keamuku parcel (discussed as West PTA Acquisition Area under the MOA) requires the Army to manage the parcel as an Intensive Fire Management Zone to alleviate concerns regarding potential impacts associated with military training. The MOA also requires several mitigation measures to be conducted by the Army, ensuring such impacts do not occur to the extent possible.

[6] The February 2008 covers study findings for January through December 2007. The report is currently in Draft form.

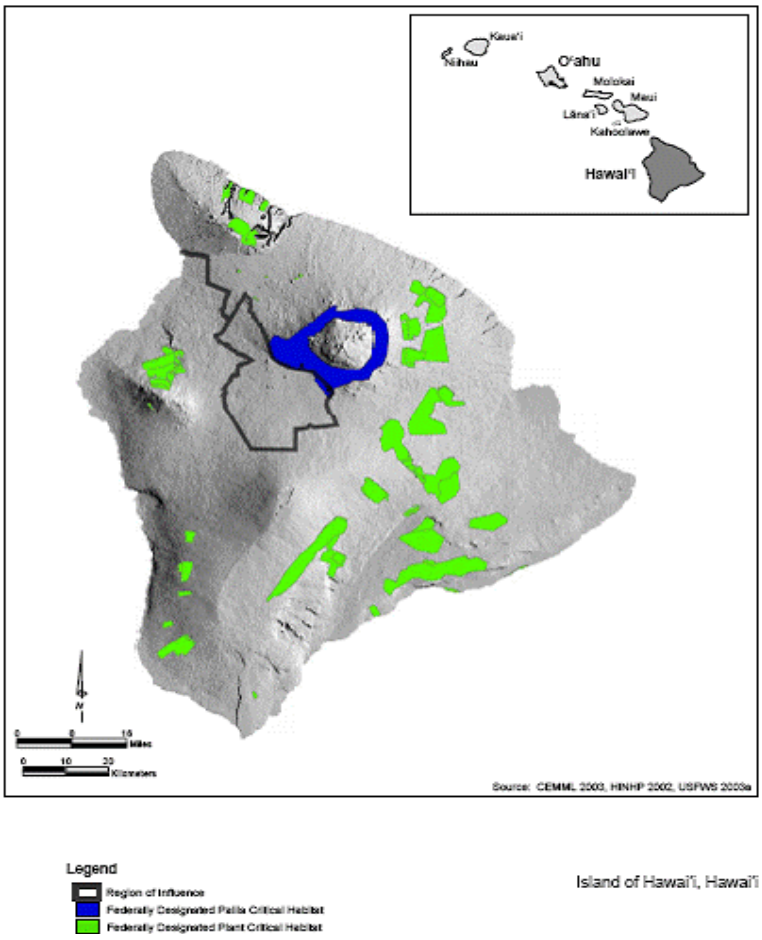

Figure 4.4-3. Palila & plant critical habitat on Hawai`i

4.4.8.2 Environmental Consequences

No Action Alternative: (Significant but Mitigable)

Under the No Action alternative, the Army activities contributing to biological impacts would not change from the conditions described in 4.4.8.1. Construction of range projects will proceed as they are planned, and will occur primarily in previously disturbed areas. Live-fire and maneuver training will continue, disturbing wildlife by noise and human presence. Training could increase the risk of wildfire, and mitigation measures are in place to minimize that risk. Continued use of Army lands will impact sensitive species, but not to a significant degree.

Range Infrastructure Construction. No new ranges would be constructed under the No Action alternative. Planned range construction and maintenance projects would proceed. Nonnative vegetation communities and barren lava prevail in the areas of proposed construction at PTA. If activities in these areas were to occur, they would mostly affect nonnative species adapted to

stressed or nonnative environments. Vegetation within the footprints of these projects, which primarily includes nonnative grasses, shrubs, and pineapple fields, would be disturbed or removed. Projects in these habitats would not adversely affect the risk to threatened and endangered species.

Live-Fire Training. Vegetation communities within the range areas of PTA would be disturbed by live-fire training. Training with existing vehicles would continue at current levels. Maneuver training would occur on established roads or trails, as well as areas designated for maneuver training throughout the installations. Army use of those ranges would produce a less than significant impact to threatened and endangered species because live-fire training would occur over a larger area and at more locations. Continued use of Army land for training under No Action would prolong impacts to threatened and endangered species. Live-fire training could potentially increase the frequency of wildfires. Several fire mitigation measures are being implemented throughout the garrison on existing ranges and would continue. These impacts from continued training would remain mitigable to less than significant impact.

Maneuver Training. No change in impacts to general wildlife and habitats is expected from the No Action Alternative. Training with existing vehicles would continue at current levels. Maneuver training would occur on established roads or trails, as well as areas designated for maneuver training throughout the installation. Wildlife would continue to be disturbed by noise and human presence during training, but the level of disturbance would not change from existing levels and remain a less than significant impact. Maneuver training could potentially increase the frequency of wildfires. Several fire mitigation measures are being implemented throughout the garrison on existing maneuver ranges and would continue. Impacts from continued training would remain mitigable to less than significant impact.

CSS (1,000), CS (1,000), CSS (3,000), CS (3,000): (Significant but Mitigable).

Under all CS and CSS stationing scenarios the number of maneuver rotations at PTA would not be anticipated to change. All CS/CSS stationing scenarios would result in an increase of less than 1% (over existing activities) in the number of vehicle maneuver miles which would occur under the No-Action alternative at PTA. Live-fire training at PTA would not be projected to increase under CSS stationing scenario's and munitions use at PTA would increase imperceptibly if at all with more CS units. The frequency of live fire and maneuver exercises is not projected to change by implementing either stationing scenario. The frequency of integrated unit live-fire training exercises at PTA are also not projected to increase as CS units conduct the vast majority of unit level training in support of BCT training exercises. The primary determinant of use of these facitlities is the number of combat maneuver units in USAG-HI.

Cantonment Construction: ***No Impact***

Range Construction: ***No Impact***

Live-fire and Maneuver Training: **Signficant but Mitigable**

As the frequency of live-fire and maneuver exercises is not projected to change at PTA through the implementation of CS/CSS stationing scenarios the impacts to biological resources are not expected to increase from existing baseline conditions. The Army's rating of significant but mitigable is based upon activities that would be implemented as part of the No Action Alternative. Mitigations, implementation plans, and programs that the Army has in place or is

establishing would remain in place. No new biologicial resources mitigations would be implemented at PTA as a result of CS/CSS stationing scenarios.

Combat Aviation Brigade (2,800): (Significant Adverse).

Cantonment Construction: **No Impact**

Training Range Infrastructure Construction. **Less than Significant**

Range construction would be concentrated in the upgrade of Aerial Gunnery Range 20. Due to an increase in the range's footprint and additional construction, some species may be displaced from their current habitats, though no sensitive species or critical habitat are known to occur in the construction footprint of the range. Construction can introduce invasive species and other weeds through the use of sand and gravel that contains nonnative plant seeds. Impacts from range construction in the existing disturbed impact area is anticipated to be less than significant. No sensitive species occur within the proposed construction footprints though surveys would be conducted prior to construction. Transport of construction equipment and materials has the potential to transport noxious weeds, but given the highly disturbed nature of the footprints and high percentage of non-native vegetation components in the existing construction footprints proposed for construction this is not anticipated to be a less than significant impact.

Noise from construction activities would increase temporarily though construction noise would not generate large noise disturbance events. New range construction would require Section 7 consultation with USFWS.

Live-fire Training. **Significant Adverse**

The added weapons qualifications and aviation gunnery training would have significant potential impacts to biological resources. This action would not involve introducing new types of weapons systems to Hawaii but it would involve an increase in live-fire training over the capacity thresholds that the Army has discussed with the US Fish and Wildlife service as part of the 2008 PTA implementation plan. The expenditure of live fire munitions as part of this stationing scenario would approximately double. Most of the munitions used would be machine gun munitions, though some training rockets and larger munitions would also be used on the range.

Changes in frequency of live-fire training activities would increase the potential for wildfires. This in turn could directly impact sensitive species and lead to increased colonization of the surrounding area following the any disturbance event by invasive species and noxious weeds. Because of the dry climate at PTA and increase fire potential this could result in significant impacts that the Army would not project to be mitigable.

Regulatory and Administrative Mitigation 1: Measures of the Integrated Wildfire Management Plan (IWFMP) would continue to be implemented. The IWFMP would be updated to address proposed activities of range construction and increased live-fire training use of range 20.

Regulatory and Administrative Mitigation 2: Actions such as fuel reduction and Soldier education would continue. Fuel management corridors are also being constructed at PTA to limit the potential effects of wildfire.

The noise response to military activities has been studied on a single Hawaiian species, *Chasiempis sandwichensis ibidus* (elepaio). VanderWerf (2000) recorded two responses to 238 artillery blasts. Both cases concerned an incubating male that was preening and had his head down at the time of the blast. The bird appeared to locate the source of the sound and returned to preening in seconds. When bird behavior was compared between Schofield Barrack's sites with a site without artillery blasts (Honouliuli Reserve), there was no statistical difference in incubation or nestling stages. Both attendance and hourly feeding rates were the same. Nest failure was the same between the two sites. Even with varying levels of sounds, there were no perceived effects. Distance is often the single most important predictor of response, followed by duration of the disturbance, visibility, number of disturbances per event, and stimulus position relative to the affected individual (Grubb and King 1991). The impacts to wildlife from live-fire (and similar) activities is also discussed by (Bass et al. (1972), Hartley (1989), and Kulichkov (1992)), (Dooling, and; Schubert and Smith, 2000), Gese et al. (1989), Stephenson et al. (1996), Stalmaster and Kaiser (1997). Noise impacts to potential biological receptors is further discussed in Section 4.4.6.2.

Maneuver Training: **Significant Adverse**

Stationing a CAB in Hawaii would result in an increase (approximately double) of helicopters utilizing PTA for tactical flight operations which may result in some short-term effects to wildlife from noise and soils and vegetation disturbance from ground insertion and low level hovering / landing activities.

Noise impacts to biological resources could be significant, though this assessment conservative estimate reflects a lack of scientific information on noise impacts to sensitive species at PTA. Although wildlife has been demonstrated to adapt to changes in noise, some species may have a more difficult time adapting to the increase in ordnance use and helicopter overflights.
In the 2003 PTA BO, USFWS acknowledged that helicopters are more likely to affect both bird and bat behavior than fixed-wing aircraft, and that low-flying, fixed-wing aircraft are more likely to impact birds and bats than those at high flight altitudes. Noise levels would increase with the increased use of helicopters at PTA. Limited information is available on decibel levels that may adversely affect Hawaiian hoary bats. Helicopters may impact noise sensitive animals, especially during low-flight operations. Roosting bats during the day may be disturbed from their roosts, and foraging bats during the night may be deterred from preferred foraging areas. Increased noise and visual disturbance from the aircraft could affect bird species and the Hawaiian hoary bat. A fuller discussion of potential impact to biological noise receptors can be found in Section 4.4.6.2.

Direct impacts to the Hawaiian Hoary bat, a Threatened and Endangered species, may occur from direct impacts with helicopters. In the PTA BO, the USFWS cites research that foraging Hawaiian hoary bats often fly 100 feet (30 meters) and more above tree canopy height and commuting bats fly 495 feet (150 meters) or more above the ground. Other research cited claims that the mean flight altitude for Hawaiian hoary bats observed at PTA ranges from 33 to 495 feet (10 to 150 meters), with an overall mean of 103±96 feet (31±29 meters) (n=37 bats). The USFWS also stated that the efforts identified by the Army to minimize impacts of aircraft on listed species were the only practical measures available to avoid or minimize the incidence of aircraft strikes on Hawaiian hoary bats (PTA 2003 BO). In addition to impacts to the Hoary bat, Migratory birds and other sensitive species could be affected by flight patterns. Downdraft from helicopters maneuvering near landing zones has the potential to directly affect trees serving as

habitat for sensitive species. Impacts from aviation training could result in significant impacts to biological noise receptors.

PTA may also be impacted from the spread of invasive species resulting from the increased inter-island transport of aviation units ground logistics support vehicles from Oahu to the PTA. Introduction of seeds of noxious weeds and invasive species could result from increased Soldier and equipment movement.

Potential fuel leaks during training events could also result in impacts to biological receptors.

Regulatory and Administrative Mitigation 1: The Army would use dedicated landing and pickup zones at pre-approved firing points and ranges or requesting alternate sites from the Army Natural Resources Office, reporting all bird or bat strikes to the Natural Resources Office, and reinitiating consultation for any unauthorized take.

Regulatory and Administrative Mitigation 2: The Army would continue to educate Soldiers on the importance of cleaning vehicles and equipment prior to movements between the islands.

Regulatory and Administrative Mitigation 3: The Army would continue to follow policy and procedures to wash vehicles thoroughly prior to inter-island transport and maneuver rotations.

Regulatory and Administrative Mitigation 4: The Army would continue to follow policy and procedures identified in the Spill Prevention Pollution Control and Countermeasures (SPCCP) for PTA and utilize drip pans and secondary containment to limit the potential of harmful effects from POL spills.

4.4.9 Wetlands

4.4.9.1 Affected Environment

No wetlands have been identified at PTA

4.4.9.2 Environmental Consequences

No Action Alternative: (No Impacts)

Under the No Action alternative, the current facilities and training as described in 4.2.9.1, other than as discussed as a part of pre-existing trends and the ongoing actions discussed below. No regulated wetlands are present on PTA, and impacts to wetlands from Army activities are expected to remain avoidable.

Range Infrastructure Construction. No new ranges would be constructed under the No Action alternative. Planned construction projects would proceed, including ranges planned as part of the 2/25th SBCT stationing, specifically a BAX at PTA. No wetlands have been identified at PTA; therefore, no impacts are expected.

Live-Fire Training. Under the No Action alternative, there would be no change to the nature of live-fire training on PTA. No wetlands have been identified at PTA; therefore, no impacts are expected.

Maneuver Training. Under the No Action alternative, there would be no change to the nature of maneuver training on PTA. No wetlands have been identified at PTA; therefore, no impacts are expected.

All Stationing Scenarios. No Impact

No impacts to wetlands resources are anticipated at PTA from the implementation of stationing scenarios. Prior to any range construction at PTA a wetlands delineation would be done to ensure no wetlands are impacted.

4.4.10 Water Resources
4.4.10.1 Affected Environment

Watersheds

On the Island of Hawai`i, there are few defined watersheds due to young, highly permeable rock and soil deposits that generally absorb the precipitation without forming stream channels. The exception is along the island's northern coast, where streams are better defined. The climate at PTA is classified as cool and tropical. PTA ranges experience an average rainfall of 10 to 16 inches annually. PTA lies within the Northwest Mauna Loa and the West Mauna Kea watersheds. There are no surface streams, lakes, or other waterbodies within PTA boundaries due to low rainfall, porous soils, and lava substrates. Rainfall, fog drip and occasional frost are the main sources of water for the biological resources found on PTA. There are no perennial streams within 15 miles of PTA; however, at least seven intermittent streams drain surface water off the southwestern flank of Mauna Kea and lie within the same drainage area as PTA.

Few data on surface water quality are available for the PTA watersheds. As stated above, there are no perennial streams within PTA. According to the 303(d) List of Impaired Waters in Hawai`i prepared under the Clean Water Act none of the streams in the PTA are listed as impaired.

Water Supply

Water must be trucked into PTA. The nearest source of potable water is approximately 19 km (12 miles) northwest of PTA and it is not likely that this source of water exists beneath PTA (Department of the Army 1990). Potable water wells that tap into the basal aquifer are found at lower elevations on the Island of Hawai`i.

Wastewater

At PTA waste water is handled through septic tanks and underground injection wells. The Army is in compliance with cesspool regulations. The Army was required by EPA Region IX to remove all of its large capacity cesspools, replace them with septic tanks and obtain a Underground Injection Control (UIC) permit issued by the State Department of Health, Safe

Drinking Water Branch. The waste water is managed in accordance with Federal and State regulations.

Stormwater

The cantonment and airfield areas of PTA, north of Saddle Road, are on land that slopes gently to the west. Under some circumstances, the runoff from the south slope of Mauna Kea could exceed the drainage capacity of the area and result in temporary flooding or localized ponding; however, the soils in the area are permeable, and the underlying lava flows contain sufficient secondary permeability that infiltration to the subsurface is rapid. Infrastructure at PTA is currently sufficient to meet the needs of the Army.

4.4.10.2 Environmental Consequences

No Action Alternative: (Less than Significant)

Under the no action alternative, the current uses of the affected environment would not change from the conditions described in 4.4.10.1, other than as discussed as a part of pre-existing trends and the ongoing actions discussed below.

Existing water supply and wastewater disposal would not require modifications. Range construction projects would proceed as they are planned. Standard construction BMPs would be followed to maintain less than significant impacts from runoff to surface and groundwater. Continued implementation of the ITAM and ORAP programs will minimize impacts from live-fire and maneuver training and maintain them at a less than significant level.

Range Infrastructure Construction. Construction projects, including those associated with the recent stationing of the 2/25th SBCT, may result in temporary impacts to water quality. During ground preparation for new construction sites, grading, excavating, and trenching may expose erodible soils to stormwater runoff and increase the potential for sediments to contaminate surface waters. Similarly, the use of heavy equipment could spill chemicals during equipment refueling, and chemical solvents, paints, and other chemicals used in construction could also be spilled. These potential impacts would be reduced to less than significant levels by implementing standard construction BMPs.

Live-Fire Training. There would be no change in the number or type of rounds used during live-fire training at PTA. Nonetheless, training ranges have the potential to carry contamination resulting from decades of use. Contaminants associated with military activities include residues of explosives or other constituents of munitions such as metals, constituents of plastics, or combustion products. Other chemical pollutants, such as petroleum hydrocarbon fuels or lubricants, may be inadvertently spilled or released as an indirect result of military activities. To better understand the potential impacts from this, the Army has started an assessment of offsite potential for contaminants at Schofield Barracks under the Operational Range Assessment Program (ORAP). Preliminary results show no contamination of surface water by explosive residues. No similar study has been undertaken at PTA; however, given the similar nature of training history and soil types, similar results are expected. Less than significant impacts are expected to continue under the No Action alternative.

Maneuver Training. Maneuver training will continue to occur at PTA and the Keamuku Parcel. Maneuver training will remain a combination of on-road and off-road areas. The same number of Maneuver Impact Miles (MIMs) would continue to be executed at designated maneuver training areas. Maneuver training could involve the possibility of accidental spills of petroleum products (from fuel or hydraulic lines) or other chemicals. Maneuver training will continue to cause sedimentation and turbidity in water bodies, a potential significant impact. Continued implementation of the ITAM and ORAP programs will minimize these impacts and maintain them at a less than significant level.

CSS (1,000), CS (1,000), CSS (3,000), CS (3,000): (Significant but Mitigable).

Under all CS and CSS stationing scenarios the number of maneuver rotations at PTA would not be anticipated to change. All CS/CSS stationing scenarios would result in an increase of less than 1% (over existing activities) in the number of vehicle maneuver miles which would occur under the No-Action alternative at PTA. Live-fire training at PTA would not be projected to increase under CSS stationing scenario's and munitions use at PTA would increase imperceptibly if at all with more CS units. The frequency of live fire and maneuver exercises is not projected to change by implementing either stationing scenario. The frequency of integrated unit live-fire training exercises at PTA are also not projected to increase as CS units conduct the vast majority of unit level training in support of BCT training exercises. The primary determinant of use of these facitlities is the number of combat maneuver units in USAG-HI.

Cantonment Construction: ***No Impact***

Range Construction: ***No Impact***

Live-fire and Maneuver Training: **Less than Significant**

As the frequency of live-fire and maneuver exercises is not projected to change at PTA through the implementation of CS/CSS stationing scenarios the impacts to water resources are not expected to increase from existing baseline conditions. The Army's rating of less than significant is based upon activities that would be implemented as part of the No Action Alternative. Mitigations and programs that the Army has in place or is establishing would remain in place. No new surface water or water resources mitigations would be implemented at PTA as a result of CS/CSS stationing scenarios.

Combat Aviation Brigade (2,800): (Less than Significant).

Cantonment Construction: ***No Impact***

Training Range Infrastructure Construction. **Minor Impact**

Surface disturbance from range construction at PTA would expose soils during the window of construction to water erosion. However, existing dry climate conditions and the fact construction contractors would follow BMPs would ensure that the potential for surface water impacts from UXO clearance and range construction at Range 20 would be minor.

Live Fire Training: **Minor Impact**

Given the dry conditions and lack of surface water surrounding range 20 at PTA there is little possibility for the migration of munitions constituents into surface water or water bodies off of the range.

Maneuver Training: **Less than Significant**

Increased levels of aviation training could result in increased sedimentation of surface waters at locations off the installation from wind erosion and fugitive dust emissions. However, due to a general lack of surface water in the vicinity and mitigations the Army has in place to rehabilitate the landscape, less than significant impacts are anticipated. The installation would continue to monitor vegetative cover and implement institutional mitigation programs, such as ITAM to limit sediment loading of surface waters.

4.4.11 Facilities

4.4.11.1 Affected Environment

PTA land is a mixture of fee simple, leased and ceded lands. PTA is the largest Army training area in Hawai`i, totaling 107,873 acres. Land uses at PTA include the Cantonment area, BAAF, maneuver training areas, drop zones, live-fire training ranges, artillery firing points an ordnance impact area, and areas unsuitable for maneuver. The Cantonment area consists of 566 acres with 154 buildings, mostly Quonset huts.

BAAF has a 3,969-foot runway and offers helicopter access and limited C-130 access. Land suitable for field maneuvers consists of approximately 80,000 acres and the ordnance impact area is approximately 51,000 acres.

The Keamuku Parcel, consisting of approximately 24,013 acres is owned by USAG-HI and is currently used for cattle grazing, limited hunting, occasional military maneuver training, and a quarry is found there. UXO hazards along the Saddle Road corridor (extending approximately 164 feet [50 meters] from the road) need to be cleared to a safe depth to support the heaviest track and wheeled vehicle that will use the area. The USACE indicated that the overall ordnance and explosives hazard level for the Keamuku Parcel is low.

Public Services

PTA is the only Army facility on Hawai`i that has its own medical and fire facilities. PTA also has its own police facility. In most instances, emergency medical services and law enforcement are regionally provided.

4.4.11.2 Environmental Consequences

No Action Alternative: (Less than Significant)

Under the no action alternative, the current uses of the affected environment would not change from the conditions described in 4.4.11.1, other than as discussed as a part of pre-existing trends and the ongoing actions discussed below.

The use of Army facilities would continue as they are currently designed. Demand for public services would not change from existing levels. Continued use and maintenance of ranges will

degrade these facilities, but impacts will be less than significant as the ranges will be repaired and maintained.

Range Infrastructure Construction. Range maintenance projects on existing ranges would proceed as needed. Maintenance projects would not add new facilities to the inventory of facilities on PTA or the Island of Hawaii. These projects would slightly increase the demand for utilities and public services. The overall effects of the range construction projects would be less than significant.

Live-Fire Training. Use of live-fire training areas would continue at ranges currently available. Ongoing use of live-fire training areas would continue to degrade these facilities. However, with continued implementation of regulatory and administrative mitigation such as ITAM, INRMPs, ecosystem management, and the sustainable range management program, impacts to facilities are expected to be less than significant.

Maneuver Training. Use of maneuver training areas would continue at maneuver areas currently available for maneuver use. Ongoing use of maneuver training areas would continue to degrade these facilities. However, with continued implementation of regulatory and administrative mitigation such as ITAM, INRMPs, ecosystem management, and the sustainable range management program, impacts to facilities are expected to be less than significant.

CSS (1,000), CS (1,000), CSS (3,000), CS (3,000): (Less than Significant).

Under all CS and CSS stationing scenarios the number of maneuver rotations at PTA would not be anticipated to change. All CS/CSS stationing scenarios would result in an increase of less than 1% (over existing activities) in the number of vehicle maneuver miles which would occur under the No-Action alternative at PTA. Live-fire training at PTA would not be projected to increase under CSS stationing scenario's and munitions use at PTA would increase imperceptibly if at all with more CS units. The frequency of live fire and maneuver exercises is not projected to change by implementing either stationing scenario. The frequency of integrated unit live-fire training exercises at PTA are also not projected to increase as CS units conduct the vast majority of unit level training in support of BCT training exercises. The primary determinant of use of these facitlities is the number of combat maneuver units in USAG-HI.

Cantonment Construction: **No Impact**

Range Construction: **No Impact**

Live-fire and Maneuver Training: **No Impact**

The Army's rating of less than significant is based upon activities that would be implemented as part of the No Action Alternative. No new facilities demands or requirements would be generated as part of CS/CSS stationing scenarios.

Combat Aviation Brigade (2,800): (Less than Significant).

Cantonment Construction: ***No Impact***

Training Range Infrastructure Construction. **Minor Impact**

Temporary minor effects from range expansion and modernization are expected due to the need to tie-in new targetry and digital technology (AWSS) to the existing range infrastructure. Additionally, the electricity required to run range targetry may be generated from a 50-kW photovoltaic power system (provided by HELCO in cooperation with the Army).

Live-fire Training. **No Impact**

Maneuver Training. **No Impact**

There is adequate space at PTA to accommodate these aircraft; only minor modifications to airspace would be needed; and no changes to maneuver corridors would be expected.

The Army's rating of less than significant is based upon activities that would be implemented as part of the No Action Alternative. No new facilities demands or requirements would be generated as part of the CAB stationing scenario.

4.4.12 Energy Demand/ Generation

4.4.12.1 Affected Environment

Hawaiian Electric and Light Company (HELCO) provide electrical power to the Island of Hawai`i. Each island must be completely self-sufficient in terms of electrical generation and transmission. Unlike states on the mainland, electricity cannot be imported from the grid, not even from the neighboring islands. Thus, HELCO and independent producers who sell HELCO electricity must generate enough to meet each day's demand. In addition, HELCO needs back-up or reserve generating capacity to allow for planned maintenance and unexpected loss of generation.

The demand for electricity is increasing throughout Hawai`i due to an growing population and increased energy usage from the average consumer. The Army is trying to reduce its demand for electricity in Hawai`i through the construction of new buildings and facilities with energy-saving features and construction. The Army is also considering renewable sources and projects, as a means to reducing demand for electricity such as the use of photovoltaic technology. As part of a demonstration, HELCO and the Army has established a 50-kW photovoltaic power system project at PTA for range targets, control towers, and airstrip lighting.

4.4.12.2 Environmental Consequences

No Action Alternative: (Less than Significant)

Under the no action alternative, the current uses of the affected environment would not change from the conditions described in 4.4.12.1, other than as discussed as a part of pre-existing trends and the ongoing actions discussed below.

Energy demand through the use of Army facilities would continue and not change from existing levels. As the energy demand for training ranges at PTA is currently adequate, impacts from their use at present levels will be less than significant.

Range Infrastructure Construction. No new range construction projects would occur under the No Action alternative. Range maintenance would proceed as needed. Range maintenance would temporarily increase the use of energy (fuels) at the construction sites. This increase would be temporary and less than significant in the overall context of energy usage.

Live-Fire Training. The number of required live-fire user days per year at PTA would be near current levels and would not change the amount of energy use (fuels and electricity) around the training areas. Consequently, live-fire training is not expected to cause any changes to energy demand, a less than significant impact.

Maneuver Training. Maneuver training would continue at all current training areas available for maneuver training. The number of maneuver rotations at PTA and the Keamuku Parcel would be near current levels and would not change the amount of energy use (fuels and electricity) around the training areas. Impacts to energy use would be similar to what occur presently. Therefore, impacts to energy use would be less than significant.

CSS (1,000), CS (1,000), CSS (3,000), CS (3,000): (Less than Significant).

Under all CS and CSS stationing scenarios the number of maneuver rotations at PTA would not be anticipated to change. All CS/CSS stationing scenarios would result in an increase of less than 1% (over existing activities) in the number of vehicle maneuver miles which would occur under the No-Action alternative at PTA. Live-fire training at PTA would not be projected to increase under CSS stationing scenario's and munitions use at PTA would increase imperceptibly if at all with more CS units. The frequency of live fire and maneuver exercises is not projected to change by implementing either stationing scenario. The frequency of integrated unit live-fire training exercises at PTA are also not projected to increase as CS units conduct the vast majority of unit level training in support of BCT training exercises. The primary determinant of use of these facitlities is the number of combat maneuver units in USAG-HI.

Cantonment Construction: ***No Impact***

Range Construction: ***No Impact***

Live-fire and Maneuver Training: **No Impact**

The Army's rating of less than significant is based upon activities that would be implemented as part of the No Action Alternative. No new energy demands would result as part of CS/CSS stationing scenarios.

Combat Aviation Brigade (2,800): (Less than Significant).

Cantonment Construction: **No Impact**

Training Range Infrastructure Construction. **Minor Impact**

Temporary minor effects from range expansion and modernization are expected due to the need to tie-in new targetry and digital technology (AWSS) to the existing range infrastructure. Additionally, the electricity required to run range targetry may be generated from a 50-kW photovoltaic power system (provided by HELCO in cooperation with the Army).

Live-fire Training. **Minor Impact**

The increase in live-fire exercises would increase demand on the power system; these effects would be minor due to the renewable nature of the energy source.

Maneuver Training. **Minor Impact**

No effects on energy demand would occur as a result of an increase in maneuver; however, the aviation units logistics Soldiers utilizing the cantonment area would result in a slight increase in energy demand and cost.

4.4.13 Land Use Conflict/ Compatibility

4.4.13.1 Affected Environment

No housing units are located at PTA. The Garrison has plans for upgrading and constructing facilities and infrastructure at PTA; and constructing or renovating runways or roadways at BAAF and PTA.

PTA consists of 132,784 acres of land which is a mixture of leased, ceded, and fee simple. This is the larges training area in Hawai`i and supports helicopter training and live-fire, maneuver training (56,661 acres), drop zones, artillery firing, and an ordnance impact area that is approximately 51,000 acres. PTA also supports a cantonment area and BAAF. The cantonment area is approximately 566 acres. The airfield accommodates helicopters and has a 3,969 foot runway with limited access for C-130s. The land surrounding the training area is largely state-designated Conservation District and land uses include game management, cattle grazing, forest reserves and undeveloped land. To the northwest of PTA land is agricultural and provides some hunting; to the north lies the Kaohe Game Management Area, the Mauna Kea Forest Reserve, Mauna Kea State Park, and the Mauna kea National Natural Landmark; and to the east and south is the Mauna Loa Forest Reserve (Final EIS for the Permanent Stationing of the 2.25th Stryker Brigade Combat Team (USAEC, February 2008). Figure 4.4-4 depicts land ownership at and surrounding PTA.

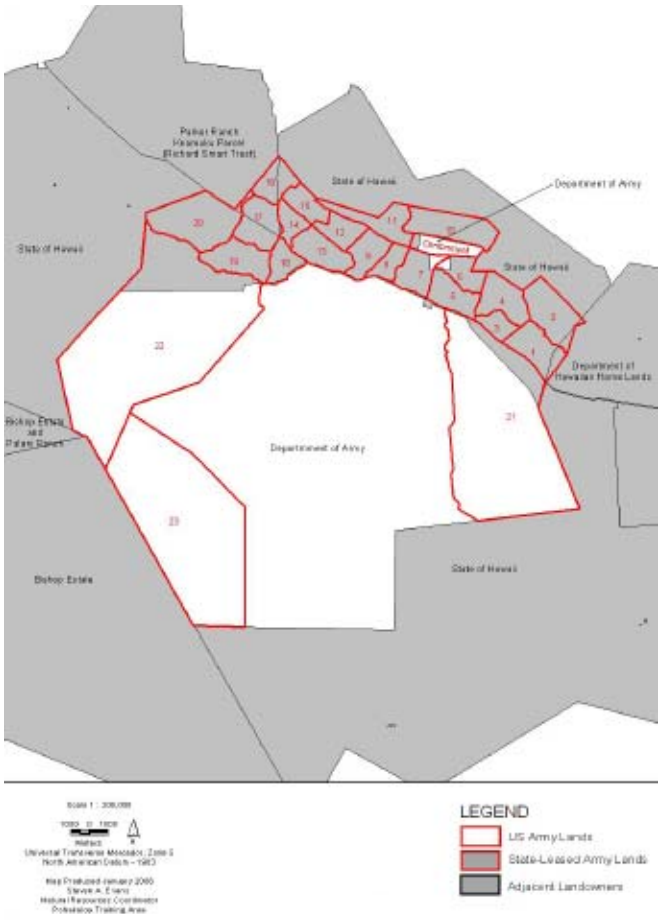

Figure 4.4-4. Land Ownership Surrounding PTA

4.4.13.2 Environmental Consequences

No Action Alternative: (Less than Significant)

Under the no action alternative, the current uses of the affected environment would not change from the conditions described in 4.4.13.1, other than as discussed as a part of pre-existing trends and the ongoing actions discussed below.

The use of Army lands would continue as they are currently designed and authorized. No changes or additions to Army lands would occur; therefore, impacts to surrounding land uses would remain less than significant. Continued coordination with the public and implementation of regulatory and administrative mitigation measures would reduce land use conflicts.

Range Infrastructure Construction. No new ranges would be constructed, and range maintenance would continue as needed. This would include berm, trail and targetry

maintenance and would temporarily restrict access to certain range sites. Maintenance of range areas could potentially limit access to range areas during maintenance activities. Continued coordination with the public and implementation of regulatory and administrative mitigation measures would reduce the impacts to less than significant.

Live-Fire Training. Live-fire training, which is one of the primary factors contributing to indirect effects to surrounding land uses, would continue. Continued use of Army land for training would result in additional land disturbances. With continued implementation of current Army SOPs to minimize potential noise and safety impacts, impacts are expected to be less than significant.

Maneuver Training. Maneuver training, which is one of the primary factors contributing to indirect effects to surrounding land uses, would continue. Maneuvers would prevent access to Army training and maneuver areas by the public to ensure training maneuvers are conducted in a safe and controlled environment. The Army would continue to implement restricted access during maneuver training to ensure there are no safety risks to the public. Limiting access to maneuver training lands during Army training could restrict hunting and recreational use. This impact would be made less than significant by installation coordination with the state to provide access to hunting areas and with the general public as appropriate to address other access issues.

CSS (1,000), CS (1,000), CSS (3,000), CS (3,000): (Less than Significant).

Under all CS and CSS stationing scenarios the number of maneuver rotations at PTA would not be anticipated to change. All CS/CSS stationing scenarios would result in an increase of less than 1% (over existing activities) in the number of vehicle maneuver miles which would occur under the No-Action alternative at PTA. Live-fire training at PTA would not be projected to increase under CSS stationing scenario's and munitions use at PTA would increase imperceptibly if at all with more CS units. The frequency of live fire and maneuver exercises is not projected to change by implementing either stationing scenario. The frequency of integrated unit live-fire training exercises at PTA are also not projected to increase as CS units conduct the vast majority of unit level training in support of BCT training exercises. The primary determinant of use of these facitlities is the number of combat maneuver units in USAG-HI.

Cantonment Construction: **No Impact**

Range Construction: **No Impact**

Live-fire and Maneuver Training: **No Impact**

The Army's rating of less than significant is based upon activities that would be implemented as part of the No Action Alternative. No new land-use demands would result as part of CS/CSS stationing scenarios. No residential area use or other land use would be impacted.

Combat Aviation Brigade (2,800): (Less than Significant).

Cantonment Construction: **No Impact**

Training Range Infrastructure Construction. **Less than Significant**

Range expansion is not anticipated to affect nearby residential land uses as a result of range construction at the range 20 site. This site is several miles removed from residential land use and its existing land use as a military munitions impact area is compatible with its conversion to a training range.

Live-fire Training. **No Impact**

There would be no changes in land-use associated with live-fire training of the CAB.

Maneuver Training. **No Impact**

There would be no changes in land-use associated with maneuver training of the CAB.

4.4.14 Hazardous Materials/ Hazardous Waste

4.4.14.1 Affected Environment

Hazardous waste at the USAG-HI is tracked and grouped into the following categories lumped by how they are generated: Ammunition, Live-fire, and UXO; Petroleum, Oils, Lubricants (POL), and Storage Tanks; Contaminated and Installation Restoration Program (IRP) sites; Lead; Asbestos; PCBs; Pesticides and Herbicides; Radon; and Hazardous Wastes.

Ammunition, Live-fire, and UXO: Live-fire training occurs at PTA, and includes artillery and mortar training (incorporating bags of explosive propellant and charges[7]). There are designated surface danger zones (SDZs) associated with live ammunition firing at range training facilities. SDZs at PTA are configured toward a cumulative ordnance impact area (approximately 51,000 acres) in the central portion of the installation. In addition, although improved conventional munitions[8] (ICMs) are no longer used on Army training lands due to the extreme safety risk they pose, PTA has a 16,800-acre ICM impact area within the larger impact area. This area is not accessible to the public. Permanent ammunition storage is not authorized on PTA. During training, ordnance is temporarily stored in ammunition holding areas. When training is completed any unused ammunition is returned to the ammunition storage point located on WAAF; this area acts as permanent ordnance storage for all of USAG-HI (Final EIS for the Permanent Stationing of the 2.25th Stryker Brigade Combat Team ((USAEC, February 2008)).

Ammunition is transported from WAAF to PTA via boat or helicopter 8 or 9 months of the year. If transported via boat, the ammunition is driven from Kawaihae Harbor to PTA. There have been no accidents involving the transport of ammunition in the last 5 years.

Results from recent soil sampling at PTA ranges produced some samples with levels above USEPA Region IX residential and industrial PRGs. Five samples from PTA exceeded the PRG for RDX. Lead concentrations of two samples from Ranges 9, 10, and 11 exceeded the industrial soil PRG. The exceedances of heavy metal PRGs are attributable to naturally occurring high background levels. Although metals such as aluminum and iron occur naturally in Hawaiian soils, byproducts of munitions, such as lead and RDX, contribute contaminants that could create health and safety concerns in the natural environment. Hazardous waste is

[7] Charges that are not used during training are typically burned, generally creating a residue. Residues from burned propellant are the only hazardous wastes that are temporarily stored at the range burn site in a designated hazardous waste satellite storage point

[8] also considered cluster bombs because these items are munitions that contain multiple smaller sub-munitions

transferred to the PTA transfer and accumulation point facilities for proper storage until disposal contractors and the DRMO coordinate to ensure proper disposal.

Unexploded Ordnance (UXO)[9] at PTA includes grenades, mortars, and artillery weapons used during live-fire training. When a live-fire training range is permanently closed, all UXO is destroyed by explosive ordnance disposal (EOD) units where it is found. UXO is suspected in various training areas and presents a potential threat to Army personnel maneuvering in those areas. Due to the suspected low level of UXO however, it is not cleared before maneuvers commence. Soldiers are taught how to identify UXO and how to handle it properly.

Petroleum, Oils, Lubricants (POL), and Storage Tanks: As a result of the estimated minimal increase in the level of training, a proportional increase in fuel storage and use would be encountered at PTA. Transportation of personnel and use of flammable or combustible materials, such as fuel or ordnance (i.e. weaponry or equipment), could minimally increase the potential for spills or releases of hazardous materials, especially in areas not previously used frequently. Best management practices would be employed at PTA and project area personnel would follow USEPA and USAG-HI protocol for using and handling hazardous materials, such as POLs. PTA maintains strict SOPs and spill contingency plans for hazardous materials and waste, identifying specific operating responsibilities and procedures.

IRP Sites: There are several IRP sites within the Hawai`i installations including at PTA. An investigation was performed to evaluate contamination in surface soil and water samples from the SBMR and PTA firing ranges. Secondary explosives compounds, primarily TNT (2,4,6-trinitrotuluene) and RDX (1,3,5-trinitotriazine), which are the major ingredients in nearly all munitions items formulations, were found on ranges at both installations. Also found at both locations were aluminum, iron, lead, and antimony, and semi volatile organic compounds (SVOCs), and were found at levels exceeding USEPA Region IX PRGs.

Depleted Uranium (DU) was found in August 2005 during the cleanup of unexploded ordnance (UXO) from a range located on SBMR. Follow-up surveys identified other locations where DU was found. The source of this DU was determined to be tail fin sections of Spotting Rounds for the Davy Crockett Weapons System. The Army is continuing to work with the State of Hawai`i to fully investigate this issue.

Lead: PTA buildings have not yet been surveyed for lead. Lead can also be found in live-fire ranges on PTA; but the Garrison has in place BMPs for lead mitigation and erosion at small arms ranges.

Asbestos: All buildings constructed prior to 1980 are suspected risks for asbestos, and upon identification of renovation or demolition projects these buildings are surveyed for asbestos-containing material.

PCBs: PCB concentrations in soil samples from PTA were below the listed PRG (FEIS for Permanent Stationing of the 2/25th Stryker Brigade combat Team (USAEC, February 2008)). Devices that were found to contain regulated levels of PCB have been either removed and

[9] Defines in DoD 6055.9 as "explosive ordnance that has been primed, fused, armed, or otherwise prepared for action, and that has been fired, dropped, launched, projected, or placed in such a manner as to constituted a hazard to operations, installations, personnel, or material and remains unexploded either by malfunction or design or for any other cause."

upgraded with non-PCB devices, or were retrofilled or removed, drained, packaged, and disposed of in accordance with 40 CFR Part 761.

Pesticides and Herbicides: These materials are commonly used throughout USAG-HI installations to prevent and mitigate pest-related health problems and maintain grounds and structures. At PTA these materials are stored at one location in approved containers.

Radon: Radon is naturally occurring in low concentrations in the Hawaiian Islands and has been evaluated in both Honolulu and Hawai`i Counties. Though radon has been associated with an increase risk of lung cancer, current samples throughout the Hawaiian Islands are lower than EPS's recommended action level of 4 picocuries per liter, and thus there is not much concern at this location.

Hazardous Wastes/Biomedical Waste: The medical clinics on PTA produce small amounts of regulated chemical and medical waste. Biomedical waste is collected and disposed of in accordance with AR 200-1, and is disposed of at a regulated off-base disposal site.

Hazardous Waste: Wastes that are characteristic or listed under the Resource Conservation and Recovery Act, Subtitle C (RCRA-C) are stored and managed in the Hazardous Waste Shop Storage Point (HWSSP). Hazardous wastes consolidated at the HWSSPs are then transferred to an approved Transfer and Accumulation Point on the installation that the wastes were generated. Hazardous wastes and non-regulated wastes are then shipped off island to a Treatment, Storage, and Disposal Facility using the Defense Reutilization and Marketing Office, Hawaii or contractors. Non-regulated recyclable materials are stored and managed in the Recyclable Material Shop Storage Points (RMSSP) and recycled through local approved recycling contractors.

Biomedical Waste: The medical clinics on PTA produce small amounts of regulated medical waste. Biomedical waste is collected and disposed of in accordance with AR 200-1 and DA PAM 40-11. Wastes are disposed of at a regulated off-base disposal site.

4.4.14.2 Environmental Consequences

No Action Alternative: (Minor)

Under the no action alternative, the current uses of the affected environment would not change from the conditions described in 4.4.14.1, other than as discussed as a part of pre-existing trends and the ongoing actions discussed below.

The production and handling of hazardous materials and hazardous wastes would continue at current levels. The types and quantities of wastes would remain the same, and the existing identification and disposal methods are sufficient to minimize impacts to human health and safety.

Range Infrastructure Construction. No new ranges would be constructed under the No Action alternative. Hazardous materials would be generated through range maintenance activities. Soils contaminated with lead would be properly handled and reused to maintain berms. Hazardous materials and wastes would continue to be managed in accordance with existing federal, state, installation-wide hazardous materials management plans, the current Army protocols, and SOPs.

Ongoing action to address issues related to depleted uranium would continue under implementation of the No Action Alternative. The Army would continue to provide information and any necessary training to the State Department of Health in a timely manner and partner with the State in the planning and execution of a survey and monitoring effort and a mutually agreed upon response.

Live-Fire Training. Live-fire exercises would continue as a part of meeting the training requirements of units training on PTA. Training would occur on existing ranges. Continued use of munitions during training could affect the training lands through the addition of lead to the soils and creating UXO. Under the No Action alternative, ammunition handling, storage, and disposal would continue at current levels. Existing weapons would continue to be used as part of current force training. Range contamination would continue to accumulate until range closure and remedial cleanup, but there would be no increase in ammunition used, so there would be only consistent levels of ongoing increased contamination. It is not likely that general training would result in any significant impacts. Current force training would continue to follow existing USAG-HI protocol. As the amount of ammunition used would not change, no increases in potential impacts from the presence of UXO are expected.

Maneuver Training. The Army would continue to follow federal, state, and Army protocols. Wheeled vehicles would continue to be used by current forces in maneuver training on PTA and the Keamuku Parcel. Consequently, the potential exists for spills during maneuver training. However, continued implementation of regulatory and administrative mitigation measures is expected to limit the potential impacts to human health and safety to minor.

CSS (1,000), CS (1,000), CSS (3,000), CS (3,000): (Less than Significant).

Under all CS and CSS stationing scenarios the number of maneuver rotations at PTA would not be anticipated to change. All CS/CSS stationing scenarios would result in an increase of less than 1% (over existing activities) in the number of vehicle maneuver miles which would occur under the No-Action alternative at PTA. Live-fire training at PTA would not be projected to increase under CSS stationing scenario's and munitions use at PTA would increase imperceptibly if at all with more CS units. The frequency of live fire and maneuver exercises is not projected to change by implementing either stationing scenario. The frequency of integrated unit live-fire training exercises at PTA are also not projected to increase as CS units conduct the vast majority of unit level training in support of BCT training exercises. The primary determinant of use of these facitlities is the number of combat maneuver units in USAG-HI.

Cantonment Construction: **No Impact**

Range Construction: **No Impact**

Live-fire and Maneuver Training: **No Impact**

The Army's rating of less than significant is based upon activities that would be implemented as part of the No Action Alternative. No new hazardous waste impacts would result as part of CS/CSS stationing scenarios. No new mitigation measures are proposed and PTA policies, procedures, and mitigations would continue to be implemented.

Combat Aviation Brigade (2,800): (Less than Significant).

Cantonment Construction: **No Impact**

Training Range Infrastructure Construction. **Less than Significant**

UXO would be expected to be found within the potential expansion footprint of range 20 at PTA. Expansion would involve moving soils that could be contaminated with UXO from prior activities in the range ordnance impact area. Construction would be preceded by Army-sponsored surface and subsurface clearance and if necessary followed by ordnance health and safety monitoring during construction in order to reduce potential exposure and impacts from this project. Although UXO presents a significant impact, USAG-HI would follow proper abatement techniques, which would reduce this impact to less than significant. In addition to these mitigation measures, the Army would continue to educate Soldiers on how to identify UXO and the proper safety procedures for handling UXO.

Additionally, range modernization and expansion may redistribute lead material from that will be removed or retained within the range soils. Due to the lack of surface water at PTA and the properties of lead, these materials do not migrate well. These areas are expected to contain significant quantities of lead. Unused lead contaminated soils would be remediated in accordance with applicable federal and state standards.

Live-fire Training. **Less than Significant**

Live-fire training would continue to add lead and other hazardous materials to the soils, and potentially UXO. Use of ordnance would be consistent with current uses at the range complex, and is not anticipated to pose a significant impact on human health.

Maneuver Training. **Less than Significant**

A certain amount of POLs and fuel storage would be required at PTA to support aircraft maneuver. The ground logistics component of the CAB would be responsible for refueling and supplying the CAB which would elevate the risk of a fuel spill at PTA. The installation SPPCC plan has existing procedure in place to deal with a spill. Best practices would be employed at the feul storage locations and personnel would follow USEPA and USAG-HI protocol for using and handling hazardous materials.

4.4.15 Traffic and Transportation

4.4.15.1 Affected Environment

The ROI for roads at PTA includes the PTA trail; which is the corridor between PTA and Kawaihae Harbor. PTA Trail is approximately 26 miles long and is bounded by State Road 190 on the east, and the coastline on the west.

The major urban areas on the island of Hawai`i are Hilo and Kailua-Kona, which are on the east and west sides of the island, respectively. Air service for these centers is provided by Hilo International Airport and Kona International Airport. Generally, major roadways in Hilo are congested, and major highway improvements are underway to address these problems. There are several congested areas in Kailua-Kona, but the periods of congestion are short. The most direct roadway link between these population centers is Saddle Road, but most motorists use

Queen Kaahumanu Highway (Highway 19) because this road has better design features. Saddle Road is not up to current design standards, and sight distances are limited. The HDOT, with the Federal Highways Administration as the lead agency, have construction projects in progress to improve Saddle Road. The first of these projects is a 7-mile segment from Mauna Kea State Park towards Hilo, which was dedicated in May 2007.

Major roadways on the island are under the jurisdiction of the HDOT. Roadways under the jurisdiction of HDOT are Queen Kaahumanu Highway, Mamalahoa Highway, Hawai`i Belt Road, Volcano Highway, and Kawaihae Road. Except for limited sections, these roadways are two-lane highways. Major intersections are signalized. The remaining local roads and streets are under the jurisdiction of the County of Hawai`i Department of Public Works.

Current traffic conditions in Hawai`i vary depending on location, but are typically over capacity during peak hours, resulting in significant traffic delays. These traffic delays occur in urban areas with multi-lane roads as well as less developed areas with only two-lane roads (Final EIS for the Permanent Stationing of the 2/25th Stryker Brigade Combat Team ((USAEC, February 2008)).

4.4.15.2 Environmental Consequences

No Action Alternative: (Less than Significant)

Under the no action alternative, the current uses of the affected environment would not change from the conditions described in 4.4.15.1, other than as discussed as a part of pre-existing trends and the ongoing actions discussed below.

Traffic on PTA would remain at existing acceptable levels. Impacts to civilian traffic on public roads by convoys of military vehicles would be lessened by the PTA Trail, once built. Coordination and public notification will maintain this impact to less than significant.

Range Infrastructure Construction. No new ranges would be constructed under the No Action alternative. There would be no anticipated impacts to traffic with the maintenance of existing ranges to include maintenance of targetry, berms, trails and stream crossings.

Live-Fire Training. Under the No Action alternative, there would be no change to the frequency of live-fire training. Continued live-fire range use would not affect traffic or transportation resources away from the training areas. A majority of military traffic would be designated on military roads and trails, therefore military traffic would not interfere with civilian traffic. Consequently, impacts to traffic and transportation resources caused by live-fire training would not be expected.

Maneuver Training. Under No Action, there would continue to be traffic impacts on public roadways associated with current force activities. This would include convoy traffic on the PTA Trail crossing public roads that may periodically cause traffic congestion. Traffic conditions are currently operating at acceptable levels. Under this alternative, the traffic volumes along the public roadways would remain at current levels, and the level of service would not change.

Military vehicles traveling between the Army installations would continue to cross public roadways. Guidance regarding convoys has been established. Examples include, per command guidance, USAG-HI convoys normally maintain a gap of 15 to 30 minutes between serials (a

group of military vehicles moving together), 330 feet between vehicles on highways, and 7.5 to 15 feet while in town traffic. Per state regulation, military convoys are not authorized movement on state highways during peak-hour conditions (between 6:00 AM and 8:30 AM and 3:00 PM and 6:00 PM, Monday through Friday). The maximum number of vehicle per convoy would be 24, and convoy traffic would yield to public traffic at road crossings. These measures will continue to be followed to minimize convoy impacts to traffic.

CSS (1,000), CS (1,000), CSS (3,000), CS (3,000): (Less than Significant).

Under all CS and CSS stationing scenarios the number of maneuver rotations at PTA would not be anticipated to change. All CS/CSS stationing scenarios would result in an increase of less than 1% (over existing activities) in the number of vehicle maneuver miles which would occur under the No-Action alternative at PTA. Live-fire training at PTA would not be projected to increase under CSS stationing scenario's and munitions use at PTA would increase imperceptibly if at all with more CS units. The frequency of live fire and maneuver exercises is not projected to change by implementing either stationing scenario. The frequency of integrated unit live-fire training exercises at PTA are also not projected to increase as CS units conduct the vast majority of unit level training in support of BCT training exercises. The primary determinant of use of these facitlities is the number of combat maneuver units in USAG-HI.

Cantonment Construction: **No Impact**

Range Construction: **No Impact**

Live-fire and Maneuver Training: **No Impact**

The Army's rating of less than significant is based upon activities that would be implemented as part of the No Action Alternative. No new traffic demands would result as part of CS/CSS stationing scenarios. No roads or trails would be adversely impacted by additional military traffic over and above traffic levels of the baseline No Action condition. All USAG-HI and PTA policies, mitigations, and procedures for minimizing traffic impacts would remain in effect. For example, Convoys would travel as they would outside the installation boundary; in serials of approximately six or more vehicles moving simultaneously from one point to another under a single commander, and normally maintaining a gap of 15 to 30 minutes between serials.

Combat Aviation Brigade (2,800): (Less than Significant).

Cantonment Construction: **No Impact**

Training Range Infrastructure Construction. **Minor Impact**

Range construction activities associated with the aerial gunnery range would generate additional traffic from worker vehicles and trucks, but due to the limited extent of the project, construction traffic would be relatively light (compared to typical construction activities) and would be temporary. Off-post traffic conditions would not significantly affect operations on nearby roads, and traffic would generally be free flowing, resulting in less than significant impacts.

Live-fire and ManeuverTraining. **Less than Significant**

There would be an increase in helicopters conducting live-fire and maneuver exercises at PTA. *H*elicopters maneuvering between WAAF and PTA would continue to use approved, existing, air traffic corridors. No traffic impacts would be anticipated on the PTA trail or other roads in the vicinity of PTA as a result of requirements to transport helicopters. Traffic impacts would be generated by an increase frequency of deployment of the CAB's logistics component to PTA. This logistics element consists of between 200-300 light trucks, feulers and other vehicles. It woud travel along the PTA trail to access PTA upon disembarkation from Kawaihae Harbor. This increase in deployment traffic is anticipated to be less than significant.

4.4.16 Socioeconomics

4.4.16.1 Affected Environment

The ROI associated with the proposed stationing scenarios includes the County of Hawai`i (which incorporates the entire Island of Hawai'i), where PTA is located. There are twelve (12) districts within Hawai`i County; these are Hilo, Honokaa-Kukuihaele, Kau, Keaau Mountain View, North Hilo, North Kohala, South Kohala, North Kona, South Kona, Paauhau-Paauilo, Pahoa-Kalapana, and Papaikou-Wailea. PTA resides within the Paauhau-Paauilo CCD and small portions of the North Kona, South Kohala, and North Hilo CCDs (Final EIS for the Permanent Stationing of the 2/25th Stryker Brigade Combat Team (USAEC, February 2008)).

According to 2006 data provided by the U.S. Census Bureau the estimated population of Hawai`i County is 171,191 (with an average household size of 2.66 persons per household). Hawai`i maintains an average labor force population (ages 16 and above) of 91,433; which contributes to an estimated median household income of $55,390. The per capita income is roughly $26,356. The County of Hawai`i has 75,185 housing units; of which 22,135 are renter occupied (U.S. Census Bureau Web Site, n.d.).

Within Hawai`i County, the South Kohala CCD experienced one of the greatest population growth percentages (43.7 percent in 2000). In 2000, the population of the North Kona CCD was one of the largest population centers on the Island of Hawai`i. The North Hilo CCD had the highest percentage of minority populations (71.9 percent in 2000), and North Kohala had the lowest (52.9 percent in 2000) (U.S. Census Bureau web site, n.d.). No military or civilian personnel are permanently stationed at or reside at PTA.

The school enrollment rates were provided by Garrison staff in an email dated 28 February 2008. These rates can be found in Appendix C of this document. As indicated in the Final EIS for the Permanent Stationing of the 2/25th SBCT (USAEC, February 2008), schools located near PTA are presently operating at or below capacity.

4.4.16.2 Environmental Consequences

No Action Alternative: (Less than Significant)

Under the no action alternative, the current uses of the affected environment would not change from the conditions described in 4.4.16.1, other than as discussed as a part of pre-existing trends and the ongoing actions discussed below.

Ongoing and planned construction projects will continue to have a beneficial impact to the local economy. The need for local goods and services would remain the same, and no shortages or

changes in demand are expected. Schools surrounding PTA would continue to project having extra capacity.

Range Infrastructure Construction. No new range construction projects would occur under the No Action alternative. Range maintenance would continue to occur at the various training areas and ranges. These actions would have less than significant impacts on the local population, economy, and employment.

Live-Fire Training. Under the No Action alternative, there would be no change to the nature of live-fire training at PTA. There are no socioeconomic impacts anticipated from continued use of existing live-fire ranges in their current configuration.

Maneuver Training. Under the No Action alternative, there would be no change to the nature of maneuver training at PTA. There are no socioeconomic impacts anticipated from continued use of existing maneuver ranges in their current configuration.

CSS (1,000), CS (1,000), CSS (3,000), CS (3,000): (Less than Significant).

Under all CS and CSS stationing scenarios the number of maneuver rotations at PTA would not be anticipated to change. All CS/CSS stationing scenarios would result in an increase of less than 1% (over existing activities) in the number of vehicle maneuver miles which would occur under the No-Action alternative at PTA. Live-fire training at PTA would not be projected to increase under CSS stationing scenario's and munitions use at PTA would increase imperceptibly if at all with more CS units. The frequency of live fire and maneuver exercises is not projected to change by implementing either stationing scenario. The frequency of integrated unit live-fire training exercises at PTA are also not projected to increase as CS units conduct the vast majority of unit level training in support of BCT training exercises. The primary determinant of use of these facitlities is the number of combat maneuver units in USAG-HI.

Cantonment Construction: **No Impact**

Range Construction: **No Impact**

Live-fire and Maneuver Training: **No Impact**

The Army's rating of less than significant is based upon activities that would be implemented as part of the No Action Alternative. No new socio-economic impacts would result as part of CS/CSS stationing scenarios.

Combat Aviation Brigade (2,800): (Less than Significant).

Cantonment Construction: **No Impact**

Training Range Infrastructure Construction. **No Impact**

No minority or low-income residences would be displaced by range construction; and noise and fugitive dust generated from project-related construction is not anticipated to have any adverse direct or indirect impacts outside the installation boundary. Conversely, very slight beneficial impacts may occur as a result of increased expenditures for certain materials. These impacts would be well within the capacity of the ROI to absorb.

Live-fire Training. No Impact

Live-fire training would have no influence to employment rates, the economy, schools nor would it adversely or disproportionately effect different economic groups or racial minorities.

Maneuver Training. No Impact

Live-fire training would have no influence to employment rates, the economy, schools nor would it adversely or disproportionately effect different economic groups or racial minorities. Aircraft would continue to utilize the standard flight route leading from WAAF to PTA, which currently has a minor influence to residential areas and largely utilizes a buffer zone around WAAF to maneuver from O'ahu to the Island of Hawai`i.

The Army's rating of less than significant is based upon activities that would be implemented as part of the No Action Alternative. No new socio-economic impacts would result as part of CS/CSS stationing scenarios.

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4.5 Cumulative Effects for USAG-HI

The cumulative impact analyses for the various alternatives focus on impacts on the environment resulting from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions.

The cumulative impact analysis focuses on impacts to the environment resulting from the incremental impact of the action when added to past, present, and reasonably foreseeable future actions. Past and present actions are accounted for in the description of the affected environment for each resource. About 40 reasonably foreseeable future actions were identified for the island of Oahu and approximately 10 were identified for the island of Hawai`i. Some of these actions are ongoing projects that would continue into the future, whereas others would be discrete projects that would be conducted in the reasonably foreseeable future. Appendix E of this document provides the reader a detailed list of each project along with a project description, project location, and the proponent for each action.

The impact table (Table 4.5-1) captures the cumulative impact that would occur if the Army decided to implement different stationing scenarios at SBMR and Fort Shafter. Effects listed for Fort Shafter and SBMR are composite ratings that include the impacts at PTA that may occur as a result of implementing stationing at SBMR or Fort Shafter. In other words, the cumulative impact rating of each column, takes into account the impact of stationing both at the home-station site (SBMR or Fort Shafter) and the individual training sites to include PTA.

The cumulative impact section also assesses the impact of stationing up to 4,000 additional Soldiers in Hawai`i which is the greatest possible increase in Soldiers that could result from Army stationing as a result of this analysis. This scenario would be possible if the Army decided to station 3,000 additional Soldiers at SBMR and 1,000 additional Soldiers at Fort Shafter.

The Cumulative impacts discussed in this section considers the Army actions that are implemented as part of the stationing of the 2/25th SBCT; actions that occurred under restructure of U.S. Army Pacific Forces to a Modular Force Structure; ongoing maintenance and modernization construction projects; and those projects initiated by the U.S. Air Force and U.S. Marine Corps forces stationed in Hawai`i. This section also considers those non-military projects that may impact resources shared by the public and the military, or may have regional implications to valued environmental components addressed in this SPEIS.

Table 4.5-1 Cumulative Effects for Stationing Scenarios in Hawai`i

VEC	Location					
	Schofield Barracks 1,000 CS/CSS*	Schofield Barracks 3,000 CS/CSS*	Fort Shafter 1,000 CS/CSS*	Fort Shafter & SBMR 4,000 CS/CSS*	Combat Aviation Brigade*	No Action Alternative
Air Quality	⊗	⊗	⊗	⊗	⊗	○
Airspace	⊙	⊙	⊙	⊙	⊘	○
Cultural Resources	⊗	⊗	⊗	⊗	⊗	○
Noise	⊗	⊗	⊗	⊗	⊗	○
Soil Erosion	⊘	⊘	⊙	⊘	⊗	○
Biological Resources	⊗	⊗	⊗	⊗	⊗	○
Wetlands	⊙	⊙	⊙	⊙	⊙	○
Water Resources	⊘	⊘	⊘	⊘	⊘	○
Facilities	⊙	⊘	⊗	⊗	⊗	○
Energy Demand / Energy Generation	⊙	⊘	⊘	⊘	⊘	○
Land Use Conflict / Compatibility	⊗	⊗	⊗	⊗	⊗	○
Hazardous Material / Hazardous Waste	⊘	⊘	⊘	⊘	⊗	○
Traffic and Transportation	⊘	⊘	⊘	⊘	⊘	○
Socioeconomics	⊘ +	⊘ +	⊘ +	⊘ +	⊘ +	⊘ +

⊗ = Significant Adverse
⊘ = Significant but Mitigable
⊙ = Less than Significant
○ = Minor or No Impact
\+ = Beneficial Impact
N/A = Not Applicable
* SBMR and Fort Shafter Assessments include impacts to PTA that would result from stationing.

Past, present, and reasonably foreseeable future actions for the Island of Oahu include:

Military (Oahu)

- Golf Course at Fort Shafter
- Consolidated Motor Pool at Fort Shafter
- Construction of Command and Control Facility, Fort Shafter
- Expand Physical Fitness Center
- Improvements to Lyman Gate at Fort Shafter
- Improvements to Kawamura Gate at Wheeler Army Airfield
- Funston Road Roundabout
- Construct new Fort Shafter chapel
- Macomb Roundabout
- 8th TSC Motor Pool and Maintenance Shop, Schofield Barracks
- New Brigade Complex, PH I and II
- Warrior in Transition facilities, Schofield Barracks
- Parking structure Quad F7
- AAFES Shopping Center 6
- Central Wash Facility
- Whole Barracks Renewal Program
- SBMR/WAAF WBR—Quad E Renovations
- SBMR/WAAF WBR—Quad C Renovations
- SBMR WBR Brigade Complex Phase IID
- SBMR WBR Williston Facilities
- SBMR WBR CAPRON Avenue Phase 3 Barracks
- SBMR WBR Reilly Street Barracks
- SBMR WBR PH 2CI Facilities
- Vehicle Maintenance Shop, 307th ITSB, HMR
- Soldier and Family Readiness Center
- Construction of Child Development Center
- Gate Alignments
- Foote Gate, SBMR
- Macomb Gate, SBMR
- Lyman Gate, SBMR
- WAAF Gate Connections with SBMR
- Kawamura Gate, WAAF
- Army Facility Strategy Program
- Prescribed Burns at Army Installations in Hawai`i
- Resumption of Live-fire Training at MMR or Establishment of Live-fire at PTA / Makua Implementation Plan
- Oahu Implementation Plan
- SBCT Live-Fire Training
- Residential Communities Initiative
- Integrated Training Area Management (ITAM)
- 25th ID(L) and USAG-HI Revitalization Program
- Implementation of the Integrated Natural Resources Management Plan (INRMP)
- Implementation of the Integrated Cultural Resource Management Plan (ICRMP)
- Implementation of Proposed Range and Training Land Program Development Plan Actions

- Drum Road Upgrade
- Construct Army Reserve Center Training Facility, FS Flats (Construct a 200 member training facility)
- Air Force Housing Privatization Program
- Air Force C-17 use at Hickam Air Force Base
- Growth and Realignment of the Army
- USARPAC Transformation to Warfighting Headquarters
- 25th Infantry Division Transformation to Modular Force Structure
- Future Combat Systems Fielding
- Stationing of the 2/25th SBCT in Hawai`i
- Joint training with National Guard units (including Guam), USAF, USMC
- Growth of the Marine Corps Base Hawaii and use of USAG-HI facilities
- Regional SATCOM Support Center
- Privatization of Army Lodging, TAMC
- Construct a Post Traumatic Stress Disorder Residential Rehabilitation Program Facility, TAMC
- Armored Security Vehicle
- Construction of Navy facility at NCTAMS/Kunia Tunnel

Non-military

- Residential Development at Koa Ridge between Pearl City and Mililani
- Central Oahu Sustainable Communities Plan
- North-South Road
- Farrington Highway Improvement
- Renton Road Improvements (Ewa Town)
- Residential Development – up to 900 new homes at Ocean Point
- Kapolei Parkway
- Waianae Sustainable Communities Plan
- Waianae Coast Emergency Alternate Route
- Kamehameha Hwy, Replacement of South Kahana Stream Bridge
- 2121 Kuhio Avenue Condominium/Timeshare Development
- Oahu Arts Center
- Hawai`i Superferry
- Turtle Bay Resort improvements
- Light Rail Transit project and Nimitz “Flyover” Project

Past, present, and reasonably foreseeable future actions for the Island of Hawai`i include:

Military

- Kawaihae Deep Draft Harbor
- PTA Implementation Plan
- Growth and Realignment of the Army
- USARPAC Transformation to Warfighting Headquarters
- 25th Infantry Division Transformation to Modular Force Structure

- Vehicle Maintenance Shop, 307th ITSB
- Future Combat Systems Fielding
- Range Modernization Projects at PTA
- Joint training exercises with National Guard and allied forces
- Training by US Marine Corps Grow the Force Soldiers
- Construct Mock Airfield, PTA

Non-military

- Saddle Road Realignment
- Kawaihae/Waimea Road
- New Highway
- UXO Cleanup
- Former Waikoloa Maneuver Area and Nansay Sites
- PanSTARRS Project
- Outrigger Telescopes Project

The following sections describe the cumulative impacts to each resource that would be expected as a result of additional stationing of GTA Soldiers in Hawai`i under the scenarios presented above.

Air Quality

Schofield Barracks is a "major source" and maintains a Title V air permit. Individual emissions sources that contribute to the Schofield Barracks' overall status include boiler systems, generators for backup power, government and personal vehicle traffic, aircraft flight operations, various equipment operations, ordnance firing and detonation during training, controlled burning on ranges, and unplanned wildfires.

Under the Army Facility Strategy Program construction of new facilities is considered to add cumulative influences to air quality; examples of construction projects include a consolidated motor pool at Fort Shafter, an aviation motor pool complex at WAAF, two physical fitness centers (SBMR, WAAF), a general instruction building and upgrades to the range at SBER, and a chapel at Fort Shafter. Cumulative air quality impacts will occur from cantonment construction projects within the same geographic area and from motor vehicles. Primarily, construction projects can be expected to cause a temporary increase in dust and opacity. Regionally, however, these effects will be largely localized to the construction sites and should produce no regional air quality issues. The current fuel storage facility at SBMR has a 60,000-gallon (227,125-liter) capacity. The Army is proposing to increase this capacity to 120,000-gallons (454,249-liters). At WAAF, an increase in fuel storage capacity for petroleum, oil, and lubricants storage is needed for the Aviation Brigade Motor Pool expansion.

Construction equipment, motor vehicle traffic, and aircraft flight activity, and fuel transport and transfer operations are important sources of ozone precursor emissions. From a cumulative perspective, 1,000 Soldier (CS & CSS) stationing alternatives would do little to alter overall vehicle traffic or air traffic activity on Oahu or Hawai`i. Scenarios to station 3,000 additional Soldiers at SBMR or an aviation brigade would contribute a greater amount of ozone precursor emissions and hazardous air pollutant emissions to cumulative air quality impacts. The identified

cumulative impacts would also include several construction projects that would at least partially overlap the timeframe of construction projects needed to support the Proposed Action and stationing scenarios. Federal ozone standards have not been exceeded in Hawai`i during the past decade, despite the cumulative emissions from highway traffic, commercial and military aircraft operations, commercial and industrial facility operations, agricultural operations, and construction projects in both urban and rural areas.

As part of Army Transformation, the Army permanently stationed the 2/25th Stryker Brigade Combat Team (SBCT) in Hawaii (ROD published March 2008). The Army fielded new and modernized vehicles, weapons systems, and equipment for Stryker forces. This action will result in air emissions from maneuver training, and live-fire training to a much lesser degree. Stationing the SBCT in Hawaii will produce greater emissions of carbon dioxide and other greenhouse gasses from both the use of explosives and the operation of vehicle engines and maintenance and repair facilities. Fugitive dust can be expected from travel on unpaved roads. These emissions, however, are of short duration and spatially isolated.

Additionally, fugitive dust may be mitigated (for all maneuver and construction activities in Hawai`i) through the use of best management practices during construction activities and integrated into training procedures (e.g., training convoys to operate at lower speeds or increased intervals during dusty conditions). The “Drum Road Upgrade” to align, widen, and harden approximately 24 miles of the dirt and gravel road that runs from the end of the paved road at HMR to the end of the paved road at KTA also addresses fugitive dust mitigation. Work would include widening the road to 24 feet and providing three-foot compacted gravel shoulders on both sides. As a result the Army anticipates the cumulative effect of military and nonmilitary actions to be less than significant.

Given historical air quality conditions, the cumulative effect of emissions associated with stationing scenarios, in combination with other construction projects and the continuing emissions from highway traffic and other sources, is not expected to violate any state or federal ozone standards. The cumulative air quality effects on ozone or other secondary pollutants would be less than significant under stationing scenarios discussed as part of Army growth.

Prescribed burns at Army Installations in Hawai`i have been required in connection with complying with the ESA. Prescribed burns have been conducted at Army installations in Hawai`i in the past on small areas (typically 4 to 5 acres) at SBMR and on about 800 to 900 acres at MMR. Controlled burns have recently been conducted on larger areas and on a more regular basis. Approximately 1,200 to 1,500 acres are burned at SBMR to reduce vegetation (fuel load) and to allow the Army to conduct UXO clearance and cultural survey activities. These burns are conducted in accordance with smoke management plans and though at the time of the burn, are a source of particulate, are required to maintain habitat as well as prevent more substantial fire events in the future. To reduce affects to air quality, aerial spraying of herbicide by helicopter is conducted before some burns to reduce live vegetation prior to the prescribed burn. This also helps to dry out the fuel load, resulting in cleaner, more complete burns with less particulate matter.

Fugitive dust sources and wildfires in Hawai`i are the major contributors to PM_{10} emissions. Fugitive dust sources include construction activity, vehicle traffic on unpaved roads or off-road areas, and wind erosion from areas with exposed soils. As discussed above, the identified projects would partially overlap the timeframe of current and planned construction projects identified for cantonment and training activities that would be implemented under different Army stationing scenarios. Spatial separation among these various construction projects would

minimize or eliminate cumulative PM_{10} effects from those projects with overlapping construction timeframes. Military training, particularly maneuver training, will be a recurring activity contributing to fugitive dust. Implementation of the Army's existing Dust and Soils Management and Monitoring Plan (DuSMMoP) would reduce impacts to air quality impacts for the SBCT; however, given the resulting increase in overall PM_{10} levels, the uncertainties associated with any estimate of potential wind erosion conditions, and public perceptions of the potential magnitude of this impact, the Army considers wind erosion to be a significant air quality impact. Combined with other projects, to include increase levels of training projected at PTA because of joint training and growth of the Marine Corps in Hawai`i and expanded use of C-17 Globemaster aircraft at Hickam AFB the cumulative air quality effects from primary air pollutants, such as PM_{10}, could be significant.

In conjunction with military projects, cumulative impacts to air quality may occur regionally, and will involve non-military actions. Honolulu County is conducting improvements to Farrington Highway such as adding sidewalks, crosswalk bridges, and other safety and operation improvements that may have very localized temporary air quality impacts from dust. Conversely, construction supporting the Kapolei Parkway and the light rail transit project and Honolulu Transit Corridor will contribute a greater degree of dust and construction equipment emissions; however these effects will be temporary, lasting the duration of those projects. The long-term impacts to air quality from these projects is anticipated to be beneficial, as mass transportation alternatives is likely to reduce vehicle emissions in Honolulu County.

Climate change is largely a global phenomenon that includes actions that are outside of the Army control. Army actions in Hawai`i contribute incrementally to this global situation. Stationing the SBCT in Hawai`i would produce greater emissions of carbon dioxide and other greenhouse gasses from both the use of explosives and the running of vehicle engines. These emissions can combine with carbon emissions from other past, present, and reasonable foreseeable future actions in the area to contribute to one of the causes of global warming. The Army is proactively working to reduce its overall consumption of energy and fossil fuels at all of its installations. Under stationing scenarios involving the stationing of an aviation brigade in Hawai`i, the Army would be projected to increase its emissions of greenhouse gases and its consumption of fossil fuels by the greatest relative percent. Under all stationing scenarios, the Army would continue to work to reduce its consumption of fossil fuels in Hawai`i.

Overall, in light of historic, on-going, and reasonably foreseeable future actions, the Army concludes that the cumulative impacts on air quality would be significant adverse under all stationing scenarios.

Airspace Resources

No significant cumulative effects would occur to airspace resources under any of the stationing scenarios which the Army is considering to implement the Proposed Action. CS and CSS unit stationing will not involve any additional impact to the use of airspace in Hawai`i. If the Army were to station an aviation brigade in Hawai`i to support the Proposed Action it would have added effects to the number of helicopters operating over military airspace, and operating in the designated flight corridor between WAAF and Pohakuloa Training Area over the island of Hawai`i. Under the CAB scenario, the Army is projected to utilize this air corridor more frequently. This would not represent a significant impact to airspace resources, however, as it would represent an increase in existing activity and would not interfere with current designated aviation traffic or air-space uses.

Other recent and projected future uses of airspace will occur from employing the use of UAVs. UAV flights primarily would be conducted within previously designated restricted areas. For UAV flights that could not be conducted entirely within restricted areas, operations would occur in accordance with well-defined FAA procedures for remotely operated aircraft. These procedures include approval of the UAV flights by the FAA regional office in Honolulu at least 60 days in advance. In addition, increased use of C-17 aircraft from Hickam AFB will be experienced throughout the region. Growth of the Marine Corps Base Hawaii may increase the use of helicopter overflights associated with the Marine Corps mission. Overall, increased use of airspace may occur during deployment and re-deployment of military forces located in Hawai`i.

The FAA is responsible for managing the airspace for commercial airliners and air carriers, general aviation, and government agencies, including the U.S. military. Although more use of different types of airspace may occur in Hawaii, no significant direct, indirect, or cumulative effects may occur as a result of military and commercial aviation operations.

Implementation of stationing scenarios and direct and indirect impacts to airspace resources would not overlap those of the reasonably foreseeable future actions in time or space for CS and CSS stationing scenarios. Without any overlap of impacts, cumulative effects are expected to be less than significant. Stationing of an aviation brigade in Hawai`i would contribute directly to impacts on use of airspace resources though its impacts, as previously discussed, could be mitigated to less than significant with proper coordination between the Army, FAA and state of Hawai`i.

Overall, in light of historic, on-going, and reasonably foreseeable future actions, the Army concludes that the cumulative impacts on air space would be less than significant under all stationing scenarios.

Cultural Resources

There would be potential cumulative impacts on cultural resources from planned and reasonably foreseeable future projects and from the construction and training the Army would implement under all stationing scenarios, with exception of the No Action Alternative. Public concerns include access to traditional areas and the potential destruction of cultural sites and landscapes from training. Historically residential, commercial, and military development throughout the state has destroyed or damaged cultural resource sites in the State of Hawai`i.

Military construction projects at Schofield Barracks Military Reservation or Wheeler Army Air Field could result in cumulative impacts to cultural resources including NRHP-eligible historic buildings, on military installations in Oahu. Construction impacts are also possible due to realignment of U.S. Marine Corps units from Okinawa, Japan to Marine Corps Base Hawaii and may combine with impacts from other military and non-military construction projects to contribute to cumulative impacts to archaeological resources on Oahu. Construction of housing from privatization is not anticipated to impact known resources as responsible environmental stewardship and planning is incorporated into design and build practices but impacts to as yet unidentified resources could still occur.

Local highway and transportation projects such as the light rail transit project in conjunction with construction of the Kapolei Parkway and other road and highway realignments could result in damage to archaeological resources throughout the region, despite best efforts by parties to comply with applicable laws protecting such resources.

Under the scenario of stationing an aviation brigade in Hawai`i, upgrade of the aviation gunnery range on the Island of Hawai`i and possible construction at Wheeler Army Airfield could also contribute to cumulative impacts on cultural resources when put into context with other range modernization projects and potential increased training use of PTA by other military services.

State and county development projects including construction of the new highway that will begin at central and west Hawai`i town of Waimea and continue to Kawaihae Harbor, and the Saddle Road realignment may also contribute to cumulative impacts to historic or archaeological resources.

There is also ongoing consultation with Native Hawaiian groups to avoid disturbance to properties of traditional, religious, or cultural significance and assure authorized access to sacred areas on Army controlled lands. No non-military undertakings are anticipated in these controlled areas. Implementation of the ICRMP would be beneficial to cultural resources because of the programs for identification, evaluation, and management of cultural resources. While the Army is not aware of any direct impacts that would result from the implementation of potential stationing scenarios to archaeological sites some may be discovered during the project development process. Construction projects to support the stationing of the 2/25th SBCT will have a projected significant impact on archaeological sites, traditional cultural properties, and historic buildings. Although specific actions proposed under SBCT can be mitigated on a case-by-case basis, the overall effect of increased training, reduced access, and continued development throughout Oahu and Hawai`i would be expected to be significant. Furthermore, the Army is considering resumption of live-fire activities at Makua Military Reservation or establishment of a live-fire facility at PTA to replace Makua Military Reservation. If Makua is selected then access to areas of traditional importance could be limited and impacts to cultural resources could occur. Given these actions will be taking place during an overlapping timeframe, in addition other actions discussed in this Cumulative Effects section, the Army assesses a significant cumulative impact for all stationing scenarios.

Noise

Steady development in the State of Hawai`i has continued to contribute to noise conditions experienced by residents. Urban and military development and operations associated with both produce noise from vehicles, aircraft, military training, and construction activities. Noise conditions near proposed activities associated with stationing scenarios discussed in this document are not likely to have substantively changed in recent years because activity levels for major noise sources have not grown or declined substantively. Noise effects are inherently localized because sound levels decrease relatively quickly with increasing distance from the source. Cumulative noise effects would occur when multiple projects affect the same geographic areas simultaneously or when sequential projects extend the duration of noise effects on a given area over a longer period of time.

Cumulative noise effects would stem primarily from temporary construction activities. Substantial military construction activities (localized mainly to on-post receptors) involve construction of the new Brigade Complex, Warrior in Transition Facilities, and Soldier and Family support facilities. Housing project construction and RCI associated construction may also contribute to localized noise issues.

More persistent sources of noise stem from live-fire and maneuver training activities at Oahu Training Sites and at PTA on the island of Hawai`i. Helicopter and fixed-winged aircraft overflights for example, contribute the most to noise experienced by off-post receptors. If a CAB were stationed at WAAF; cumulative noise effects may be more significant. At the southern part of Oahu, more aircraft noise may be experienced from the increased use (take-off/landing) of C-17 Galaxy aircraft from Hickam AFB (Honolulu). In addition, growth of forces supporting the Marine Corps Base Hawaii is likely to have short- cumulative construction impacts for new facilities supporting the mission and Families; and long-term cumulative training noise.

The construction of a new live-fire range on Hawai`i to support company-live fire exercises and a mock airfield to support Air Force bombing training at PTA would add temporary noise effects and increase cumulative noise effects when used for training. Public development such as construction supporting the Light Rail and Honolulu Transit projects would likely have temporary noise effects over a large construction area; whereas construction noise generated from the Oahu Arts Center may be more localized and is not likely to take as long to complete (shorter construction period). In summary, project-related activities will not reduce noise levels at the affected installations, but rather continue to contribute to an already significant level of noise at some on-post and off-post receptors. Therefore, the cumulative noise effects would be significant under all stationing scenarios.

Soil Erosion

If the Army selects any of the stationing scenarios resulting in the stationing of additional Soldiers in Hawaii it will contribute to cumulative impacts from soil erosion. The major influence on soil erosion in the area is the disturbance of soils, modification of slopes and drainage features, and loss or disturbance of vegetation due to agricultural conversion, military activities, fires, roads, and other development. While soil erosion and deposition is a naturally occurring phenomenon in any landscape, adverse impacts may occur when erosion rates are accelerated by human or natural disturbances.

Activities that disturb or remove vegetative cover are presently occurring or would occur in the reasonably foreseeable future, which would continue to result in greater soil erosion and loss than without these activities. Training activities associated with the 2/25th SBCT, joint training exercises, and minor increases in training associated with the proposed action would cumulatively result in soil damage at training sites on Oahu and Hawai`i. the proposed action associated with stationing scenarios training on Hawaii is anticipated to result in only minor increases in training, with the exception of the CAB scenario, which may result in more significant impacts. Areas with well-developed (deep) soils have the potential to be revegetated and stabilized; however, areas with newly formed soils or shallow soil profiles may not be able to recover from soil erosion or soil loss impacts. In areas of the PTA where soils can be thin and fragile, the effects of soil loss may be irreversible. Maintaining a persistent vegetative cover in areas of intensive use or development would not be possible because of the nature of the proposed use. Under stationing scenarios involving Combat Support Soldiers, the direct impacts and cumulative addition to adverse soils impacts in Hawai`i would be projected to be limited, but still significant given all of the actions taking place in Hawai`i and at PTA. If the Army chooses to station an aviation brigade in Hawai`i, the increased aviation traffic of helicopters, particularly in drier local climates encountered at PTA, will increase the loss of soils from wind erosion.

In light of past, ongoing, and reasonably foreseeable future actions, the cumulative soil erosion impacts associated with all action alternatives could be locally significant. Combined with regional-level soil loss, project-related impacts are expected to be cumulatively significant. The implementation of BMPs, as required by federal and state regulations, will reduce the cumulative impact, but not to a less than significant level

Stationing of 1,000 Soldiers at Fort Shafter is not anticipated to have significant impacts to soil resources there. The installation generally serves an administrative and Command and Control function. Although some excavation and/or demolition would occur, when considered in the context of recent infrastructure changes that occurred under modularity, soil function or surfaces would not significantly be disrupted.

Non-military projects that would have the greatest impacts to soils throughout Hawai`i include those that include new building construction. The establishment of the residential development at Koa Ridge (between Pearl City and Mililani) will impact 763 acres and include 3,000-4,500 homes with infrastructure. During the initial construction phase, significant excavation would occur for the preparation of the building site and the installation of supporting infrastructure (including walkways, parking lots, and utilities). Soil loss may occur from the removal of soil during excavation, increased sedimentation during rainfall events, and wind erosion while the soil is exposed and unvegetated. In addition, new road and railway construction in the region (Kapolei Parkway, North-South Road, and light rail transit system) will contribute to the cumulative impacts to soil. Substantial cut/fill and grading is typically required to prepare the area for the installation of either roadways or railways. Although these actions are geographically isolated, the result would be a cumulative loss of top soil that would otherwise sustain native plant and animal communities.

Although prescribed burns would initially negatively impact soils, due to the loss of protection from vegetative cover, there would be a positive impact from the return of nutrients to the soil from the burned vegetation. Potential risks from the anticipated annual or semi-annual prescribed burns that would be conducted at DMR, MMR, and PTA would be minimized by following BMPs and close coordination with USFWS, USFS, State Department of Health (Clean Air Branch), State DNLR-Division of Forestry and Wildlife, Federal Fire Department, Honolulu Fire Department, Hickam Fire Department, and the National Weather Service.

Seismic or volcanic eruption hazards could result in cumulative effects if, for example, evacuation of personnel or treatment of casualties were to overwhelm the capacity of the available infrastructure. The most likely site for severe seismic or volcanic impacts to occur is at PTA, where the seismic and volcanic hazards are greatest. The Army is expected to have internal capacity to evacuate its personnel and to support civilian emergency response efforts in a seismic or volcanic emergency.

Biological Resources

When analyzing past, present and reasonably foreseeable future actions, the cumulative impact of implementing any of the stationing scenarios in Hawai`i will be significant. Actions which will be taken to support the stationing of the 2/25th SBCT will result in significant biological impacts in a timeframe which would overlap with the construction of projects and training that would take place to implement growth of the Army needed to support Pacific Theater Operations. Some of the projects identified as contributing to cumulative impacts would impact biological resources.

Habitat at SBMR and Oahu Training Sites, for the most part, is either already developed or disturbed natural and introduced landscapes. Activities limited to this area would mostly affect nonnative species adapted to stressed or nonnative environments. Other projects would have detrimental affects on vegetation in their vicinity, and consequently on the species that have been supported by these habitats. Potential projects associated with the proposed action at SBMR include cantonment construction at South Range (previously used for pineapple agriculture), demolition and minor construction at SBMR, and infrastructure that may support a CAB at WAAF. In addition, ongoing or planned projects in the cantonment area are generally associated with maintenance or modernization of aging facilities. Few new projects are planned for SBMR. Some of these include construction of a Brigade Complex and construction of a centralized vehicle wash facility. Construction of a Brigade Complex will centralize command and administrative functions at SBMR; and the development and construction of a central vehicle wash facility will assist in the prevention of military vehicles transporting nonnative plants (seeds) to and from the installation facility. Because the South Range area (where much of the construction is planned) primarily supports non-native species, the cumulative impacts to resources at SBMR is anticipated to be less than significant.

There may be an increase in the number of nonnative species resulting from the implementation of stationing scenarios and recent Army actions. Construction and increased use of roads would introduce additional nonnative species and further spread those that already occur on O'ahu and the Island of Hawai`i. The disturbance caused by construction and demolition and the increased use of improved roads would leave the surrounding habitats vulnerable to nonnative species that can thrive in conditions where native species cannot. Mitigation and conservation measures associated with the Army's proposed actions would limit the spread of nonnative species by washing construction and military vehicles equipment incoming to Oahu and the island of Hawai`i; however, the overall cumulative impact from the spread of non-native species from other proposed projects in the area could be significant.

Alternatives, particularly if an aviation brigade were selected for stationing on Oahu, may contribute to cumulative effects to threatened, endangered, and special status species from habitat loss, erosion and runoff, wildfire, and introduction of non-native species due to training activities mainly on the island of Hawai`i. The cumulative impact on sensitive species that would result from habitat loss and degradation would be significant.

There would be an expected increase in the potential for wildfire as a result of new units stationed in Hawai`i. The Army has developed and is implementing an Integrated Wildfire Management Plan (IWFMP) for all locations on the Islands of O'ahu and Hawai`i to prevent, minimize, and control fires. Implementation of the IWFMP will reduce the potential impacts involving wildfires. However, since there is an increased risk of wildfire as a result of additional live-fire activities on Oahu, the result could be an irretrievable loss of individuals of sensitive species. Furthermore, the Army is considering resumption of live-fire activities at Makua Military Reservation or establishment of a live-fire facility at PTA to replace Makua Military Reservation. If Makua is selected potential risk from fire to biological resources could increase. The Army has made a conservative determination that although minimization practices will considerably reduce wildfire risk, the impacts may not be reduced to a less than significant level. In light of historic, ongoing, and reasonably foreseeable future actions, the cumulative impacts involving wildfires are expected to be significant.

The cumulative noise impacts to wildlife from training may be significant. Although live-fire training requirements associated with the CS and CSS scenarios would result in an overall relatively minor increase in training at Oahu, when considered among live-fire training

requirements for units currently stationed there the net effect is anticipated to be significant. Although no new weapons systems would be introduced as a result of any of the stationing scenarios analyzed in this SPEIS, the cumulative effects would be similar to the cumulative effects of training noise analyzed in the FEIS for stationing the 2/25th SBCT.

The cumulative noise and visual effects on marine wildlife would be minor. The implementation of stationing scenarios is not anticipated to increase shipping traffic between islands, as CS CSS unit stationing is not projected to increase requirements for increased frequency of combat training rotations at PTA nor the amount of sea shipping transport between islands. The relatively sparse distribution of marine mammals in the portion of the area that abuts the coastline and the seasonality of many species in the project area combine to make the probability of substantive effects on marine mammals extremely low and not adverse. Stationing proposals are not expected to result in a significant cumulative effect on marine wildlife.

Private and public development of land throughout the state continues to degrade native species habitat, however, habitats throughout the state continue to support common and sensitive species of plants and wildlife. The spread of invasive plant species as a result of spread through development and construction could cause landscape changes and thereby modify habitats important to sensitive species. Notable private construction projects that may present new impacts to native species include residential development on 763 acres at Koa Ridge between Pearl City and Mililani (3,000-4,500 homes with infrastructure), and 901 homes and infrastructure on 143 acres at Ocean Point. Large-scale transit projects in and around Honolulu may also cause damage or destruction to native plant or animal species. Overall development (military, private, public) throughout Hawai`i is likely to continue to impact native species.

Implementation Plans developed for MMR, O'ahu training sites, and PTA are guides for conservation efforts focused on stabilizing endangered species that could be affected by military training. The intent of the installation INRMPs will be provide goals and objectives to properly manage and conserve wildlife species while supporting the various military missions assigned.

Overall, in light of historic, on-going, and reasonably foreseeable future actions, the Army concludes that the cumulative impacts on wetlands would be less than significant under all stationing scenarios.

Wetlands

Cantonment Construction at SBMR, South Range, WAAF and Fort Shafter could have minor impacts, though the Army will know more when specific projects are sited and designed. The Army would take all practicable measures to avoid impacts to wetlands during design and construction of all projects which would be implemented to support stationing of additional units as part of the proposed action. For the most part, construction would be planned in the existing cantonment area or on elevated, previously disturbed areas away from saturated soils or wetlands. These projects include the 8th TSC Motor Pool and Maintenance Shop and AAFES Shopping Center on Schofield Barracks, and the vehicle Maintenance Shop, 307th ITSB, HMR. The cumulative impacts involving wetlands are expected to be less than significant for all stationing scenarios.

Water Resources

Cumulative impacts to water resources could occur from the implementation of all alternatives where the Army is stationing additional Soldiers in Hawai`i. Cumulative impacts could occur wherever construction or training would take place to support stationing, within the watershed downstream of the installation boundaries (for surface water impacts), or the aquifer(s) downgradient of the installation boundaries (for groundwater impacts).

Nonpoint source pollution is recognized as one of the principal causes of degradation of surface water quality. Nonpoint source pollution would present a cumulative impact as pollutants may be introduced at many points throughout the ecosystem and from a variety of sources (such as from agriculture and stormwater runoff). Major potential contributors to nonpoint source pollution from stormwater runoff include construction activities, motorpool activities, and other large paved sources that may direct POL and other contaminants primarily to nearby waterbodies. Large areas contributing pollutants to stormwater include the cantonment areas of military installations, the City of Honolulu, and from large construction projects both military and non-military. Enforcing stormwater management regulations would help reduce pollutant loading to surface waters by requiring industrial facilities, municipalities, and military and other facilities to implement stormwater management practices to reduce their individual nonpoint source contributions of pollutants. Any contribution to pollutant loading from a source in the watershed of an impaired water body, if it is greater than natural background levels, can be regarded as substantive. The implementation of required Regulatory and Administrative mitigation measures the Army concludes that the impacts on surface water quality from nonpoint source pollutants would be significant but mitigable to less than significant level.

There would potentially be less than significant to significant but mitigable long-term cumulative impacts on surface water quality from suspended sediment resulting from training activities. Scenarios involving CS units (including headquarters units) are projected to have less direct and cumulative impact to surface waters, given the reduced off-road impact of their training activities and reduction in potential for sedimentation. Trace levels of explosives residues could be transported by runoff from training ranges to streams; however, the trace concentrations that have been found to be present in soils and that may be transported by runoff into stream waters are not expected to be much greater relative to background concentrations of natural organic compounds. Also, with the implementation of required BMPs under the Clean Water Act, and the other potentially cumulative actions, the Army concludes that the cumulative impacts on surface water quality from contaminated sediment suspension would be significant but mitigable to less than significant for all stationing scenarios.

The soil loss from stationing scenarios would not be expected to add substantially to the overall trend of sedimentation resulting from erosion. All construction projects that involve disturbance of more than 1 acre of land would be required to comply with stringent stormwater pollution prevention requirements. The implementation of these BMPs would also minimize the effects of chemical contaminant loading could also contribute to cumulative impacts on stream water quality. These measures would collectively be expected to mitigate potential watershed impairment impacts to less than significant levels.

Stationing scenarios are not expected to contribute greatly to a cumulative increase in the potential for flooding. Impacts from construction projects are not expected to decrease appreciably the amount of stormwater runoff retained by soils in the high-intensity short-duration storms that cause most flooding in Hawaiian watersheds. Additionally, supporting stormwater

management infrastructure would be installed as part of construction projects and would help properly manage expected increased runoff.

The proposed modification of Kawaihae Deep Draft Harbor would cause a temporary increase in sedimentation loading in the Harbor, during the dredging phase. Impacts from this project are expected to be temporarily significant, but short in duration and non-persistent.

The Army continues to address potential groundwater contaminants resulting from past practices through its Installation Restoration Program. Infiltrating surface water containing nonpoint source pollutants is not likely to have a great impact on groundwater quality because the pollutants are typically highly dilute and tend to be adsorbed or biodegraded during infiltration through soils. Spills and other accidental releases may occur from time to time and could have greater local impacts on groundwater quality. Standard operating procedures are in place to reduce the potential and impacts of accidental spills and releases.

Stationing alternatives would increase the number of Army personnel and their Families and this would increase water demand. In addition, operating certain new facilities could increase water use. However, a new centralized wash facility is planned for FY11 would use recycled water; therefore, it is possible that water use could go down for vehicle washing once the new facility becomes available. These increases are not expected to be significant with respect to the overall demand for water in the hydrologic units in which the stationing of additional Soldiers and their Families would occur.

Overall, in light of historic, on-going, and reasonably foreseeable future actions, the Army concludes that the cumulative impacts on water resources would be mitigable to less than significant under all stationing scenarios.

Facilities

Facilities availability and utilities capacity available to support stationing scenarios is not a significant concern for stationing additional Soldiers at SBMR under all stationing scenarios, either cumulatively or directly. Facilities constraints would be a direct significant impact in stationing 1,000 additional Soldiers at Fort Shafter or those actions required to station an aviation brigade at WAAF. A number of other projects would contribute cumulative impacts in or near the range and cantonment projects, as well as live-fire and maneuver training, and would proceed as needed at the Army installations. No cumulative effects are anticipated from construction in conjunction with stationing the 2/25th SBCT. Because the 2/25th had already been stationed in Hawai`i, no new cantonment construction supporting the SBCT would be necessary. Although range construction and modernization projects supporting the 2/25th are ongoing, no new ranges are anticipated for any of the stationing scenarios evaluated in this SPEIS.

Other projects ongoing at SBMR include construction of the new Brigade Complex, Warrior in Transition facilities, and the expansion and construction of other facilities such as the whole barracks renewal program and a central wash facility. All mission essential military construction would occur on military land.

Planned and ongoing community construction and development occurs outside the boundary of military installations and therefore no cumulative impacts are anticipated when considering public and private construction in conjunction with military construction activities.

Cumulative impacts to facilities would be minor for stationing 1,000 additional CS or CSS Soldiers at SBMR, less than significant for 3,000 CS or CSS Soldiers at SBMR and significant for stationing of an aviation brigade with impacts at WAAF and 1,000 additional Soldiers at Fort Shafter.

Energy

Stationing scenarios are expected to result in less than significant impacts to regional energy demand. Competition for energy resources and capacity is anticipated to continue to increase. This is a direct and cumulative result of population growth on Oahu. Residential development will continue throughout the state. Although overall beneficial effects may occur from the construction of a light rail transit project, because it runs on electricity operation of the light rail system will place added demand on power generation facilities. In addition, as the tourism industry grows (evidenced through the expansion of resort facilities such as Turtle Bay) energy demand will increase.

A number of military projects would contribute to cumulative impacts in or near the cantonment projects. These include barracks construction and renovation programs, operation of the WBR Brigade Complex at SBMR, and construction of Family support facilities such as a Child Development Center and Soldier and Family Readiness Center. Impacts to energy use and costs could be significant but continued implementation of energy conservation measures would reduce these impacts to less than significant. Cumulative impacts to energy and energy demand from stationing scenarios are anticipated to be less than significant.

Land Use Conflict and Compatibility (including Recreational Activities)

Implementation stationing scenarios may result in land use conflicts in the South Range area and may further restrict recreational uses due to an increase in training. Recent action by the Army as part of the stationing of the 2/25th SBCT has led to development and loss of agricultural land. Ongoing loss of agricultural land would continue because of regional development in Hawai`i, and agricultural land would be lost permanently through construction at South Range. Land easement for the Dillingham Trail proposed by the Army in connection with SBCT stationing, in combination with past land acquisition actions by the Army, would contribute to a statewide decline in farmland. Conversely, however, numerous cantonment construction projects, for example the Brigade Complex, the Whole Barracks Renewal, and the Residential Community Initiative will not affect recreational or agricultural land use. These projects are located on already occupied and disturbed land.

Other regional projects that may affect land use changes in Hawai`i include the potential growth of the Marine Corps Base Hawaii may result in land use changes. In addition, land compatibility conflicts may arise due to increased noise from Marine Corps and Air Force training activities.

Non-military projects on Oahu that may involve land use changes and loss of agriculture include the development of 763 acres for residential communities (up to 4,000 new homes) and related infrastructure. That project would occur between Koa Ridge and Pearl City. As the population in Hawai`i increases more land will be required to accommodate development. The State of Hawai`i, however, has begun addressing land use concerns through the Central Oahu Sustainable Communities Plan and the Waianae Sustainable Communities Plan; both of which

focus on 20-25 year development strategies that account for more sustainable planning practices, open space, responsible management of natural and cultural resources, and preserving coastal and in-land resources. These initiatives are anticipated to have a beneficial effect to land use planning and practices.

On the island of Hawai`i, range construction and modernization projects at PTA, coupled with an increase in live-fire and maneuver training may continue to restrict recreational use in some areas, but is not likely to change land use designations. Use of the recently acquired Keamuku Parcel is anticipated for military training 40 to 60 times per year. General military training within these areas is not expected to affect off-post land uses because activities would be confined to within the training area boundaries.

Other military projects that involve PTA include construction of the mock airfield for Air Force bombing training located in the permanent impact area at PTA. This project is not anticipated to affect existing adjacent land uses.

Direct impacts from stationing scenarios may not result in significant impacts on the conversion of agricultural land. In the State of Hawai`i, there is an ongoing loss of agricultural land due to development. In light of historic, ongoing, and reasonably foreseeable future actions, the Army concludes that the overall cumulative impacts could be significant.

Hazardous Materials and Hazardous Waste

Under stationing scenarios for new units, the primary cumulative impacts to human health and safety would be those associated with ammunition and UXO. Training on existing ranges could further contaminate ranges with UXO, lead, or explosives munitions constituents. Only a minor increase in live-fire activities on small arms ranges is anticipated to occur as a result of the stationing scenarios analyzed in this SPEIS. Given that ranges are designed for this use, this minor increase is not considered a direct significant impact; and no new range areas are being considered under these scenarios where UXO contamination would occur. Therefore no new hazards to personnel safety are anticipated. Although, because training would continue on range areas where UXO contamination occurs, and the tempo of training will increase slightly above training levels considered for existing units at SBMR and Oahu training sites, the added impact from range contamination hazards may be significant given the existing training tempo; however, these impacts may be mitigated through the use of range clearance activities and continued implementation of SOPs for personnel safety.

Specific regulations generally govern the use, storage, and disposal of hazardous materials and wastes. The U.S. Army Pamphlet 200-1 governs all aspects of managing hazardous materials and regulated waste by military or civilian personnel and on-post tenants and contractors at all Army facilities. The Army maintains site-specific spill prevention, control, and countermeasure (SPCC) plans and pollution prevention plans that regulate the storage and use of petroleum products and hazardous materials, respectively. Hazardous material and waste management continues to follow Army, federal, and state regulations in order to minimize potential impacts to human health or the environment. Following established guidelines for hazardous material waste management would mitigate increases in waste generation.

The additional training required with the stationing associated with a combat aviation brigade in Hawai`i may require expansion of the aviation gunnery range. The increase in training would continue to contaminate the range area with UXO, creating a safety risk to personnel. However,

the footprint for live-fire activities would be contained within the expanded range footprint; and the existence of a buffer zone around the range area could help to minimize the risk to human health; however, even with proper abatement and removal techniques under EPA and USAG-HI guidelines cumulative impacts could potentially be significant.

The increased use of private vehicles and military vehicles across the state, and the increase in USTs/ASTs may potentially result in fuel spills which could contaminate groundwater and surface water. The continued implementation of spill prevention, control, and countermeasure plans (40 C.F.R. 261) in conjunction with BMPs and proper monitoring and replacement of aging equipment would continue.

Construction projects outside of the installation boundary, such as from state/county and private construction on Oahu or Hawai`i, would contribute to the generation of hazardous materials such as PCBs; and demolition of aging facilities, may involve the disposal of asbestos and lead-based paint. Although a large number of demolition and construction projects may result in the accumulation of hazardous materials; using proper abatement, storage, and disposal methods in accordance with state and federal guidelines is anticipated to mitigate impacts.

Continued use of private and military seafaring vessels, and use of the superferry may potentially introduce fuel spills or leaks in areas surrounding Hawai`i.

Significant impacts may arise from excavation or exposure to IRP sites throughout Hawai`i, or from pesticides during the aerial broadcast spraying of range areas. With proper abatement procedures and conformance with existing regulations, these impacts would not be significant. All other issues are considered less than significant, would have no impacts, or the potential impacts would be handled or addressed in accordance with existing BMPs and SOPs, thus introducing no new impacts on the public or environment. Under stationing scenarios analyzed in this document, cumulative impacts associated with hazardous materials and wastes could be significant but mitigable with continued implementation of USAG-HI BMPs and SOPs.

Traffic and Transportation

All scenarios would contribute to the increase in volume of civilian and off duty traffic generated by the stationing of new personnel and their dependents at locations in Hawai`i. Military traffic on the state and county road systems would be consistent with historic trends, and much of the traffic would use military vehicle trails rather than public roadways. The frequency of training rotations would not change under all stationing scenarios analyzed in the SPEIS.

Construction equipment and vehicles associated with numerous military projects throughout SBMR may temporarily increase pressure on commuter and lunch-time traffic conditions. Planned projects include the Brigade Complex, Warrior in Transition facilities, and completion of the Whole Barracks Renewal Program, would temporarily place greater demand on existing transportation infrastructure. Conversely, the construction of the Macomb and Funston Round-abouts, barracks parking facility, new parking areas, and consolidated motorpools at both Fort Shafter and SBMR would have long-term beneficial effects to traffic conditions on-post.

Traffic impacts associated with existing military vehicle trail crossings of public roadways would be minimal because the convoy traffic utilizes proper intervals between groups of vehicles, avoids peak traffic periods, and generally yields to public traffic and traffic-related impacts associated with construction would be minimal. Traffic along the roadways in the area is

expected to increase because of the projected population growth and development on both Oahu and Hawai`i; however, stationing scenarios result in significant cumulative impacts on off-post traffic when considered cumulatively with other actions and the current traffic conditions on the island of Oahu. These significant effects may be mitigable through planned roadway and transit improvements throughout Hawai`i. Some pressure on traffic conditions however, may be relieved upon completion of the light rail transit project planned to follow Farrington Highway, Kamehameha, and Nimitz Highways. An increase in use of public transportation would decrease the overall amount of vehicles traveling on highways in those areas. In addition, construction of the North-South Road, Kapolei Highway, and the Waianae Coast Route may also relieve traffic pressure on heavily traveled routes.

Socioeconomics, Environmental Justice, and Protection of Children

Long-term direct and indirect beneficial cumulative effects are expected because of increased sales volume and employment in the area under all stationing scenarios. Additional increases in sales, employment, and income could also occur from other foreseeable actions. The beneficial economic effects (i.e., increased spending, employment, and income) of these actions are expected to last for the duration any construction projects. A lasting economic benefit will result from increased expenditure of discretionary income of Soldiers and their Families.

Collectively, the cumulative actions would not substantially alter the current and projected trends for population, employment, income, or housing. However, cumulative impacts would be significant but mitigable to less than significant for the economy (business sales volume). The Whole Barracks Renewal Program will replace and upgrade 60+ year old unaccompanied Soldier housing, providing more desirable on-post accommodations, and potentially reduce the competition for, and stress on, off-post housing. Likewise, the Residential Communities Initiative (RCI), or Privatization of Army Housing, affects an estimated 8000 Family housing units and will eliminate inadequate housing while improving neighborhoods and communities. This project also has the potential of reducing competition for off-post housing by providing more desirable accommodations on-post.

Schools would also be impacted throughout Oahu for stationing actions that may occur at SBMR or Fort Shafter. Data available for the 2007-2008 school year suggests most schools operating on Oahu have excess capacity to accommodate new students. Past Army stationing actions are already considered in these estimates provided by the State of Hawai`i Department of Education. An increase in enrollment from Army Growth could impact some schools negatively; however, the fact that many Soldiers and their Families live off-post in many different school districts serves to mitigate these impacts. Cumulative impacts may be more significant when considering potential growth collectively from Army actions, general civilian population growth, and potential expansion of the Marine Corps Base Hawaii footprint.

There would be no expected disproportionate impacts on low-income or minority populations. No adverse cumulative effects to the health and safety of children would be expected. To minimize potential safety risks, strict adherence to applicable safety regulations and procedures would continue. Construction and training activities under all alternatives would, for the most part, take place in areas that are off limits to the general public. Restricted areas would continue to be posted with signs, or enclosed by a fence.

There are several public initiatives that have the potential to significantly improve off-post, the cumulative effects of socioeconomics and quality of life. The Central Oahu Sustainable

Communities Plan, which includes the revitalization of the Waipahu and Wahiawa town centers, provides an opportunity for economic development while maintaining open and green space. Another initiative is the Waianae Sustainable Communities Plan, a 20 year land use plan that combines open spaces with light economic and commercial development to maintain and enhance that region's unique character.

Overall, in light of historic, on-going, and reasonably foreseeable future actions, the Army concludes that the cumulative impacts on socioeconomics could be significant and beneficial under all stationing scenarios.

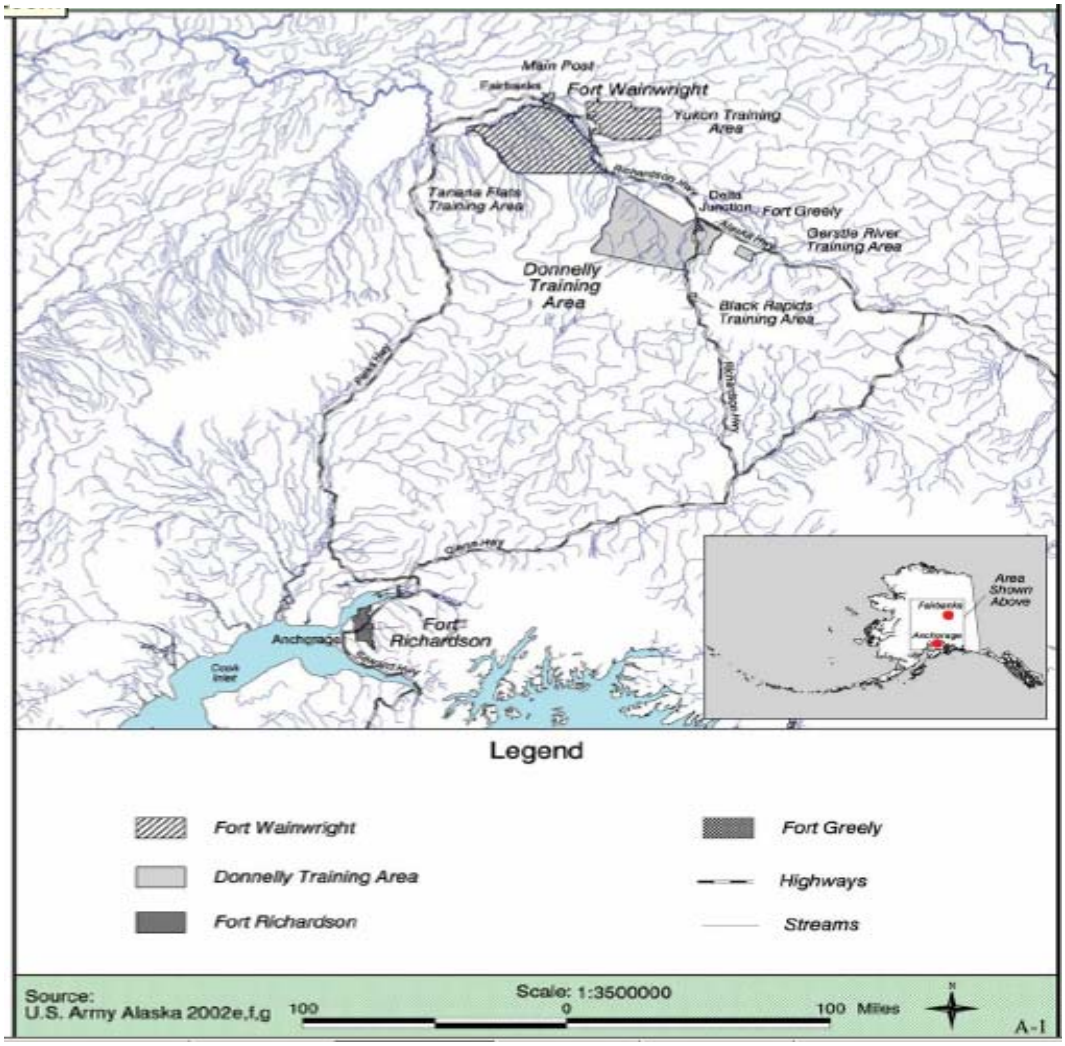
4.6 U.S. ARMY GARRISON, ALASKA

The U.S. Army Garrison, Alaska (USAG Alaska) is headquartered at Fort Richardson and consists of two Army posts (Fort Richardson and Fort Wainwright) capable of housing more than 1,000 additional permanent party and also several large training areas. USAG Alaska consists of over 1 million acres of Army training lands, and supports almost 12,000 Soldiers and 2,500 civilian employees. The USAG Alaska is in the process of transitioning to an early entry command post with the responsibility of establishing command and control of U.S. forces in a combat theater and setting the foundation of a parent operational command post that will assume command and control (USAG Alaska Web Site, n.d., 2008). Current Soldier authorizations in Alaska are listed below in the chart below.

Figure 4.6-1 on the next page depicts the locations of the two installations and their designated training areas being analyzed for Army Growth stationing scenarios in this document.

Dec 07 4th Qtr Calendar Year 2007	Military	Dependents	Civil Service	NAF	Total
ARMY					
Ft. Wainwright	6,341	7,400	899	358	14,998
Ft. Richardson	5,677	7,722	842	321	14,562
Total	12,018	15,122	1,741	679	29,560

Figure 4.6-1. General locations for Fort Richardson, Fort Wainwright, Donnelly Training Area, Tanana Flats Training Area, and Yukon Training Area,



As discussed in Chapter 4.0 (Methodologies) the Army is evaluating several stationing scenarios in USAG Alaska that could result in impacts. These scenarios include the stationing of an additional 1,000 combat support or service support troops; 3,000 combat support or service support troops; or an additional fires brigade. Each of these stationing scenarios could take place at Fort Richardson or Fort Wainwright. Each of these stationing scenarios could result in environmental impacts from cantonment area construction, training range and infrastructure construction, firing range use, and maneuver training. A description of activities that would be implemented as part of each scenario is provided below:

4.7 Fort Richardson, Alaska

Fort Richardson (FRA) Summary

This section provides an overview of the actions the Army would take to implement the Proposed Action under each stationing scenario at FRA. The Army would undertake four primary types of actions to support new unit stationing. These actions include cantonment construction, training infrastructure construction, live fire training, and maneuver training activities. The discussion of environmental consequences to each resource discusses the impacts of each type of activity and assesses the combined impact of these activities on a given resource. Table 4.7-1 below lists the environmental impacts which are anticipated to occur if the Army were to implement various different unit stationing assignments to FRA to support the growth of the Army needed to support operations in the Pacific Theater. Stationing scenarios possible at FRA include the stationing of 1,000 additional Combat Support (CS) or Combat Service Support Soldiers (CSS), 3,000 additional CS or CSS Soldiers, or a new Fires Brigade. A summary of the symbology which discusses intensity of anticipated environmental impacts is provided below:

Description of VEC Impact Ratings

○	No impact, minimal or minor impacts are anticipated
⊙	Less than Significant
⊘	Significant but Mitigable
⊗	Significant Adverse impacts
+	Beneficial Impact
N/A	Not Applicable

Table 4.7-1. Fort Richardson VEC Ratings

Fort Richardson, Alaska						
VEC	Combat Service Support (1,000 Soldiers)	Combat Support (1,000 Soldiers)	Fires Brigade (1,600 Soldiers)	Combat Service Support (3,000 Soldiers)	Combat Support (3,000 Soldiers)	No Action Alternative
Air Quality	⊙	⊙	⊙	⊙	⊙	⊙
Air Space	○	○	○	○	○	○
Cultural	⊘	⊘	⊙	⊘	⊘	⊘
Noise	⊙	⊙	⊙	⊙	⊙	⊙
Soil Erosion Effects	⊙	⊙	⊙	⊙	⊙	⊙
Biological Resources	⊘	⊘	⊘	⊘	⊘	⊙
Wetlands	○	○	○	○	○	○
Water Resources	⊙	⊙	⊙	⊙	⊙	⊙
Facilities	⊘	⊘	⊘	⊗	⊗	⊙
Energy Demand/ Generation	○	○	○	○	○	○
Land Use Conflict/ Compatibility	⊙	⊙	⊙	⊘	⊘	⊙
Hazardous Materials/ Hazardous Waste	⊙	⊙	⊙	⊘	⊘	⊙
Traffic and Transportation	⊙	⊙	⊙	⊗	⊗	⊙
Socioeconomics	⊙	⊙	⊙	⊘	⊘	⊙

Fort Richardson Introduction

Fort Richardson, Alaska (FRA) consists of 61,376 acres of land and is located in south-central Alaska adjacent to the cities of Anchorage, Eagle River, and nearby Elmendorf Air Force Base (AFB) (Figure 4.7-1) (USAG Alaska, 2004). The installation is home to the 4th Brigade combat Team (Airborne), 25th Infantry Division; the 17th Combat Sustainment Support Battalion; 95th Chemical Company; 716th Ordnance Detachment; 864th Engineer Combat Battalion (Heavy); and the Headquarters for the 59th Signal Battalion among other units.

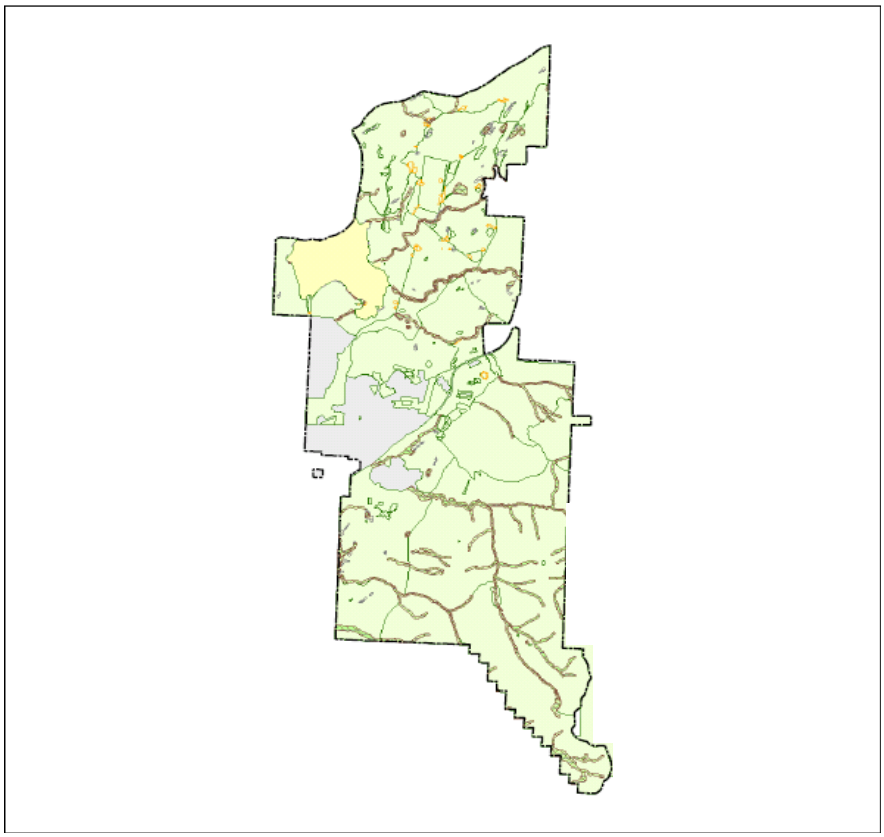


Figure 4.7-1. Fort Richardson

4.7.1 Fort Richardson Proposed Actions to Support Army Stationing Scenarios

Scenario 1: Growth by 1,000 Additional Combat Service Support Soldiers

Cantonment Construction: As part of this alternative, additional Garrison infrastructure such as company operations facilities (COFs), Brigade and Battalion Headquarters buildings, storage buildings, motor pools for military vehicle parking, and other maintenance facilities would be sited on Fort Richardson. Growth by 1,000 additional Soldiers would drive requirements to demolish some existing facilities and replace them with the necessary facilities in the existing cantonment area. Cantonment construction at Fort Richardson will not require establishment of additional supporting facilities for wastewater transport, water lines, or power as existing facilities would be able to support requirements under this stationing scenario. In addition to these cantonment construction requirements, drainage projects would be sited to channel water during storm events.

Table 4.7-2 lists the space and size requirements for key facilities associated with the growth of 1,000 CSS Soldiers.

Table 4.7-2. Estimated Facilities Requirements at Ft. Richardson for Scenario 1

Garrison Facilities	Requirement
Fuel Storage (gallons)	30,000
Brigade Offices (sf)	40,000
Battalion Offices (sf)	18,000
Company Offices (sf)	12,000
Unit Storage Buildings (sf)	17,000
Barracks Space (sf)	38,800
Military Vehicle Parking (sf)	400,000
Vehicle Maintenance Shop (sf)	30,00

Range Construction: To accommodate the stationing of new Soldiers, Fort Richardson will need to upgrade several training range facilities to meet doctrinal training requirements of 1,000 additional combat support Soldiers. These Soldiers will primarily need to engage in basic marksmanship tasks and qualifications with individual and crew served weapons. As part of this scenario several ranges would be expanded to handle additional training requirements generated by this stationing scenario. No new ranges would be built but the Modified Record Fire Range, the Known Distance Range, and the Combat Pistol range would be expanded through the addition of more firing lanes to accommodate a greater number of Soldiers. Each of these ranges would be expanded at the location of the existing ranges which are currently located to the East of the Fort Richardson cantonment area. Figure 4.7-3 in scenario 4 depicts the current location of each of the ranges below. The scope of the necessary expansion and purpose of each range is described below:

Modified Record Fire Range (MRF): This range is used to train support unit Soldiers in basic marksmanship tasks. The range teaches Soldiers to quickly aim and engage stationary infantry targets. To implement the proposed action between 4 and 8 lanes would need to be added to this 16 lane range to expand its training capacity.

Known Distance Marksmanship Range (KD Range): This range is used to train Soldiers to identify and engage stationary and moving targets at a known distance. 10 – 25 additional lanes would be added to this 25 lane facility to expand the range capacity to a total of 35-50 firing lanes.

Combat Pistol Qualification Course (CPQC): This combat pistol range is used to train Soldiers to identify, engage, and defeat an array of targets using the 9mm, .38 caliber, or .45 caliber pistol. This project involves the extension of the 7 lane CPQC by 4 additional lanes for an upgraded range totaling 11 lanes to allow more capacity.

Live Fire Training: Training activities of CSS units would primarily involve weapons qualifications with individual (pistols, rifle and light machine gun) weapons and crew served weapons qualification with heavy machine guns. Firing activities would be conducted on existing qualification ranges on Fort Richardson. In comparison to the 4/25th IBCT and other units stationed at Fort Richardson, 1,000 additional CSS Soldiers would increase existing live

fire requirements on qualification ranges by 10-15%. There are no new impacts that would be anticipated from these activities, though there would be a slight increase in the volume of live-fire activities attributable to this unit stationing. Soils of new firing lanes constructed on existing ranges as part of this scenario would be exposed to lead munitions and soils contamination from live fire activities of these new units.

Maneuver Training: Units stationed under this scenario would not involve any appreciable increase in the amount and scale of maneuver training that takes place in Alaska. CSS units will support the maneuver training exercises of combat units; supporting their logistics and support requirements. Off-trail maneuver by these units would be limited, with major operations consisting of resupply, transport of equipment and command and control functions. A majority of maneuver operations would take place at Donnelly Training Area and other USAG Alaska maneuver areas. Much of this maneuver would occur on existing road and train infrastructure. Additional small unit maneuver support missions at the platoon level would be supported at Fort Richardson's existing maneuver sites. Off-road travel would be minimal and significant off-road maneuver requirements are not anticipated.

Scenario 2: Growth by 1,000 Additional Combat Support Soldiers

Cantonment Construction: No change from Scenario 1. Cantonment construction would take place in the existing cantonment area by demolition of unneeded facilities and replacement with required barracks, offices, motor pools and other facilities. No upgrades to power, sewage lines, or water lines would be required.

Range Construction: To accommodate the stationing of 1,000 new CS Soldiers, Fort Richardson will need to conduct the same firing range upgrades discussed in Scenario 1. These upgrades of existing ranges will allow Fort Richardson to properly meet the training range certification requirements of its Soldiers. In addition to the upgrades of the CPQC, KD and MRF ranges, an upgrade of the Multi-purpose Machine Gun range would be required under this stationing scenario. A description of the MPMG is provided below.

Multipurpose Machine Gun Range (MPMG): This range is designed to train Soldiers to engage stationary infantry and mobile vehicular targets with the full range of Army machine guns to include the M249, M60, M240, and .50 caliber machine guns. This range would be extended out to 1500m and upgraded with additional firing lanes to allow for sniper field fire and the qualification of additional machine gun crews.

Live Fire Training: Training activities of CS units would primarily involve many of the same weapons qualifications discussed under scenario 1, with individual (pistols, rifle and light machine gun) weapons and crew served weapons qualification with heavy machine guns. CS units would also be required to conduct certifications with MK-19 grenade machine gun systems and also demolitions in the case of combat engineering units. Firing activities would be conducted on existing qualification ranges on Fort Richardson. In comparison to the 4/25th IBCT and other units stationed at Fort Richardson, 1,000 additional CS Soldiers would increase existing live fire requirements on qualification ranges by approximately 15-20%. Soils of new firing lanes constructed on existing ranges as part of this scenario would be exposed to lead munitions and soils contamination from live fire activities of these new units.

Maneuver Training: CS units stationed under this scenario would participate in small unit (platoon and below) maneuvers at Fort Richardson, AK. These units would support combat

units during Combined Arms Live Fire Exercises (CALFEX) and maneuver training rotations at Donnelly Training Area and other USAG Alaska maneuver areas. Engineer and military police units under this stationing scenario would be anticipated to execute a majority of their small unit maneuver training at Fort Richardson. These units would support large-scale integrated maneuver training rotations of combat units within the boundaries of USAG Alaska training areas. The total increase in maneuver impact would not be anticipated to be more than 10-20% over what currently takes place on Fort Richardson's small unit maneuver training areas. While CS units are supporting combat units and executing small unit maneuvers, both on and off-road maneuver would be required. In some events, shallow excavation activities may also be required as part of standard operations.

Scenario 3: Growth by 3,000 Additional Combat Service Support Soldiers

Cantonment Construction: As part of this alternative, additional Garrison infrastructure such as company operations facilities (COFs), Brigade and Battalion Headquarters buildings, storage buildings, motor pools for military vehicle parking, and other maintenance facilities would be sited on Fort Richardson. Growth by 3,000 additional Soldiers would increase the current Soldier population by more than 50 percent. In addition, this increase would be accompanied by a large increase in the Family dependent population of Fort Richardson, which would also increase by more than 50 percent. Such an increase would drive requirements to expand the cantonment area outside the current footprint of the Fort Richardson cantonment area. Facilities could not be sited in the current cantonment area and power, sewage lines, water lines and roads would need to be extended to the expansion location for the new cantonment area. This area would consist of between 100-150 acres of land outside of the existing cantonment area.

Table 4.7-3 lists the space and size requirements for key facilities associated with the growth of 3,000 CSS Soldiers.

Table 4.7-3. Fort Richardson Facilities Requirements for Scenario 3 and 4

Garrison Facilities	Requirement
Fuel Storage (gallons)	90,000
Brigade Offices (sf)	40,000
Battalion Offices (sf)	54,000
Company Offices (sf)	300,000
Unit Storage Buildings (sf)	40,000
Barracks Space (sf)	300,000
Military Vehicle Parking (sf)	1,200,000
Vehicle Maintenance Shop (sf)	90,00

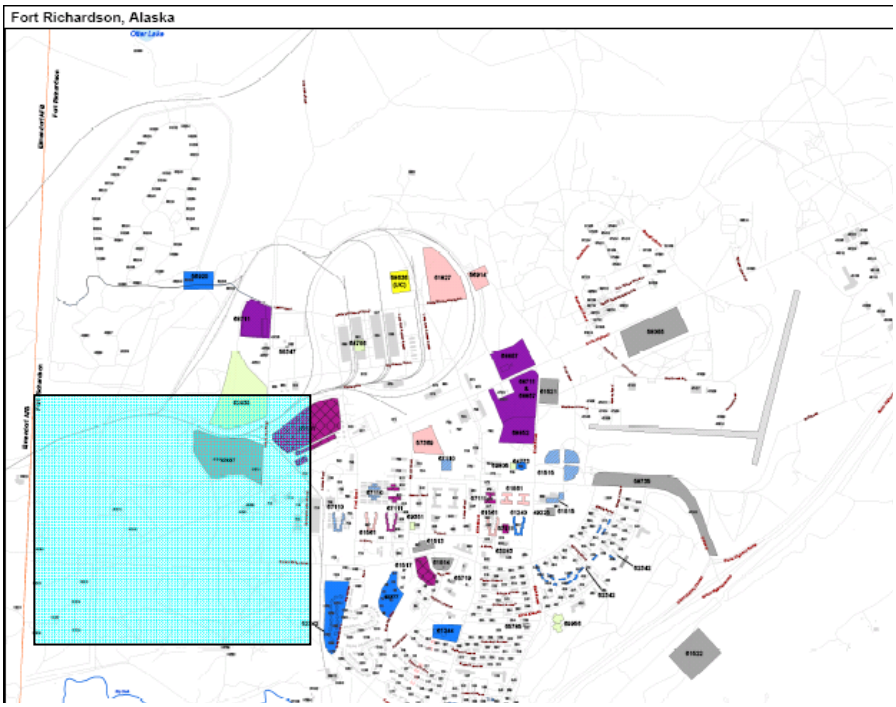


Figure 4.7-2. Construction Location for Additional Cantonment Facilities for Scenario 3-5

Range Construction: To accommodate the stationing of 3,000 new CSS Soldiers, Fort Richardson will need to upgrade approximately three training ranges. Upgrades will be required to meet doctrinal training requirements of 3,000 additional combat support Soldiers. These Soldiers will primarily need to engage in basic marksmanship tasks and qualifications with individual and crew served weapons. As part of this scenario no new ranges would be built but the Modified Record Fire Range, the Known Distance Range, and the Combat Pistol Qualification range would be expanded through the addition of more firing lanes to accommodate a greater number of Soldiers. Each of these ranges would be expanded at the location of the existing ranges which are currently located to the East of the Fort Richardson cantonment area. Figure 4.7-4 depicts the current location of each of the ranges below. The scope of the necessary expansion and purpose of each range is described below:

Modified Record Fire Range (MRF): This range is used to train support unit Soldiers in basic marksmanship tasks. The range teaches Soldiers to quickly aim and engage stationary infantry targets. To implement the proposed action between 8 and 12 lanes would need to be added to this 16 lane range to expand its training capacity.

Known Distance Marksmanship Range (KD Range): This range is used to train Soldiers to identify and engage stationary and moving targets at a known distance. 25 additional lanes would be added to this 25 lane facility to expand the range capacity to a total of 50 firing lanes.

Combat Pistol Qualification Course (CPQC): This combat pistol range is used to train Soldiers to identify, engage, and defeat an array of targets using the 9mm, .38 caliber, or .45 caliber pistol. This project involves the extension of the 7 lane CPQC by 8 additional lanes for an upgraded range totaling 15 lanes to allow more capacity.

Live Fire Training: Training activities of CSS units would primarily involve weapons qualifications with individual (pistols, rifle and light machine gun) weapons and crew served weapons qualification with heavy machine guns. Firing activities would be conducted on existing qualification ranges on Fort Richardson. In comparison to the 4/25th IBCT and other units stationed at Fort Richardson, 3,000 additional CSS Soldiers would increase existing live fire requirements on qualification ranges by 30-45%. Soils of new firing lanes constructed to expand existing ranges as part of this scenario would be exposed to lead munitions and soils contamination from live fire activities of these new units.

Maneuver Training: CSS units will support the maneuver training exercises of combat units; supporting their logistics and support requirements. Off-trail maneuver by these units would be limited, with major operations consisting of resupply, transport of equipment and command and control functions. A majority of maneuver operations would take place at Donnelly Training Area and other USAG Alaska maneuver areas. Much of this maneuver would occur on existing road and trail infrastructure. Small unit maneuver support missions would be supported at Fort Richardson's existing maneuver sites. Off-road travel would be minimal and significant off-road maneuver requirements are not anticipated.

Scenario 4: Growth by 3,000 Additional Combat Support Soldiers

Cantonment Construction: Same proposed action as scenario 3.

Range Construction: All range upgrades discussed in Scenario 3 would take place. In addition, the MPMG (machine gun) range would be expanded to accommodate additional firing activities and its length would be extended out to 1500 meters to allow sniper range qualification. Range locations are provided in Figure 4.7-3 below.

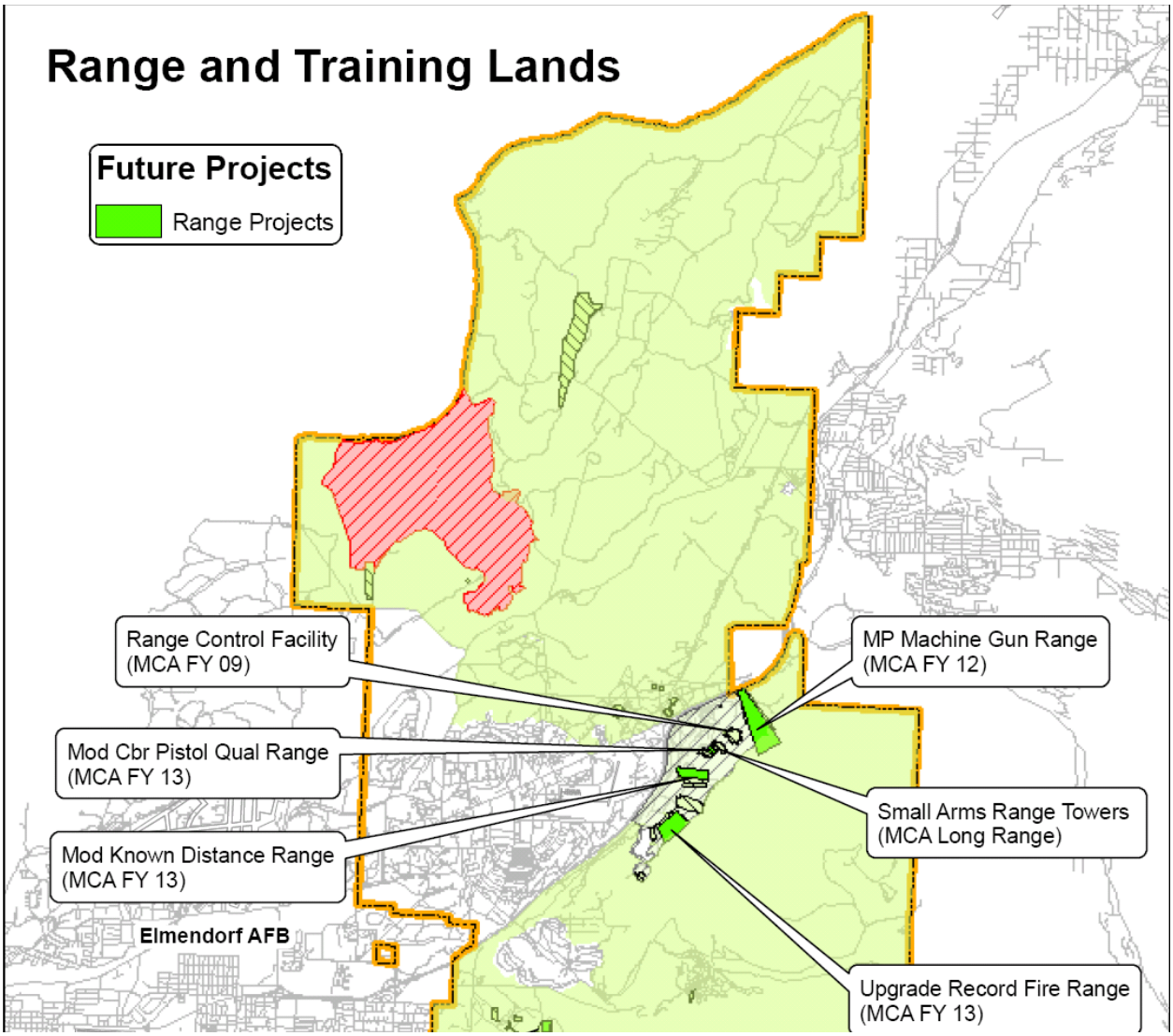


Figure 4.7-3. Proposed Range Upgrade Projects and Existing Range Locations

Live Fire Training: Training activities of CS units would primarily involve many of the same weapons qualifications discussed under scenario 3, with individual (pistols, rifle and light machine gun) weapons and crew served weapons qualification with heavy machine guns. CS units would also be required to conduct certifications with MK-19 grenade machine gun systems and also demolitions training and certification in the case of combat engineering units. Firing activities would be conducted on existing qualification ranges and upgraded ranges on Fort Richardson. In comparison to the 4/25th IBCT and other units stationed at Fort Richardson, 3,000 additional CS Soldiers would increase existing live fire requirements on qualification ranges by 45-60%. There are no new impacts that would be anticipated from these activities, though there would be a slight increase in the volume of live-fire activities attributable to this unit stationing. Soils of new firing lanes constructed to expand existing ranges as part of this scenario would be exposed to lead munitions and soils contamination from live fire activities of these new units.

Maneuver Training: CS units stationed under this scenario would participate in small unit (platoon and below) maneuvers at Fort Richardson, AK. These units would support combat units during Combined Arms Live Fire Exercises (CALFEX) and maneuver training rotations at Donnelly Training Area and other USAG Alaska maneuver areas. Engineer and military police units under this stationing scenario would be anticipated to execute a majority of their small unit maneuver training at Fort Richardson. These units would support large-scale integrated maneuver training rotations of combat units within the boundaries of USAG Alaska training areas. The total increase in maneuver impact would be anticipated to be 30-60% over what currently takes place on Fort Richardson's small unit maneuver training areas. While CS units are supporting combat units and executing small unit maneuvers, both on and off-road maneuver would be required. In some events, shallow excavation activities may also be required as part of standard operations.

Scenario 5: Growth by an additional Field Artillery (Fires) Brigade

Cantonment Construction: As part of this alternative, additional Garrison infrastructure such as company operations facilities (COFs), Brigade and Battalion Headquarters buildings, storage buildings, motor pools for military vehicle parking, and other maintenance facilities would be sited on Fort Richardson. The stationing of a Fires Brigade at Fort Richardson would involve the stationing of approximately 1,600 additional Soldiers which would increase the current Soldier population by more than 25%. In addition, this increase would be accompanied by a large increase in the Family dependent population of Fort Richardson, which would also increase by more than 25%. Administratively, the units of the Fires Brigade would need to be collocated to effectively coordinate training and command and control of its subordinate units. Such an increase would drive requirements to expand the cantonment area outside the current footprint of the Fort Richardson cantonment area. Facilities could not be sited in the current cantonment area and power, sewage lines, water lines and roads would need to be extended to the expansion location for the new cantonment area. This area would consist of between 75-120 acres of land to the east of the current cantonment area. The footprint would be sited in the same vicinity as depicted by figure 4.7-2 in scenario 3, though the overall cantonment expansion would be slightly more than half the size of what was proposed in scenario 3.

Table 4.7-4 listed the space and size requirements for key facilities associated with the stationing of a new Fires Brigade at Fort Richardson.

Table 4.7-4. Fort Richardson Facilities Requirements for Scenario 5

Garrison Facilities	Requirement
Fuel Storage (gallons)	50,000
Brigade Offices (sf)	40,000
Battalion Offices (sf)	36,000
Company Offices (sf)	150,000
Unit Storage Buildings (sf)	20,000
Barracks Space (sf)	150,000
Military Vehicle Parking (sf)	800,000
Vehicle Maintenance Shop (sf)	50,000

Range Construction: All range upgrades discussed in Scenario 3 would take place. In addition, the MPMG (machine gun) range would be expanded to accommodate additional firing activities and its length would be extended out to 1500 meters to allow sniper range qualification. Range locations are provided in Figure 4.7-4 below.

Live Fire Training: Live fire training activities of the Fires Brigade would primarily involve many of the same small-arms and crew served weapons qualifications discussed under scenario 3, with individual (pistols, rifle and light machine gun) weapons and crew served weapons qualification with heavy machine guns.. Firing activities would be conducted on existing qualification ranges and upgraded ranges on Fort Richardson. In comparison to the 4/25th IBCT and other units stationed at Fort Richardson, additional Fires Brigade Soldiers would increase existing live-fire requirements on qualification ranges by 25-40%. There are no new impacts that would be anticipated from small arms qualification and crew served weapons firing activities. Soils of new firing lanes constructed on existing ranges as part of this scenario would be exposed to lead munitions and soils contamination from live fire activities of these new units.

In addition to small arms qualifications, however, units of the Fires Brigade, including a battalion of 155 mm howitzer artillery pieces and Multiple Launch Rocket System (MLRS) Artillery would conduct firing activities into the impact area at Donnelly training area. Firing would take place from dozens of firing points to which artillery units would maneuver before firing into the impact area.

Maneuver Training: Fire Brigade units stationed under this scenario would participate in small unit (platoon and below) maneuvers at Fort Richardson, AK. These units would support combat units during Combined Arms Live Fire Exercises (CALFEX) and maneuver training rotations at Donnelly Training Area and other USAG Alaska maneuver areas. Field artillery units stationed under this stationing scenario would be anticipated to execute about 25-30 percent of their maneuver training at Fort Richardson as small units and the remainder during large-scale maneuver training rotations within the boundaries of USAG Alaska training areas. The total increase in maneuver impact would be anticipated to be 20-40% over what currently takes place on Fort Richardson's small unit maneuver training areas. While Fires Brigade units are supporting combat units and executing small unit maneuvers, both on and off-road maneuver would be required.

Baseline description for Fort Richardson No Action Alternative

The 61,376-acre FRA borders the northeast side of Anchorage in the Cook Inlet watershed. As with all USAG Alaska installations, FRA has undergone modular transformation. It is now home to the modularized 4/25th IBCT (Airborne) and the 17th CSS Battalion. Approximately 5,700 Soldiers are stationed at FRA. As part of transformation, various facilities in the cantonment area and range development projects in the training areas have been implemented and various new facilities and ranges have been constructed. For example, a new BAX and CACTF were approved and constructed at DTA for training Soldiers from FRA and FWA. Additional projects continue to be developed over time to facilitate the ability of Soldiers at FRA and FWA to train to doctrinal standards. In addition to range development projects and facilities, USAG Alaska recently developed a new ICRMP (2001), ITAM Plan (2005), and INRMP (2007). Together, these plans direct the management of natural and cultural resources at USAG Alaska installations, including FRA. All of these developments and plans comprise the No Action Alternative for FRA.

4.7.2 Fort Richardson Affected Environment and Environmental Consequences

This section discusses the existing baseline conditions for each environmental resource as well as the anticipated consequences to FRA should the Army implement one of the stationing scenarios discussed in Chapter 4.7.1.

4.7.3 Air Quality

4.7.3.1 Affected Environment

With approximately 6,640 miles of coastline, a significant portion of Alaska is influenced by ocean waters and the seasonal distribution of sea ice. Locations that are under the predominant influence of the sea are characterized by relatively small seasonal temperature variability with high humidity. For the Cook Inlet region, summer temperature averages range from 52.8°F to 56.7°F, with some variability; fall temperatures average 46.4°F to 16.2°F; winter temperatures range from 16.2°F to 24.6°F; and spring ranges from 24.6°F to 45°F. The average annual temperature at Cook Inlet is 34.7°F. The annual precipitation for this region is approximately 24.81 inches (Alaska Climate Research Center Web site, n.d.).

FRA is located near the cities of Anchorage and Eagle River and is adjacent to Elmendorf Air Force Base. Eagle River is situated on the installation's northeast border, whereas Anchorage and Elmendorf AFB forms the western boundary. To the north lies the Knik Army of the Cook Inlet. The geographic features that most influence climate at Fort Richardson are latitude and terrain, and the installation's relative position to waterbodies and landmasses. The St. Elias and Chugach Mountains act as a barrier to the maritime climatic influence (Pacific Ocean) from the south; and a transitional zone to the north. The Alaska Range in the north shelters the installation from arctic air masses from the state's interior region.

While air monitoring stations are present in both Eagle River and Anchorage, no monitoring stations are located on Fort Richardson. Temperature inversions contribute to the degradation of air quality by trapping Carbon Monoxide (CO) close to the ground, sometimes resulting in conditions where Anchorage exceeds the National Ambient Air Quality Standards (NAAQS) CO standard. Table 4.7-5 lists NAAQS.

Table 4.7-5. National Ambient Air Quality Standards

	Primary Standards		Secondary Standards	
Pollutant	**Level**	**Averaging Time**	**Level**	**Averaging Time**
Carbon Monoxide (CO)	9 ppm (10 mg/m^3)	8-hour [1]	None	
	35 ppm (40 mg/m^3)	1-hour [1]		
Lead (Pb)	1.5 ug/m^3	Quarterly Average	Same as Primary	
Nitrogen Dioxide (NO_2)	0.053 ppm (100 ug/m^3)	Annual (Arithmetic Mean)	Same as Primary	
Particulate Matter (PM_{10})	150 ug/m^3	24-hour [2]	Same as Primary	
Particulate Matter ($PM_{2.5}$)	15.0 ug/m^3	Annual [3] (Arithmetic Mean)	Same as Primary	
	35 ug/m^3	24-hour [4]	Same as Primary	
Ozone	0.075 ppm (2008 std)	8-hour [5]	Same as Primary	

Table 4.7-5. National Ambient Air Quality Standards

	Primary Standards		Secondary Standards	
Pollutant	**Level**	**Averaging Time**	**Level**	**Averaging Time**
(O_3)	0.08 ppm (1997 std)	8-hour [6]	Same as Primary	
	0.12 ppm	1-hour [7] (Applies only in limited areas)	Same as Primary	
Sulfur Dioxide (SO_2)	0.03 ppm	Annual (Arithmetic Mean)	0.5 ppm (1300 ug/m^3)	3-hour
	0.14 ppm	24-hour [1]		

[1] Not to be exceeded more than once per year.
[2] Not to be exceeded more than once per year on average over 3 years.
[3] To attain this standard, the 3-year average of the weighted annual mean PM2.5 concentrations from single or multiple community-oriented monitors must not exceed 15.0 µg/m3.
[4] To attain this standard, the 3-year average of the 98th percentile of 24-hour concentrations at each population-oriented monitor within an area must not exceed 35 µg/m3 (effective December 17, 2006).
[5] To attain this standard, the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.075 ppm. (effective May 27, 2008)
[6] (a) To attain this standard, the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.08 ppm.
(b) The 1997 standard—and the implementation rules for that standard—will remain in place for implementation purposes as EPA undertakes rulemaking to address the transition from the 1997 ozone standard to the 2008 ozone standard.
[7] (a) The standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above 0.12 ppm is < 1.
(b) As of June 15, 2005 EPA revoked the 1-hour ozone standard in all areas except the 8-hour ozone nonattainment Early Action Compact (EAC) Areas.

The City of Anchorage is among the top 10 worst air quality regions in the western U.S. Anchorage is classified as a serious maintenance area for CO (as of March 12, 2008), and the Eagle River area is in nonattainment for PM_{10}. While Fort Richardson is not within either nonattainment area, both criteria pollutants contribute to the primary issues of regional concern in which Fort Richardson resides. The primary source of CO emissions from Anchorage is motor vehicles (approximately 83.6 percent), which are believed to be the result of engine "cold starts" during the winter months. Additional data on CO pollution for the region is found in the Transformation Environmental Impact Statement, U.S. Army Alaska (U.S. Army, 2004).

PM_{10} issues associated with the town of Eagle River is due largely to (more than 90 percent) travel on unpaved roads. 10 percent of fugitive dust/emissions are attributable to automobile exhaust, wood stove burning, and industrial sources. While these sources have contributed to high PM_{10} in the past, the state has implemented measures to minimize impacts which resulted in no PM_{10} exceedances since 1987.

FRA is currently in attainment with all criteria air pollutants. The installation is a major source of criteria air pollutants and has the potential to emit approximately 250 tons of at least one criteria air pollutant. Fort Richardson currently has a Title V permit issued in November 2003 and set to expire in December 2008. The installation is currently undergoing a Minor Source Permit revision to desegregate sources and to be removed as a Title V facility. An application has been submitted by the installation to the Alaska Department of Environmental Conservation (ADEC) and therefore must comply with several NESHAPs for hazardous air pollutants and

source categories; and also must comply with 40 CFR 60.116b for fuel tanks. The installation has also pursued an Alaska State Air Quality Control Plan to install 523 small boilers and water heaters, which all future buildings constructed must include. Compliance with the Air Quality Control Plan must also be monitored as part of the installation's Title V Permit Application. The Title V Permit Application also lists 16 significant sources and several insignificant sources of air pollution in the emissions inventory section.

All prescribed burning activities on the installation are in compliance with its prescribed burn plan and are coordinated with the Bureau of Land Management (BLM).

4.7.3.2 Environmental Consequences

No Action Alternative: (Less than Significant)

Under the No Action Alternative, the current uses of the affected environment would not change from the conditions described in 4.7.3.1. FRA would remain in attainment for all criteria pollutants. Impacts to air quality from emissions and fugitive dust would continue at current levels, which are less than significant. Ongoing military activities would continue and new mission essential projects would be developed as needed.

Cantonment Construction. Under the No Action Alternative, no additional Soldiers would be stationed at FRA so no cantonment construction is required. The garrison has adequate facilities to support the existing units' requirements for living, administration, and vehicle maintenance. No construction of cantonment facilities would be required so increases in mobile source emissions or fugitive dust from construction vehicles are not expected.

Range Infrastructure Construction. No new range construction would occur under the No Action Alternative. The current number of Soldiers training at FRA would remain the same and no additional ranges would be constructed. In addition, none of the current ranges would be expanded as described for the action alternatives.

Live-Fire Training. Under the No Action Alternative, the number of Soldiers stationed and training at FRA would remain the same. Consequently, the number of required live-fire user days per year at FRA would continue at present levels. Overall impacts to air quality from live-fire training would continue to be less than significant.

Maneuver Training. The intensity and frequency of maneuver training at FRA would remain at current levels because the number of Soldiers training at FRA would remain the same. Impacts (emissions and fugitive dust) generated by tactical and non-tactical vehicles maneuvering on FRA would remain at current levels, which are less than significant.

CSS (1,000), CS (1,000): (Less than Significant).

Cantonment Construction. Impacts from either of these stationing scenarios would include dust and opacity issues from new construction and the remodel or demolition of existing. As construction of new COFs, Headquarters buildings, motor pool, and other facilities would occur as infill among the existing cantonment area, additional dust control measures would be necessary.

There would be an increase in mobile source emissions from construction vehicles. Impacts to air quality however, would be temporary, lasting the duration of the facilities construction. Vehicle emissions and fugitive dust generated by heavy construction equipment and materials transport may have short-term impacts which are anticipated to be less than significant.

The additional fleet vehicles and Soldier POVs would have more long-term effects. While Fort Richardson itself is in attainment for all criteria air pollutants, an increase of mobile source emissions on the installation may cause air quality impacts to nearby Anchorage, which is in a nonattainment area for CO.

FRA utilizes decentralized central heating and cooling. The installation uses more than 523 separate small boilers and water heaters in its existing buildings. The construction of new buildings would require the use of small boilers and water heaters as well. The addition of 1,000 Soldiers would increase the emissions given off by small boiler systems. FRA may need to apply for a Minor Source Title I permit for small heaters and boilers. However, because the installation resides in an attainment area for all criteria pollutants, conformity analysis may not be necessary. There would be an increase in some criteria pollutants such as nitrogen oxides (NOx), however these emissions are expected to remain under the installation's 40 tons/year limit for PSD.

Training Range Infrastructure Construction. Short-term effects would occur. Construction vehicles would cause soil disturbance that may generate fugitive dust leading to additional air quality impacts. Fugitive emissions and dust generated from expansion of ranges would affect the areas adjacent to ranges, but by and large would be contained within the range area. Best management practices would be used to mitigate fugitive dust emissions during construction.

Live-fire Training. Localized emissions from the increase in live-fire from small arms firing may be anticipated. The weapons associated with new unit stationing are the same weapons systems as are currently being fired on the installation by its tenant units. The frequency of live-fire activities on facilities designated for live-fire use would increase by less than 20 percent. The emissions released into the environment from live-fire training would result from the use of hand-held weapons such as rifles; crew served weapons such as machine guns; and (in the case of CS units, explosive munitions. Rifles and Machine Guns have very low emissions rates; and these emissions are generally dispersed quickly (depending on wind speed and direction) (Driver et al, 1993). Air emissions from firing qualifications are released at the firing point. These emissions are anticipated to be relatively minor and are found at the EPA's Technology Transfer network Clearinghouse for Inventories & Emissions Factors, AP42, Fifth Edition, Volume I (www.epa.gov/ttn/chief/ap42/ch15/index.html, n.d.).

Live-fire activities may also increase the risk of wildfires, which may create short-term adverse impacts to air quality. Fires can add Carbon Monoxide (CO), Particulate Matter (PM_{10} and $PM_{2.5}$), and Polycyclic Aromatic Hydrocarbons (PAH), among other combustion byproducts. In addition, the smog created from fires can travel great distances and potentially impact on-post housing and off-post communities.

Maneuver Training. Smaller unit maneuvers would continue to be supported at FRA, while Company-level and above would be supported at Donnelly Training Area (DTA) and other Alaska training sites. Vehicles associated with CSS or CSS training occurring on roads, trails, or hardened surfaces would increase the occurrence of opacity or fugitive dust emissions; however these effects are anticipated to be localized to the range area. Vehicle emissions

would also add to the pollutants currently being released in maneuver areas including PM, CO, and Ozone (O_3).

In addition, CS units would have an increased (localized) effect to air quality from off-road maneuvering. The increase in off-road maneuvers would denude soils of vegetation and increase opacity and fugitive dust within the range area.

Fires Brigade (1,600), CSS (3,000), CS (3,000): (Less than Significant).

Impacts from each of these scenarios would include dust and opacity issues from new construction.

The installation is currently undergoing a Minor Source Permit revision and is being removed as a Title V major air pollutant contributing facility. All stationary source groupings have the capacity to grow currently; although insignificant sources may need to be listed under a Title V permit application.

Cantonment Construction. To accommodate this level of growth, the installation may consider the use of modular facilities until cantonment construction is complete. Historically, the use of these facilities has caused the temporary increase in emissions due to the use of small boilers or heating units. A Title I permit may be required prior to construction; however there is no anticipated need for a conformity analysis.

Impacts from these stationing scenarios would include dust and opacity issues from new construction. Because the Soldier population would increase by 25 – 50 percent, construction of new facilities to the west of the cantonment area (Figure 4-7.2) would encompass a large area and resulting in an increase in fugitive dust.

There would be an increase in mobile source emissions from construction vehicles. Impacts to air quality however, would be temporary, lasting the duration of the facilities construction. Vehicle emissions and fugitive dust generated by heavy construction equipment and materials transport.

The additional fleet vehicles and Soldier POVs would have more long-term effects. While Fort Richardson itself is in attainment for all criteria air pollutants, an increase of mobile source emissions on the installation may cause air quality impacts to nearby Anchorage, which is in a nonattainment area for CO.

FRA has transitioned away from its centralized heating system to a decentralized system comprised of 523 small boilers and water heaters. An additional 1,000 Soldiers would require new buildings and additional small boiler systems to heat those buildings, thereby increasing emissions. FRA may need to apply for a Minor Source Title I permit for small heaters and boilers. However, because the installation resides in an attainment area for all criteria pollutants, conformity analysis may not be necessary. There would be an increase in some criteria pollutants such as nitrogen oxides (NOx), however these emissions are expected to remain under the installation's 40 tons/year limit for PSD.

Live-fire Training. Similar to the 1,000 Soldier stationing scenario, temporary localized emissions would occur from the increase in live-fire from small arms. Emissions occur at the firing point, and in the case of MK-19 (used by CS units) would also occur from explosion upon

impact. However, approximately 99.8 percent of munitions emissions are consumed during combustion the effects are anticipated to be less than significant. Similarly, rifles and Machine Guns have very low emissions rates and these emissions are generally dispersed quickly (depending on wind speed and direction) (Driver et al, 1993). These emissions are found at the EPA's Technology Transfer network Clearinghouse for Inventories & Emissions Factors, AP42, Fifth Edition, Volume I (www.epa.gov/ttn/chief/ap42/ch15/index.html, n.d.).

Live-fire activities may also increase the risk of wildfires, which may create short-term adverse impacts to air quality. Fires can add CO, PM_{10} and $PM_{2.5}$, and PAHs, among other combustion byproducts. In addition, the smog created from fires can travel great distances and potentially impact on-post housing and off-post communities.

Maneuver Training. Smaller unit maneuvers would continue to be supported at FRA, while Company-level and above would be supported at DTA and other Alaska training sites. Vehicles associated with CSS or CSS training occurring on roads, trails, or hardened surfaces would increase the occurrence of opacity or fugitive dust emissions; however these effects are anticipated to be localized to the range area. Vehicle emissions would also add to the pollutants currently being released in maneuver areas including PM, CO, and O_3. These levels of Soldier growth would add approximately 25 to 50 percent more vehicle emissions to the installation as a whole.

In addition, CS units would have an increased (localized) effect to air quality from off-road maneuvering. The increase in off-road maneuvers would denude soils of vegetation and increase opacity and fugitive dust within the range area.

4.7.4 Airspace

4.7.4.1 Affected Environment

Anchorage International Airport, 15 miles southwest of FRA, is the nearest commercial airport. It is the largest airport in Alaska for both passenger and air cargo operations. More than 30 carriers provide passenger service in the recently renovated airport. It is the largest air cargo handler and transfer site in the United States. There are competing requirements for airspace by both military and commercial or private air traffic surrounding the installation.

Bryant Army Airfield, located adjacent to the cantonment area and the Glenn Highway, has a main, hard-surfaced, north/south runway, which is 3,000 feet in length. It also has a hard-surfaced crosswind runway oriented east/west. Bryant Army Airfield is used primarily by the Alaska Army National Guard as a base for its fixed-wing aircraft and helicopters. Portions of restricted airspace lie over FRA and over the southern tip of Eagle River Flats Impact Area and some of FRA's training areas (USAG Alaska Regulation 350-2, 1998).

Military Deployments from Fort Richardson are accommodated by Elmendorf AFB; which can also support any type of military aircraft, including the C5 Galaxy.

4.7.4.2 Environmental Consequences

No Action Alternative: (Minor)

Under the No Action Alternative, the current uses of the affected environment would not change from the conditions described in 4.7.4.1. FRA's current air traffic operations would continue at current levels and airspace restrictions would remain as they currently exist. Ongoing military activities would continue and new mission essential projects would be developed as needed.

Cantonment Construction. Under the No Action Alternative, no additional Soldiers would be stationed at FRA so no cantonment construction is required. The garrison has adequate facilities to support the existing units' requirements for living, administration, and vehicle maintenance. Consequently, this alternative would not require modifications to controlled or special use airspace.

Range Infrastructure Construction. No new range construction would occur under the No Action Alternative. The current number of Soldiers training at FRA would remain the same and no additional ranges would be constructed. In addition, none of the current ranges would be expanded as described for the action alternatives. Therefore, no effects to airspace are expected.

Live-Fire Training. Under the No Action Alternative, the number of Soldiers stationed and training at FRA would remain the same. Consequently, the number of required live-fire user days per year at FRA would continue at present levels. No modifications to CFAs above existing ranges and no increases in the number of hours of airspace time over FRA's ranges are expected.

Maneuver Training. The intensity and frequency of maneuver training at FRA would remain at current levels because the number of Soldiers training at FRA would remain the same. Maneuver training of these ground-based units would have no effect on airspace at FRA.

CSS (1,000), CS (1,000), Fires Brigade (1,600), CSS (3,000), CS (3,000): (Minor).

There is no airspace requirements associated with the Combat Support stationing scenario therefore no impacts are expected. Some airspace requirements may exist with the Combat Service Support scenario if a medical units having MEDEVAC service is located at Fort Richardson; however these activities would be few in occurrence and pose no scheduling conflicts with existing activities.

Cantonment Construction. Construction at FRA is not expected to require modifications to controlled or special use airspace. Therefore, no additional affects are expected.

Training Range Infrastructure Construction. The various range expansion projects that would be required to support any of these stationing scenarios (respectively) is not expected to require modifications to controlled or special use airspace. Therefore, no additional affects are expected.

Live-fire Training. The training of any of these scenarios would be similar to current training activities throughout the Garrison. Training would generally involve the use of small arms ranges for all stationing scenarios. Under these stationing scenarios no new ranges would be constructed; however, expansion of some ranges may drive the need for modification to controlled firing areas (CFA) above existing ranges. Although CFAs pose no problems to flights, activities within a CFA must be suspended immediately when radar, spotter aircraft, or ground lookouts detect an approaching aircraft.

Additionally, the installation retains approximately 8,000 hours of airspace time per year (Michael Breyers, USAG Alaska Installation Range Manager); currently, however, only approximately 200 of these hours are used on the average which opens up additional public access. The frequency of Soldiers training on live-fire ranges would increase by approximately 15 to 60 percent on live-fire training facilities. This would mean that actual airspace use over FRA ranges would increase from approximately 200 hours annually to between 230 and 280 hours annually. This would be a relatively small increase in airspace requirements due to live-fire activities.

Ordnance live-fire training associated with the Fires Brigade would occur at DTA.

Maneuver Training. Maneuver training of these ground-based units will have no effect to airspace at FRA.

4.7.5 Cultural Resources

4.7.5.1 Affected Environment

The Early Holocene traditions of south-central Alaska were similar to those of the interior and may have been derived from them. In the Middle Holocene, there is a poorly represented shift away from terrestrial animals to marine resources. Sites of the Late Holocene represent a Pacific Eskimo adaptation with characteristic pottery and transverse knives (ulus). The Late Prehistoric is characterized by Athabascan material culture including house depressions, cobble spall scrapers, and fire-cracked stone. These archaeological traditions are thought to be associated with Dena'ina Athabascans.

The earliest known site in the Cook Inlet region dates to no earlier than 8,000 years ago. This site is associated with the Denali Complex. No sites of this era are known on Fort Richardson. The Middle Holocene Era is also poorly represented in the region. Findings of this era at a Beluga Point Site suggest an affiliation with the Ocean Bay Tradition. No sites of this era are known on Fort Richardson. Numerous sites of the Late Holocene Era have been identified in the Cook Inlet region. These sites show an affiliation with the Pacific Eskimo. No sites of this era are known on Fort Richardson. Many late prehistoric Athabascan sites are also known in the region. Most of these sites are believed to be associated with the Dena'ina people who were here when Cook arrived. No sites of this era are known on Fort Richardson.

Captain Cook searching for the Northwest Passage in 1778 encountered the Dena'ina in Cook Inlet. However, there had been Russian fur traders in the region since early in the century, and there had undoubtedly been earlier, undocumented contacts. The Dena'ina hunted caribou, seal, moose, bear, mountain goat, squirrel, and Dall sheep and harvested salmon. They shared many traits and tools with the neighboring Eskimo. Several Dena'ina villages had been located near Fort Richardson. Historically, the largest village in the area was Knik, near the mouth of the Knik and Matanuska Rivers.

The U.S. purchased the rights to Alaska from Russia in 1867. Beginning in the 1880s, Anglo-American trappers, miners, and settlers moved into the area, and the influx accelerated after the discovery of gold. The early gold rushes along the coast had little impact on Cook Inlet, but the rushes in the interior had a strong impact. Anchorage grew with the development of the Alaska Railroad beginning in 1913. Anchorage was established as a construction camp and

headquarters for the railroad. Anchorage took its name from nearby Knik Anchorage, an important supply center for the interior during the gold rushes. The railroad was completed in 1923. During the Great Depression, schools, roads, bridges, trails, harbors, and water systems were built and developed throughout Alaska. The Old Richardson Highway from Matanuska Valley to Anchorage was built across what is now Fort Richardson in 1935.

Elmendorf Field was established in 1939 and renamed Fort Richardson in 1940. The location was chosen for its comparatively favorable weather and access to the transportation resources of Cook Inlet and the Alaska Railroad. In World War II, Fort Richardson was a coordinating spot for the Alaskan war effort and a strategic location for defending Alaska from invasion. Later in the Cold War, Fort Richardson preformed primarily a training and administrative support role.

At least six archaeological surveys were completed on Fort Richardson between 1970 and 2000. Four of these were small reconnaissance surveys that did not identify any archaeological sites. The cantonment area of Fort Richardson is considered to have a low potential for prehistoric sites. In contrast, six of the Fort Richardson training areas have been identified as having high archaeological sensitivity. A survey of selected sample zones in 1980 identified four historical archaeological sites. Six archaeological sites are known on Fort Richardson, four are historic and one was reported as both prehistoric and historic. Later reports list the last site as prehistoric. All of the sites are recommended as not eligible. Portions of the Seward to Susitna segment of the Iditarod Historic Trail cross Fort Richardson, and may have associated historical archaeological sites. Many areas need to be surveyed and there is a strong potential for newly discovered sites, particularly in those settings identified as having high archaeological sensitivity.

Several areas on Fort Richardson were excluded from the list of areas identified for archaeological inventories in the Integrated Cultural Resources Management Plan (ICRMP) because of mission considerations (including hazards), low site potential, or low potential for mission impact. These areas include:

- The Eagle River Flats impact area, which contains UXO and is off-limits to cultural resource management;
- The Alpine Tundra zone, which is an ecologically sensitive zone protected by limitations on training;
- Wetlands, including freshwater and saltwater marshes, bogs, and lakes that are often covered by standing water and have a low potential for undisturbed archaeological sites. This does not include riparian areas along drainages; and
- Cantonment developed areas that have been extensively disturbed for development and are unlikely to retain undisturbed archaeological sites. Some isolated portions of the cantonment near Ship Creek and Camp Carroll are comparatively undisturbed.

Two historic building surveys have been completed on Fort Richardson for the Nike Site Summit and Cold War era buildings. The Nike Summit Inventory documented 27 contributing buildings and structures. Nike Site Summit has been listed on the NRHP as a historic district. Additional studies of Cold War era historic buildings on Fort Richardson are currently underway. Fifty-four buildings and structures currently exist in the Fort Richardson Historic Area. USAG Alaska developed a Cold War context for Fort Richardson (USAG Alaska 2002). USAG Alaska is currently in the process of evaluating the buildings within the cantonment area to evaluate the potential eligibility of a Cold War historic district. The parcel in question would be comprised of

the older facilities located in the center of the cantonment and require close coordination between installation staff and the Alaska SHPO.

Consultation with Alaskan Native Tribes to identify Traditional Cultural Properties (TCP's) or other sites of cultural or sacred significance has been on-going. Multiple contracts with Alaskan Native communities are in the process of being executed but currently no TCP's or other cultural resources have been identified.

4.7.5.2 Environmental Consequences

No Action Alternative: (Significant, but Mitigable)

Under the No Action Alternative, the current uses of the affected environment would not change from the conditions described in 4.7.5.1. FRA's current operations would continue at current levels. Ongoing military activities would continue and new mission essential projects would be developed as needed.

Cantonment Construction. Under the No Action Alternative, no additional Soldiers would be stationed at FRA so no cantonment construction is required. The garrison has adequate facilities to support the existing units' requirements for living, administration, and vehicle maintenance. Consequently, this alternative would not affect cultural resources present in the cantonment area beyond current levels.

Range Infrastructure Construction. No new range construction would occur under the No Action Alternative. The current number of Soldiers training at FRA would remain the same and no additional ranges would be constructed. In addition, none of the current ranges would be expanded as described for the action alternatives. Therefore, no effects to cultural resources are expected.

Live-Fire Training. Under the No Action Alternative, the number of Soldiers stationed and training at FRA would remain the same. Consequently, the number of required live-fire user days per year at FRA would continue at present levels. All the areas used for live-fire training have been surveyed for cultural resources and protective measures have been implemented for all known sites. Thus, no change in effects to cultural resources is expected.

Maneuver Training. The intensity and frequency of maneuver training at FRA would remain at current levels because the number of Soldiers training at FRA would remain the same. In addition, no new maneuver areas would be required. Although maneuver training would be conducted in the footprint of existing ranges and trails at FRA, it may still affect cultural resources. New cultural resources currently not identified could be impacted through maneuver training. Mechanisms and procedures are in place to monitor the effects of operations, maintenance, and training exercises and to respond to any unanticipated discoveries.

CSS (1,000), CS (1,000): (Significant but Mitigable).

Cantonment Construction. Construction to accommodate an additional 1,000 Soldiers would occur as infill (de-construction/construction or modification of new or existing structures among the cantonment area) in the FRA cantonment area. Construction can cause direct damage to these resources from the operation of heavy equipment or during demolition of nearby facilities;

or may have indirect impacts from vibration. The Alaska State Historic Preservation Office (SHPO) is in the process of determining the presence of a Historic District within the cantonment area. The parcel in question is small and is located at the center of the cantonment area. Any construction in the vicinity of this historic district would require close coordination between installation staff and the SHPO. FRA staff is currently negotiating a programmatic agreement for addressing maintenance and repair of historic resources in the cantonment area, and routinely continues consultation with the SHPO.

Training Range Infrastructure Construction. Modification and expansion of ranges would occur under these stationing scenarios. Construction equipment would involve grading/re-grading site surfaces, grubbing vegetation, and using heavy equipment to excavate the subsurface. These activities have the potential to result in damage to cultural resources; or potentially destroy, damage, or restrict access to properties of traditional importance resulting in adverse effects. As indicated above, Fort Richardson training areas have been identified as having high archaeological sensitivity. Although the areas where range expansion would occur are in highly disturbed areas (within or nearby the footprint of existing ranges) additional archaeological surveys or Section 106 consultation may be needed.

Live-fire Training. Range expansion and new targetry would be sited to avoid cultural resources at FRA following identification of these sites during cultural resource surveys. Live-fire activities would not have a significant impact to cultural resources.

Maneuver Training. Maneuver training may impact cultural resources. Maneuver training is restricted to prevent impacts to known cultural resources sites. No new maneuver areas would be required to support these stationing scenarios. Maneuver training under all scenarios would be conducted in the footprint of existing ranges and trails at FRA. However, new cultural resources currently not identified could be impacted through maneuver training discussed in these scenarios. Stationing scenarios involving CS units, particularly engineer or combat engineer units, may involve some surface excavation, which could potentially uncover or damage undocumented cultural resources.

Fires Brigade (1,600), CSS (3,000), CS (3,000): (Significant but Mitigable).

Cantonment Construction. Construction would occur in an area approximately 75 to 150 acres in size (depending on the stationing scenario) to the east of the existing cantonment area. Construction can cause direct damage to these resources from the operation of heavy equipment or during demolition of nearby facilities; or may have indirect impacts from vibration. Although the cantonment area of Fort Richardson is considered to have a low potential for prehistoric sites, the alternative construction site may not have been previously surveyed for these or other cultural resources. Cultural resource surveys would need to be accomplished prior to project siting.

The Alaska SHPO is in the process of determining the presence of a Historic District within the cantonment area. The parcel in question is small is located at the center of the cantonment area. However, because construction would take place a safe distance away from the potential Historic District, the probability of damage from construction is dramatically reduced. FRA staff is currently negotiating a programmatic agreement for addressing maintenance and repair of historic resources in the cantonment area, and routinely continues consultation with the SHPO.

Training Range Infrastructure Construction. Modification and expansion of ranges would occur under these stationing scenarios. Construction equipment would involve grading/re-grading site surfaces, grubbing vegetation, and using heavy equipment to excavate the subsurface. These activities have the potential to result in damage to cultural resources; or potentially destroy, damage, or restrict access to properties of traditional importance resulting in adverse effects. As indicated above, Fort Richardson training areas have been identified as having high archaeological sensitivity. Although the areas where range expansion would occur are in highly disturbed areas (within or nearby the footprint of existing ranges) additional archaeological surveys or Section 106 consultation may be needed.

Live-fire Training. Range expansion and new targetry would be sited to avoid cultural resources at FRA following identification of these sites during cultural resource surveys. Live-fire activities would not have a significant impact to cultural resources.

Maneuver Training. Maneuver training may impact cultural resources. Maneuver training is restricted to prevent impacts to known cultural resources sites. No new maneuver areas would be required to support these stationing scenarios. Maneuver training under all scenarios would be conducted in the footprint of existing ranges and trails at FRA. However, new cultural resources currently not identified could be impacted through maneuver training discussed in these scenarios. Stationing scenarios involving CS units, particularly engineer or combat engineer units, may involve some surface excavation, which could potentially uncover or damage undocumented cultural resources.

Company- and above-level maneuver would continue to occur at DTA or other USAG Alaska training sites.

4.7.6 Noise

4.7.6.1 Affected Environment

The more important sources of noise at Fort Richardson are traffic, live-fire from small and large caliber weapons, and aircraft overflights. These elements are documented in greater detail in the Installation Environmental Noise Management Plan (IENMP). Noise contours associated with large and small caliber weapons are contained within military lands at both Fort Richardson and Elmendorf AFB. Noise contours associated with Noise Zones II and III overlap a portion of the ocean near Eagle River Flats. However, Fort Richardson receives a few noise complaints from the public each year; these are generally due to helicopter overflights (Robert Hall, USAG Alaska Public Affairs Officer).

In response to these few complaints the installation has adopted the use of quieter equipment and has rescheduled aircraft training times to reduce the impact to the public. Firing activities are scheduled to limit noise impacts to both on-post residents and off-post populations. Most low frequency, high-energy blast events occur at Donnelly Training Area and are removed from receptor populations. Noise at Fort Richardson has the potential to impact recreation, land use, biological resources (wildlife) which in turn can impact subsistence activities. Figure 4.7-4 illustrates the noise contours at FRA. As illustrated, NZ III is contained mostly within the installation boundary, and does not overlap with residential areas. NZ II affects the northern portion of the cantonment area and parts of the Otter Lake Wildlife and Recreation Area.

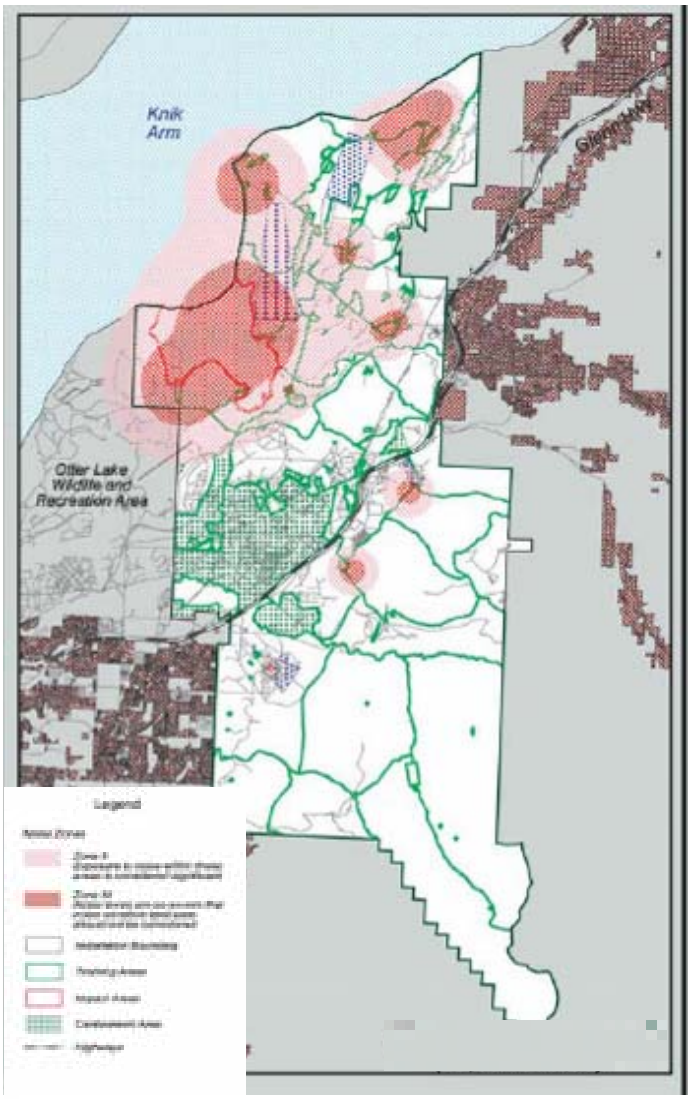


Figure 4.7-4. Noise contours at FRA

4.7.6.2 Environmental Consequences

No Action Alternative: (Less than Significant)

Under the No Action Alternative, the current uses of the affected environment would not change from the conditions described in 4.7.6.1. FRA's current operations would continue at current levels. Ongoing military activities would continue and new mission essential projects would be developed as needed.

Cantonment Construction. Under the No Action Alternative, no additional Soldiers would be stationed at FRA so no cantonment construction is required. The garrison has adequate facilities to support the existing units' requirements for living, administration, and vehicle maintenance. Consequently, no additional noise from new construction in the cantonment at FRA is expected.

Range Infrastructure Construction. No new range construction would occur under the No Action Alternative. The current number of Soldiers training at FRA would remain the same and no additional ranges would be constructed. In addition, none of the current ranges would be expanded as described for the action alternatives. Therefore, no effects to noise are expected.

Live-Fire Training. Under the No Action Alternative, the number of Soldiers stationed and training at FRA would remain the same. The number of required live-fire user days per year at FRA would continue at present levels. Noise from live-fire training would continue to occur as it does currently and is not expected to result in any increased effects to the public, primarily because the ranges are located in the central portion of FRA.

Maneuver Training. The intensity and frequency of maneuver training at FRA would remain at current levels because the number of Soldiers training at FRA would remain the same. In addition, no new maneuver areas would be required and maneuver training would be conducted

in the footprint of existing ranges and trails at FRA. Therefore, no increase in noise due to maneuver training would occur and impacts would remain at less than significant levels.

CSS (1,000), CS (1,000), Fires Brigade (1,600), CSS (3,000), CS (3,000): (Less than Significant).

Cantonment Construction. Impacts from construction for these stationing scenarios would be temporary. Noise associated with range construction would result from the movement of construction vehicles and equipment. An assessment of specific impacts would be conducted upon final siting of facilities required to support these stationing scenarios. Construction for the 1,000 Soldier stationing scenarios may have more of an impact to cantonment activities than would construction supporting more than 1,000 Soldiers. This is due to the proximity of the potential construction site. However, noise from construction to the east of the existing cantonment area could have a higher degree of affects to wildlife currently inhabiting this area.

Noise associated with construction equipment generally produce noise levels of 80 to 90 dBA at a distance of 50 feet. Permissible noise exposures identified by the Occupational Safety and Health Administration (OSHA) (29 CFR 1910.95) for an 8-hour work day is 90 dBA. Therefore construction noise in the cantonment area would likely be compliant with these levels. The zone of relatively high construction noise may extend to distances of 400 to 800 feet from major equipment operations; and those locations that are more than 1,000 feet from construction sites generally do not experience significant noise levels. There are no communities within 1,000 feet from the cantonment area at FRA; therefore noise from construction activities is not anticipated to be significant.

Training Range Infrastructure Construction. Similar to cantonment construction, range construction would result from the movement of construction vehicles and equipment. There are not effects anticipated to the public due to potential range expansion locations; however, temporary noise impacts may occur to wildlife. This would be discussed in Chapter 4.7.6 Biological Resources.

Live-fire Training. Although the same intensity of noise would continue, stationing 1,000 or more Soldiers would increase the frequency of noise generating events. The frequency of live-fire events that generate noise may increase by 15 to 60 percent depending on the stationing scenario. As ranges are expanded to accommodate these additional Soldiers the noise contours around these ranges may expand as well. However, due to their location in the central portion of the post, no increased impacts to the public are anticipated. There may be some expected noise effects to wildlife; this would be discussed in Chapter 4.7.6 Biological Resources.

The fires brigade would train with artillery and ordnance at DTA.

Maneuver Training. Although there would be an increase in Soldiers maneuvering in these areas, the type of noise would be consistent with ongoing maneuver activities. The increased frequency of noise generating events would correspond to the increased maneuvers associated with these stationing scenarios (10 to 60 percent).

Noise levels along on-post roadways and along military vehicle trails would increase. However, overall traffic volumes and vehicle speeds generally are low for these types of roadways. As a

result, noise increments attributable to vehicle traffic would remain within the Army's land use compatibility guidelines.

The noise effects that would be produced from convoy travel on public roads (when traveling between FRA and central Alaska maneuver sites) would be short-term as these activities are intermittent and are usually mitigated through standard operating procedures for convoy maneuver. A convoy is normally defined as six or more military vehicles moving simultaneously from one point to another under a single commander, ten or more vehicles per hour going to the same destination over the same route, or any one vehicle requiring a special haul permit. Convoys normally maintain a gap of 15 to 30 minutes between serials (a group of military vehicles moving together), 330 feet between vehicles on highways, and 7.5 to 15 feet while in town traffic. These procedures are followed to minimize the noise and traffic impacts to the public.

4.7.7 Soil Erosion

4.7.7.1 Affected Environment

The FRA lies in the Cook Inlet–Susitna Lowland and Kenai–Chugach Mountains physiographic provinces on an alluvial plain called the Anchorage Lowland. The Anchorage Lowland is fed by the Chugach Mountains to the east and flows into to the Cook Inlet to the north, south, and west. The topography of the Anchorage Lowland has been primarily influenced by glacial activity and alluvial deposition and erosion by the four major drainages that originate in the Chugach Mountains – Ship Creek, Eagle River, Campbell Creek, and Chester Creek. The Anchorage Lowland is a triangular area located between the Knik and Turnagain Arms below 500 feet amsl in elevation. It is characterized by rolling hills with topographic relief ranging from 50 to 250 feet. To the east, rolling uplands extend to elevations up to 3,000 feet amsl at the base of the Chugach Mountains. A small portion of the western section of the Chugach Mountains, which rise abruptly to more than 5,000 feet above mean sea level (amsl) on the front, is contained within the FRA boundaries. The peaks of the Chugach Mountains are separated by northwest-trending, steep U-shaped valleys, which are occupied by the four major drainages mentioned above. The Anchorage Lowland is characterized by rolling hills with up to 250 feel of topographic relief in the eastern portion along the Chugach Mountains. The terrain flattens to the west into an alluvial plain that is inundated with broad, shallow streams and wetlands. The FRA contains many landforms that are characteristic of glaciated terrain, including moraines, esker deposits, outwash plains, and estuarine sediments.

Fort Richardson is covered by Quaternary age glacial, glacio-marine (estuarine), and glacio-alluvial sedimentary deposits, with bedrock outcrops occurring in the south and east along the Chugach Mountains. The deposits form a westward-thickening wedge beginning at the base of the Chugach Mountains to a thickness of approximately 656 feet locally. Based on well logs, the thickness of sediments below the cantonment ranges from 230 to 322 feet (Cederstrom et al.1964). Because the glacial sediments underlying Fort Richardson were deposited during multiple ice advances, the stratigraphy is complex, particularly under the cantonment, where sediments deposited along the south margin of Elmendorf Moraine interfinger with alluvial fan sands and gravels. The most common and spatially extensive deposits are end, lateral, and ground moraines; glacio-alluvial, alluvial, and alluvial fan deposits; and estuarine and lacustrine deposits. Loess (wind-deposited silt), colluvium (poorly sorted and uncompacted sand and gravel), and rock glaciers are less abundant in the high mountain valleys.

Parent material that formed the various soil types on Fort Richardson varies widely and includes glacial moraines, glacial outwash, tidal flats, and peat bogs. These soils are shallow, recently formed, nutrient deficient, and have low water-holding capacity, which are all factors that limit vegetative growth during dry periods and limit the potential to reclaim land after surface disturbance. Surface soil horizons may be covered with peat in areas containing depressions, wetlands, and other saturated areas. The NRCS soil survey of the Anchorage area (Moore 2002) identifies two distinct climate zones and associated soil types for FRA: the lowlands surrounding Anchorage, and the neighboring Chugach Mountains.

Along the coast and tidal plains, the Cook Inlet sediments are silty and clayey, with broad depressions in the area occupied by poorly drained bogs and fens. The soils on the lowland plains inland from the coast have less developed horizons because of lower precipitation, mid-winter thaws, and strong localized winds, with the exception of wind-protected forested areas. The uplands at the base of the Chugach Mountains are covered by a layer of silty loess, which is formed by deposition of fine glacial sediments from the floodplains and volcanic ash. The portion of the FRA that encompasses the Chugach Mountains contains soils that were formed because of weathering and leaching of minerals, which was influenced by high annual precipitation, deep snowfall, strong localized winds, and deep annual frost (USAG Alaska 2004). Permafrost is present on less than 1 percent of Fort Richardson, occurring primarily in patches of forested bogs along Muldoon Road as well as in the higher elevations of the areas within the Chugach Mountains. The effects of thermokarst, described above as irregular subsidence of permafrost that causes mounds, hummocks, water-filled depressions, flooded forests, and mudflows on steeper slopes, have been less than 0.1 percent in the last 200 to 300 years in the FRA.

Sedimentation is an issue that potentially affects Beluga whale populations. The effects of increased soil loading in the water column may decrease the effectiveness of Beluga whale feeding behavior on salmon and the survivorship of whale populations. This issue continues to be researched and investigated.

USAGAK conserves and manages soil resources as the foundation of other natural resources, through planning level soil and topographical surveys, soil resource monitoring, and soil resources rehabilitation and management strategies. The Draft Natural Resources Guidance from Army Chief of Staff for Installation Management (U.S. Army 2007) requires the installation to identify and map soils, correlate soils to permafrost areas, and establish relationships among components of terrain. The data from these efforts are required for input into the military training and scheduling process. Army Regulations require 10-year updates of topographical planning level surveys to implement the INRMP, as mandated by the Sikes Act.

Soil monitoring is conducted through the Range and Training Land Assessment Program, which is the monitoring component of ITAM. Annual Range and Training Land Assessment reports detail the levels of current and past disturbance and land condition resulting from military training and recreational use on Fort Richardson. Soil resources management on Fort Richardson is achieved through prevention activities and actual restoration of disturbed areas by implementing BMPs in agreement with industry standard installation storm water prevention techniques. Disturbed areas are restored by both erosion control and streambank stabilization activities, which control installation sources of dust, runoff, silt, and erosion debris to prevent damage to land, water, and air resources; equipment; and facilities (including those on adjacent properties). Relevant BMPs used at Fort Richardson are detailed in the INRMP (USAG Alaska 2007) and in the ITAM Five Year Management Plan (USAG Alaska 2005).

4.7.7.2 Environmental Consequences

No Action Alternative: (Less than Significant)

Under the No Action Alternative, the current uses of the affected environment would not change from the conditions described in 4.7.7.1. FRA's current operations would continue at current levels. Ongoing military activities would continue and new mission essential projects would be developed as needed.

Cantonment Construction. Under the No Action Alternative, no additional Soldiers would be stationed at FRA so no cantonment construction is required. The garrison has adequate facilities to support the existing units' requirements for living, administration, and vehicle maintenance. Consequently, no soil erosion impacts from construction in the cantonment at FRA are expected.

Range Infrastructure Construction. No new range construction would occur under the No Action Alternative. The current number of Soldiers training at FRA would remain the same and no additional ranges would be constructed. In addition, none of the current ranges would be expanded as described for the action alternatives. Therefore, no effects to soil erosion are expected.

Live-Fire Training. Under the No Action Alternative, the number of Soldiers stationed and training at FRA would remain the same. The number of required live-fire user days per year at FRA would continue at present levels. Weapons firing can involve the disturbance of vegetation and soils, which can cause increase the erodibility of soils. Implementation of the INRMP and ITAM program work plans and associated management practices and soil erosion mitigation would continue to ensure soil erosion-related impacts caused by live-fire training would be less than significant.

Maneuver Training. The intensity and frequency of maneuver training at FRA would remain at current levels because the number of Soldiers training at FRA would remain the same. In addition, no new maneuver areas would be required and maneuver training would be conducted in the footprint of existing ranges and trails at FRA. Implementation of the INRMP and ITAM program work plans and associated management practices and soil erosion mitigation would continue to ensure soil erosion-related impacts caused by maneuver training would be less than significant.

CSS (1,000), CS (1,000), Fires Brigade (1,600), CSS (3,000), CS (3,000): (Less than Significant).

Cantonment Construction. Short-term effects may occur from construction. Construction supporting the 1,000 Soldier stationing scenarios would be as infill among existing structures within the main cantonment area where stormwater management practices may already be in place to mitigate potential adverse effects from sediment runoff.

Construction activities to accommodate growth of more than 1,000 Soldiers to the east of the cantonment area would occur on land that has not recently been disturbed. Although this area currently supports an antennae field, the lack of traffic and human activity in that area has done little to disturb soils there. The use of heavy equipment would remove vegetation and disturb

and compact soil in the construction area, making it difficult to support the growth of natural vegetation while increasing the potential for soil erosion. Direct and indirect short-term impacts to vegetation and nearby waterbodies from site runoff may occur. Fugitive dust may also occur, however impacts from dust would likely to be localized and not have any lasting adverse effects to nearby waterbodies. Stormwater runoff from construction sites is mitigable through the installation's existing monitoring activities and best management practices.

Long-term effects could occur from the compaction of soils, reducing the likelihood for vegetation to re-establish itself and increasing the effects from wind erosion or precipitation. Soils transported away from the construction area may accumulate in gullies or to other areas where post-precipitation event water may carry sediments to other waterbodies.

Training Range Infrastructure Construction. Similar to cantonment construction, training range expansion activities would have temporary direct and indirect effects to soils. The use of heavy equipment would remove vegetation and disturb and compact soil in the construction area, making it difficult to support the growth of natural vegetation while increasing the potential for soil erosion. Direct and indirect short-term impacts to vegetation and nearby waterbodies from site runoff may occur. Fugitive dust may also occur, however impacts from dust would likely to be localized and not have any lasting adverse effects to nearby waterbodies. Increased turbidity and sediment loading on surface waters as a result of construction activities may impact salmon populations and could have indirect effects on Beluga whale populations. Site-specific planning would identify detailed range siting and soil erosion issues. Stormwater runoff from range sites is mitigable through the installation's existing monitoring activities and best management practices.

Live-fire Training. Weapons firing can typically involve the disturbance of soils, denuding the soil surface of vegetation and increasing the erodibility of soils. While weapons firing would typically occur in existing training areas the frequency of the training events would increase and potentially cause a greater amount of soil disturbance, resulting in larger areas of bare ground than what is observed under current conditions. Installation DPW staff monitors impacts from live-fire activities and would continue to institute the required mitigations and BMPs (such as berm revegetation and regrading) to minimize effects off the firing ranges.

For CS and field artillery units, the use of ordnance (small ordnance items such as the MK-19 Grenade Machine Gun; larger ordnance items associated with field artillery would be supported at DTA) items or explosives could cause wildfires resulting in the removal of large areas of vegetation that normally protects soil from erosion by slowing surface runoff, intercepting raindrops before they reach the soil surface, and anchoring the soil with roots. Without surface vegetation the top layer of soils may be transported away due to natural processes, and the soil remaining may become compacted leaving little opportunity for vegetation (especially native vegetation) to re-establish itself. Vegetation removal resulting from wildland fires could result in increased soil erosion by water and wind, indirectly causing large-scale removal and redeposition of soils, gullying, or unstable slopes in areas of steep slopes and rapid runoff. The impact would be directly proportional to the size of the fire. Wildfire plays an important role in Alaskan ecosystems and is considered a beneficial impact on the natural environment. However, fire starts generated by military training activities often occur in elevated numbers and intervals, thereby causing unacceptable damage to critical vegetative cover that aids in stabilizing soils from wind and water erosion. Fuel maps were created indicating concentrations of fire-prone vegetation and areas recommended for hazard fuel reduction projects; these may be found in the 2004 USAG Alaska Transformation EIS.

Maneuver Training. There would be a 10 to 60 percent increase in maneuver required to support these Soldier stationing scenarios. The increase in maneuver frequency is expected to damage or remove vegetation and disturb soils to an extent that would increase soil erosion rates and alter drainage patterns in the training areas. This could lead to gullying, and indirectly to downstream sedimentation, particularly when the vehicles travel off-road.

During summer months, there is a great deal more open or standing water located on FRA. During the warmer seasons the risk of sediment transport and loading to waterbodies on the installation is much greater. In many areas, maneuver is reduced or restricted to minimize or eliminate effects of training to water bodies. Training maneuvers in Alaska are often conducted more frequently in the winter months to reduce impacts from soil erosion and to waterbodies.

4.7.8 Biological Resources

4.7.8.1 Affected Environment

Fish & Wildlife

Wildlife is abundant throughout FRA and its surrounding areas, which include a variety of large mammals; small mammals and furbearers; amphibians; fish; and avian species including game birds, waterfowl, passerines, and raptors.

FRA is home to a number of Priority species of conservation importance. Priority species are listed due to their conservation vulnerability. These species include many avian, mammalian, and other species of concern. Priority wildlife species at FRA include the Wolverine, Grizzly bear, Black bear, Wolf, Dall sheep, Moose, Beluga whale (proposed species), and the Common loon, as well as waterfowl and raptor species. Appendix F of the Transformation EIS (USAG Alaska, 2004) discusses these species and human impacts to these species in greater detail.

In addition, the list of priority species includes migratory bird species; these include the Western wood-pewee, Steller's jay, American dipper, Golden-crowned kinglet, and the Golden-crowned sparrow (Partners in Flight). Table 4.7-6 below lists the species of concern found on FRA and DTA (USAG Alaska 2007, 2008). As a note, the Beluga whale is a proposed species and is anticipated to be federally-listed as an endangered species this year. Many activities stemming from the city of Anchorage, surrounding communities, and from FRA and Elmendorf AFB may directly and indirectly affect the Beluga. While the effects of disturbance to the whale are not well understood, the Beluga may be susceptible to shipping, aircraft overflights, and water quality degradation (including any water quality impacts that may affect the salmon that the Beluga whale feeds upon).

Table 4.7-6. Species of Concern found on U.S. Army Alaska lands

Training Area/ Installation	Group	Species	Scientific Name
Fort Richardson	Bird	American peregrine falcon*	*Falco pereginus anatum*
	Bird	Northern goshawk (southeast population)	*Accipter gentiles laingi*
	Bird	Olive-sided flycatcher**	*Contopus cooperi*
	Bird	Gray-cheeked thrush	*Catharus minimus*

	Bird	Townsend's warbler	*Dendroica townsendii*
	Bird	Surfbird	*Aphriza virgata*
	Bird	Rusty Blackbird	*Euphagus carolinus*
	Bird	Blackpoll warbler	*Dendoica striata*
	Amphibian	Wood Frog	*Rana sylvatica*
	Mammal	Brown bear (Kenai Peninsula population)	*Ursus arctos horribilis*
	Mammal	Harbor seal	*Phoca vitulina*
	Mammal	Beluga whale (Cook Inlet Population)	*Delphinapterus leucas*
Species of Management Concern	Moose Caribou Bison Chinook salmon Wolverine Lynx Dall Sheep Black Bear Brown Bear Wolf Sharp-tailed Grouse Ruffed Grouse Grayling		

* Downlisted from the Alaska Endangered Species List

** Category 2 Candidate Species under Federal Endangered Species Act

Recreational Hunting and Fishing and Subsistence Hunting

Wildlife and fisheries management on USAG Alaska 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 USAG Alaska, the Alaska Department of Fish and Game, and the U.S. Fish and Wildlife Service. More information on wildlife and fisheries can be found in the Transformation of U.S. Army Alaska Final Environmental Impact Statement (USAG Alaska 2004).

Fort Richardson is located within the Alaska Department of Fish and Game's Game Management Unit 14 and Game Management Subunit 14C. A detailed map of Game Management Subunit 14C and the wildlife species available for hunting (and their associated seasons and regulated hunting limits) is found in the Alaska Department of Fish & Game's 2007-2008 Alaska Hunting Regulations, No. 48 (Regulated by Title 5, Alaska Administrative Code and Title 16 of Alaska Statutes) (www.wildlife.alaska.gov, n.d.).

Fish stocking is a common activity at four lakes on Fort Richardson and is intended to promote the recreational use of Army lands while improving the health of rainbow trout (*Oncorhynchus mykiss*), chinook salmon (*Onchorhynchus tshawytscha)*, and arctic char (*Salvelinus alpinus*) populations. Waters within the installation also support wild populations of the silver salmon (*Oncorhynchus kisutch*), chum salmon, red salmon (*Oncorhynshus nerka*), pink salmon (*Oncorhynchus gorbuscha*), the dolly varden (*Salvelinus malma*), and the three-spine stickleback (*Gasterosteus aculeatus*).

FRA is located within the traditional lands of the Dena'ina, northern Athabascan Tribes of Cook Inlet. The Dena'ina traditionally pursued a semi-permanent lifestyle, spending winters in permanent settlements and dispersing in the summer months with the onset of summer fish runs. Seasonal camps at favorable fishing locations were established along riverbanks, coastal edges, and lakeshores. A number of these traditional fish campsites are known to lie within what is now FRA. Once salmon runs had ended, groups would often travel into the mountains to hunt caribou and mountain sheep. Moose, bear, mountain goats, and Dall sheep were often hunted year-round in areas outlying winter village settlements.

The only Dena'ina village remaining in the FRA vicinity is the Native Village of Eklutna, located approximately 10 miles north of the cantonment area and post entrance. However, 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 FRA. Contemporary communities extend through kinship ties into Eagle River and Anchorage, for example. Any reference to specific communities here is based on current proximity of federally recognized tribal governments to USAG Alaska managed lands. It is hoped that a better understanding of subsistence use and traditional use areas on FRA will be gained through ongoing coordination efforts.

Vegetation

Vegetation type and distribution is generally influenced by climate, topography, soil types, hydrology and other factors; and in Alaska vegetation types are broadly classified as barren lands, tundra, forest land, and scrub land, and wetland. Four plant species are ranked in USAG Alaska's short list of species of concern for ecosystem management; these are *Carex sychnocephala*, *Phlox hoodii*, *Carex parryana*, and *Sisyrinchium montanum*, which are rare and considered critically imperiled within the state of Alaska. A more detailed description of vegetation types is found in Robert G. Bailey's Description of Ecoregions of the United States (U.S. Department of Agriculture, 1995). USAG Alaska conducted extensive studies and surveys of its land assets from 1998 to 2000. Detailed maps and classifications of vegetation relative to USAG Alaska's land assets are found in Jorgenson et al. (1999, 2001, 2002). According to Jorgenson et al. (2002), of the 61,972 acre post commanded by Fort Richardson, 55.3 percent is covered by forest, 23.7 percent by scrub land, human disturbed lands comprise 13.1 percent, 5.5 percent are barren lands, bog and wetland make up only 1.6 percent (this conflicts with the 8% in the wetlands section), 0.7 percent is meadow, and 0.5 percent of Fort Richardson is water. The Transformation Environmental Impact Statement, U.S. Army Alaska (USAG Alaska, 2004) offers a more comprehensive discussion of vegetative cover throughout the installation. Fort Richardson's INRMP describes the installation's forest management program.

Wildfire Management

Fire management on USAG Alaska installations is required by the Sikes Act and by Army regulation. Fire management plans are required by the Resource Management Plan, which is mandated under Public Law 106-65, the Military Lands Withdrawal Act. Additional direction regarding fire management is stated in a 1995 Memorandum of Understanding between the Bureau of Land Management (BLM) and USAG Alaska as well as in the Army wildland fire policy guidance document (U.S. Army 2002). Wildland fire management in Alaska requires multi-agency cooperation. Fire management is a joint effort by USAG Alaska and the BLM,

Alaska Fire Service (AFS). The agencies have developed two inter-service support agreements, which establish the AFS's responsibility for all fire detection and suppression on installation lands (AFS and USAG Alaska 1995a,b). In exchange, the Army provides the AFS with use of certain buildings, utilities, land, training services, air support, and other support services.

The AFS also has a Reciprocal Fire Management Agreement with the State of Alaska's Department of Natural Resources, Division of Forestry (AFS and State of Alaska 1998). Under this agreement, the agencies have implemented a coordinated fire suppression effort and have identified areas where each agency has agreed to provide wildland fire suppression, regardless of whether the lands are under state or federal ownership.

The Alaska Wildland Fire Management Plan, which is reviewed each year, designated wildland fire management areas and allowed land managers to establish fire management options according to land use objectives and constraints. The Alaska Wildland Fire Management Plan also established four fire management options: Critical, Full, Modified, and Limited (USAG Alaska 2004). 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 (Alaska Wildland Fire Coordinating Group 1998). In addition, two additional fire management option categories have been developed specifically for lands managed by USAG Alaska. Unplanned Areas are not officially designated but receive fire management equal to the Full management option. The AFS has responsibility for initial response in Unplanned Areas (USAG Alaska 1999b). Restricted Areas or Hot Zones include impact areas and other locations where no "on the ground" firefighting can be accomplished due to danger of unexploded ordnance. High-hazard impact areas are managed as Hot Zones with Limited management.

The north post of FRA is classified for Full and Critical fire management options due the high value of resources at risk from fire, in addition to the post's proximity to Anchorage, Eagle River, and Elmendorf AFB (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, and management options related to wildland fire have been developed. Cultural resources potentially at risk from wildfire have also been identified in DTA East and Main Fort Greely Post, and management options related to wildland fire have been determined. The north post is bounded by Elmendorf AFB, private parcels, railroad lands, and Native Corporation lands (USAG Alaska 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, and management options related to wildfire have been determined. The south post is bound by private parcels and state lands (USAG Alaska 2002b).

Although wildfires are a concern at FRA, they are rarely a significant problem. Numerous fires have been recorded in the Matanuska-Susitna Valley to the north, but no major fires have occurred on FRA since 1950 (Jorgenson et al. 2002). Severe drought conditions occur about once every 20 years, and, in normal years, there is an average of less than five wildfires. These fires are usually mission-related, small, and easily contained.

The FRA Fire Department provides the initial response for wildfire suppression, which has traditionally been confined to areas behind the small arms complex. 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 (USAG Alaska 2002b). When necessary, BLM reimburses the Alaska Division of Forestry to suppress wildfires in the southern half of the state, including FRA. The Division of Forestry also provides training for wildfire suppression at FRA. USAG Alaska and Elmendorf AFB have a mutual aid agreement for fire suppression (USAG Alaska 2002b).

There is some concern over the spruce bark beetle that killed most of the larger white spruce in the north and south post training areas. The dead spruce has resulted in high fuel load conditions on the forest floor. Additionally, the deaths of the larger spruce trees have allowed areas to be taken over by bluejoint reedgrass, another potential fire risk (USAG Alaska 2002b). The absence of wildfires may be inhibiting the potential for optimal ecosystem development. The current infestation of spruce bark beetles in old-aged timber is one problem that may have been exacerbated by a lack of wildfires (USAG Alaska 2002b). To reduce this threat, 60 acres of dead spruce were removed along the Stuckagain Heights residential area, and 10 acres of dead spruce were removed near another housing area. Additionally, Grezelka Range was recently treated with a 15-acre prescribed burn to reduce fuel loads.

4.7.8.2 Environmental Consequences

No Action Alternative: (Less than Significant)

Under the No Action Alternative, the current uses of the affected environment would not change from the conditions described in 4.7.8.1. FRA's current operations would continue at current levels. Ongoing military activities would continue and new mission essential projects would be developed as needed.

Cantonment Construction. Under the No Action Alternative, no additional Soldiers would be stationed at FRA so no cantonment construction is required. The garrison has adequate facilities to support the existing units' requirements for living, administration, and vehicle maintenance. Consequently, no construction-related impacts are expected to vegetation, wildlife, species of concern, or populations of noxious weeds in the cantonment at FRA.

Range Infrastructure Construction. No new range construction would occur under the No Action Alternative. The current number of Soldiers training at FRA would remain the same and no additional ranges would be constructed. In addition, none of the current ranges would be expanded as described for the action alternatives. Therefore, no effects to vegetation, wildlife, or species of concern are expected. Invasive species is a minimal concern and USAG Alaska is committed to proactive management, so no impacts from noxious weeds would occur.

Live-Fire Training. Under the No Action Alternative, the number of Soldiers stationed and training at FRA would remain the same. The number of required live-fire user days per year at FRA would continue at present levels. Noise from weapons firing can disturb wildlife, causing more sensitive species and individuals to move away from training ranges. In addition, weapons firing can remove vegetation directly and indirectly through the disturbance of vegetation and soils. Implementation of the INRMP and ITAM program work plans and associated management

practices and soil erosion mitigation would continue to ensure that impacts to vegetation, wildlife, and species of concern caused by live-fire training would be less than significant.

Maneuver Training. The intensity and frequency of maneuver training at FRA would remain at current levels because the number of Soldiers training at FRA would remain the same. In addition, no new maneuver areas would be required and maneuver training would be conducted in the footprint of existing ranges and trails at FRA. Implementation of the INRMP and ITAM program work plans and associated management practices and soil erosion mitigation would continue to ensure that impacts to vegetation, wildlife, and species of concern caused by maneuver training would be less than significant.

CSS (1,000), CS (1,000), Fires Brigade (1,600), CSS (3,000), CS (3,000): (Significant but Mitigable).

Cantonment Construction. Short-term impacts to wildlife from construction noise are expected, but may have greater effects from scenarios supporting more than 1,000 Soldiers. Construction supporting the 1,000 Soldier stationing scenario would occur as infill among the existing cantonment area. This area is built up and is not currently supporting any sensitive wildlife species.

Construction occurring in the antennae field to the east may have more significant effects to vegetation and wildlife. Construction and the use of heavy equipment would disturb soils and remove vegetation and soil compaction from heavy equipment may make it difficult for soils to support the future growth of natural vegetation. Stormwater runoff from the construction site(s) may result in short-term adverse impacts to nearby waterbodies, increasing turbidity and temporarily degrading water quality and potentially impacting the fish and invertebrates that live and feed in those waters; and indirectly effecting the terrestrial, avian, and marine mammals (such as the Beluga whale) that feed on fish like the Salmon that use these waterways. Impacts to waterways would be temporary and localized, and the installation would ensure BMPs are in place to minimize and mitigate potential impacts from runoff. The installation has a robust and successful stormwater management program.

Construction activities (increase in vehicles and human presence) create noise and disturbs habitat. While these activities have not been shown to be detrimental to hunting and foraging behavior or reproductive success, these effects may vary by location, species, and type of human activity (Bowles (1993), Holthuijzen et al. (1990), and Doresky et al. (2001)).

Construction impact to soils could make soils available for invasive plant species to become established. Equipment and vehicles could introduce these species in tire tread (as seeds) or among construction materials. Management of invasive plant species is an issue of concern on USAG Alaska lands. The Range and Training Land Assessment program monitors vegetation and documents invasive plant species. These species are managed using integrated pest management techniques, whereby chemical control is minimized.

Adverse impacts to species of concern would include increased habitat loss and disturbance; however, the proposed alternatives are unlikely to cause such impacts as proposed projects would occur in previously developed or disturbed areas. USAG Alaska's policies for management of endangered species are outlined in the Integrated Natural Resources Management Plan (USAG Alaska 2007). USAG Alaska monitors and manages its species of concern. The focus of installation natural resource management is at the ecosystem level.

These management goals and objectives include protection and conservation of species of concern found on USAG Alaska posts, identification and delineation of species and their habitats, and compliance with Section 7 of the Endangered Species Act. If species are listed as threatened or endangered USAG Alaska would consult with U.S. Fish and Wildlife Service and conduct planning as part of its natural resources management program. The USAG Alaska natural resources management program implements inventory and monitoring to identify the location and distribution of any rare, uncommon, or priority species; and protects habitats of these species.

Training Range Infrastructure Construction. Short-term impacts from construction noise are expected, however (as discussed above) these activities have not shown to have significant long-term impacts to wildlife behaviors or reproductive success. Movement of equipment into areas that do not currently support military activities would increase the likelihood of nonnative plant and animal introductions. Construction equipment and materials can introduce invasive species and other weeds to the area which may affect the long-term habitat of some wildlife. Since range renovations and construction would occur on previously disturbed soils at FRA, the effects to general wildlife and habitats are anticipated to be less than significant.

Although there are no threatened and endangered species found on the installation, past experience with range construction has demonstrated that construction activities may temporarily inhibit Moose from grazing in some range areas. However, installation staff have observed the return of Moose after construction projects. It is thought that Moose and other ungulates may be attracted by the growth of herbaceous, non-woody vegetation which are prevalent on Army ranges in Alaska.

Live-fire Training. Operation of ranges has the potential to displace various wildlife species. Displacement would be caused by increased human presence in the area, as well as by elevated noise levels. Wildlife species that are more tolerant of human activity may remain in or around these ranges. Individuals that remain within the impact area and associated surface danger zones could be directly affected by munitions. Higher training levels at existing ranges would increase incidental mortality to wildlife. However, such mortality is not expected to cause measurable impacts to wildlife populations.

Direct impacts to wildlife from noise associated with live-fire activities would be long-term but are not anticipated to be significant. If food is abundant on or near the ranges where Soldiers fire weapons and maneuver wildlife species tend to adjust to training activities. Bowles (1990) found that predator species will often move toward the sound of gunfire because the disturbance of prey species (seeking shelter) may provide successful hunting opportunities. This was supported in a raptor study conducted by Andersen et al. (1986, 1990), and a study conducted by the Fish and Wildlife Service in 1988 regarding training noise impacts to northern harriers. Although Bowles suggested that other studies indicated large mammals may move away from military training sites, they will often return during times when the ranges are not in use.

Impacts from live-fire activities would include the disturbance of soils and vegetation on ranges, increasing the erodibility of soils and requiring more monitoring and maintenance. The use of explosives by CS units may create craters and remove vegetation. The explosives residue associated with their use is not expected to migrate easily off-range due to low precipitation and near year-round frozen conditions.

Live-fire training could potentially increase the frequency of wildfires. A larger number of Soldiers would use existing or expanded ranges for live-fire training. As a result of more rounds being fired there would be an increased risk of accidental wildfire ignition. Sources of wildfire ignition would include small arms fire, vehicles, flammable materials, and cigarettes. Several fire mitigation measures are being implemented throughout the Garrison on existing ranges and would be in place under all stationing scenarios. Reclassification of fire management options may occur to ensure fire management meets anticipated changes in wildfire risk. Prescribed burns of deadfall timber would continue to ensure reduced levels of fuel loading in range areas. In drought years fire management practices would be adjusted. Given relatively low frequency of wildfires at FRA and its ongoing fire management activities, the impacts are anticipated to be mitigable to less than significant.

Maneuver Training. Additional Soldiers associated with these scenarios would significantly increase the amount of maneuver on ranges (by approximately 10 to 60 percent). Although these units would stay mostly on roads and hardened surfaces possible disturbances to soils in off-road training areas may erode away vegetation and further compact soils making it more difficult for vegetation to re-establish itself. Potential direct impacts include damage to soil surface and causing disruption to the permafrost layer below, allowing soils to subside and creating the opportunity for water to collect at the surface. Any impacts to permafrost may considerably alter the landscape and habitat in range areas.

CS units would have a greater degree of impact on vegetation and wildlife communities due to the increased frequency from off-road maneuver and ground clearance activities. The noise associated with CS and CSS maneuver activities would be of the same intensity as currently experienced, however, more maneuver rotations would occur at FRA.

4.7.9 Wetlands

4.7.9.1 Affected Environment

Almost half of the immense state is classified as wetlands, which make the wetland important to Alaska's economy, ecology, and culture. Wetland types found there are saltwater or brackish (tidal flats and estuaries), and freshwater further divided into marshes, bogs, and fens. A more detailed description of wetlands is found in Robert G. Bailey's Description of Ecoregions of the United States (U.S. Department of Agriculture, 1995).

At Fort Richardson, nearly 4,990 acres of land (or approximately 8 percent) is classified as wetlands and include marine and freshwater, tidal and non-tidal types. The largest of these resources is Eagle River Flats at 2,165 acres; which is now listed on the EPA's National Priorities List for cleanup of hazardous substances. Although the hazardous material found there, mainly white phosphorus, was determined to have little to no impact on most wildlife species that live or forage for food there, water birds were determined to be at serious risk, especially shorebirds, dabbling ducks, and swans. In a step to preserve that important resource, USAG Alaska ceased the use of white phosphorus there in 1989, and munitions items containing the chemical constituent were banned from impact areas throughout Alaska in 1991. Remediation efforts are ongoing at Eagle River Flats.

Nearly 8 percent of the land at FRA is covered by wetlands. The following are the most prevalent types of wetlands there.

Wetland Type	Totaling ~8% of FRA Land	Wetland Characterization and/or Location	Vegetation
Coastal Halophytic Zone	3%	Shoreline tidal flats and barren mud flats Eagle River Flats (2,165 acre estuarine marsh)	Rye grass, Lyngebye sedge, Maritime arrow grass, Glasswort, Goose tongue, and Alkali grass
Lowland Forest Wetlands	3%	Palustrine Bordering Ship Creek, McVeigh Marsh, Fossil Creek Bottomlands; areas southwest of Eagle River Flats; and south and west of Clunie Lake.	Bluejoint grass, Oak fern, Red raspberry, Lowbrush cranberry, Red currant, shrubs, and sedges
Lacustrine Wetlands	1%	Open water and vegetated with sedges	Marsh Five-finger, Marsh and Woodland horsetail, Cahmiss's cottongrass, Shore sedge, and Sphagnum moss
Alpine and Subalpine Wetlands	0.3%	Sub-alpine areas of FRA	Bluejoint meadow wetlands

4.7.9.2 Environmental Consequences

No Action Alternative: (No Impact)

Under the No Action Alternative, the current uses of the affected environment would not change from the conditions described in 4.7.9.1. FRA's current operations would continue at current levels. Ongoing military activities would continue and new mission essential projects would be developed as needed.

Cantonment Construction. Under the No Action Alternative, no additional Soldiers would be stationed at FRA so no cantonment construction is required. The garrison has adequate facilities to support the existing units' requirements for living, administration, and vehicle maintenance. Consequently, no impacts to wetlands from construction in the cantonment at FRA are expected.

Range Infrastructure Construction. No new range construction would occur under the No Action Alternative. The current number of Soldiers training at FRA would remain the same and no additional ranges would be constructed. In addition, none of the current ranges would be expanded as described for the action alternatives. Therefore, no effects to wetlands are expected.

Live-Fire Training. Under the No Action Alternative, the number of Soldiers stationed and training at FRA would remain the same. The number of required live-fire user days per year at FRA would continue at present levels. Because the live-fire ranges were located to avoid wetland impacts, continued live-fire training is not expected to affect the function or presence of wetlands at FRA.

Maneuver Training. The intensity and frequency of maneuver training at FRA would remain at current levels because the number of Soldiers training at FRA would remain the same. In addition, no new maneuver areas would be required and maneuver training would be conducted

in the footprint of existing ranges and trails at FRA. Consequently, no change in impacts to wetlands from maneuver training is expected.

CSS (1,000), CS (1,000), Fires Brigade (1,600), CSS (3,000), CS (3,000): (No Impact).

Cantonment Construction. Because there are no wetlands present in the cantonment area no impacts are expected.

Training Range Infrastructure Construction. Small pockets of wetlands exist in the training areas of FRA. During springtime, it has been historically difficult to differentiate between wetlands and temporary standing water from snowmelt; both can appear hydrologically similar without further investigation. The installation takes precaution if siting a range and may likely consider a wetlands delineation or further evaluation if uncertain. Site-specific analysis would determine if range siting would impact wetlands, but installation staff would avoid wetlands when siting range expansion projects.

Live-fire Training. As stated above, the installation would site ranges and their firing points away from documented wetland areas to avoid potential impacts wherever possible. The live-fire activities are not anticipated to change the function or presence of wetlands at FRA. The presence of munitions constituents may occur in some wetlands areas on designated firing ranges.

Maneuver Training. Maneuver from these stationing scenarios is expected to remain on roads and hardened surfaces, within the existing road and trail network at FRA. No additional roads or trails would likely be constructed and therefore only minor impacts to nearby wetlands from runoff are anticipated. Site-specific analysis would identify range roads and trails that these units may use to train, their proximity to wetlands, and potential impacts.

4.7.10 Water Resources

4.7.10.1 Affected Environment

Watershed

Major waterways on each of the Army's installations and training lands in Alaska are classified as either glacial or non-glacial. Each variety of waterway experiences higher flow conditions during spring and summer, whereas water flow is reduced (low flow) during the fall and winter seasons. Non-glacial waterways will experience a sharper increase in flow during May coinciding with snowmelt; and glacial waterways tend to experience peak discharge in June or July, coinciding with melting of glaciers.

The State of Alaska has assigned freshwater use classes to its waters, protecting them from exceedances for certain uses; these are Class (A) Water Supply, (B) Water Recreation, and (C) Growth and propagation of fish, shellfish, other aquatic life, and other wildlife. If exceedances in water quality standards are detected the state will designate that waterbody as "water quality limited".

FRA is located within the Cook Inlet watershed which for FRA consists of two major waterways and several smaller tributaries. At FRA, the main glacial waterway is Eagle River, originating at

the base of the Eagle Glacier in the Chugach Mountains. Eagle River flows through FRA and settles out at Eagle River Flats, the estuarine tidal marsh located at the mouth of the river. Ship Creek (a non-glacial waterway) flows from Ship Lake at the Chugach Mountains to the Knik Arm where water is diverted to FRA and Elmendorf AFB (USAG Alaska, 2004) (discussed below). Smaller tributaries include Chester Creek (located south of Ship Creek) which flows through the southwestern portion of FRA and into a marsh wetland at the base of the Chugach Mountains and then is re-channeled near FRA's western border. North Fork Campbell Creek is a non-glacial stream that stems from Long Lake (in the Chugach Mountains) and flows across FRA's southwestern corner where waterflow there recharges the groundwater aquifer. McVeigh Creek also begins near the Chugach Mountains and flows west to southwest (parallel to Glenn Highway) and flows through FRA's small arms range where it continues to McVeigh Marsh and drains into Ship Creek upstream from the Glenn Highway Bridge. Snowhawk Creek (also non-glacial) is a tributary to Ship Creek; it drains Tanaina Lake and flows northeast through Snowhawk Valley and joins Ship Creek upstream of Ship Creek Dam and Reservoir. Clunie Creek flows from wetlands located south of Clunie Lake into Eagle River Flats and ultimately drains into Knik Arm. Finally, Otter Creek is a perennial stream that flows from Otter Lake to Eagle River Flats.

FRA has 12 lakes and several unnamed waterbodies totaling approximately 359 acres. Five of these lakes are managed for recreational fishing.

Water quality at FRA is indicated by different classes of freshwater use as assigned by the Alaska Department of Environmental Conservation (ADEC); these are not discussed in this document. However, ADEC has labeled Eagle River Flats as a Tier II waterbody and Ship Creek a Tier I waterbody based on the degrees in which they exceed water quality standards. Eagle River Flats contains white phosphorus contamination due to previous military activities. Ship Creek is water quality limited due mainly to non-point source pollutants entering the waterbody downstream of FRA.

Water Supply

As indicated above, all of FRA's water supply is diverted from the reservoir at Ship Creek. The Army has primary rights to 7 MGD, and nearly 10 MGD is diverted from the reservoir to the Anchorage Water and Wastewater Utility (AWWU). The water supply is treated and distributed throughout FRA. The installation currently uses an average of 1 to 1.5 MGD even though it is permitted for much more. However, the water treatment plant is only capable of processing 6 MGD. Flow rate and water treatment at the plant can be influenced by avalanches or increased turbidity from rain events. The soils hosting the water distribution system tend to be favorable to protecting from water pipe bursts during earthquakes. While pipes bursting may have been a problem some time ago, the entire system was upgraded in the late 1980s to a stronger system that is not prone to earthquake activity. The distribution system on-post is gravity fed through and in some locations is augmented with booster pumps due to low flow.

If peak capacity is exceeded, or if an alternate source of water is necessary, FRA also maintains the ability to access water from the Eklutna line through a 36 inch distribution pipe. However, because this line has only been tested once and is not well-monitored for maintenance needs, there are potential problems with distribution and access.

Additionally, the installation may also use well network systems (3 wells) situated near the hospital (which one) that have the capability of pumping up to 1,000 GMP. This system is sometimes used when spring water flow into Ship Creek is low.

The water treatment and wastewater treatment systems at FRA is undergoing privatization, soon to be transferred to Doyon Utilities, which would also assume control of maintenance for the distribution system throughout post.

Wastewater

There are no wastewater treatment facilities at Fort Richardson (Doyon Utilities Web Site, n.d.). There is one main line leaving post that carries wastewater from FRA. Historically, the wastewater treatment plant (City-owned) can handle a maximum capacity waste stream from FRA and Elmendorf AFB of 3.5 to 4.0 MGD (Elmendorf accounts for approximately 60 percent of the waste stream). However, due to recent upgrades the treatment plant may be able to accommodate up to 6.0 MGD. Doyon Utilities is currently conducting a characterization study to determine the need for upgrades and maintenance on current distribution and receiving pathways.

Stormwater

FRA has an intensive stormwater program and conducts strict enforcement of BMPs to ensure against stormwater runoff from the installation. Furthermore, the installation has recently invested in a full-time stormwater monitor dedicated to stormwater compliance throughout the installation 7 days per week, offering a greater degree of quality assurance and control at all construction sites.

4.7.10.2 Environmental Consequences

No Action Alternative: (Less than Significant)

Under the No Action Alternative, the current uses of the affected environment would not change from the conditions described in 4.7.10.1. FRA's current operations would continue at current levels. Ongoing military activities would continue and new mission essential projects would be developed as needed.

Cantonment Construction. Under the No Action Alternative, no additional Soldiers would be stationed at FRA so no cantonment construction is required. The garrison has adequate facilities to support the existing units' requirements for living, administration, and vehicle maintenance. Consequently, no changes or impacts to water resources at FRA are expected, including water supply and distribution, wastewater collection, and stormwater runoff.

Range Infrastructure Construction. No new range construction would occur under the No Action Alternative. The current number of Soldiers training at FRA would remain the same and no additional ranges would be constructed. In addition, none of the current ranges would be expanded as described for the action alternatives. Therefore, no changes or impacts to water resources at FRA ranges are expected.

Live-Fire Training. Under the No Action Alternative, the number of Soldiers stationed and training at FRA would remain the same. The number of required live-fire user days per year at FRA would continue at present levels. USAG Alaska would continue to implement its current BMPs, SPCC, and SWPPP to address the ongoing effects of live-fire training. Therefore, effects to water resources are expected to continue to be less than significant.

Maneuver Training. The intensity and frequency of maneuver training at FRA would remain at current levels because the number of Soldiers training at FRA would remain the same. In addition, no new maneuver areas would be required and maneuver training would be conducted in the footprint of existing ranges and trails at FRA. USAG Alaska would continue to implement its current BMPs, SPCC, and SWPPP to address the ongoing effects of maneuver training. Therefore, effects to water resources from maneuver training are expected to continue to be less than significant.

CSS (1,000), CS (1,000): (Less than Significant).

Cantonment Construction. Construction within the main cantonment area would require the tie-in of utilities to the existing infrastructure. There is more than adequate water supply and infrastructure to accommodate any of these stationing scenarios, especially as construction may be infilled among existing structures and centrally located in the cantonment area. The wastewater collection and water distribution system may require some upgrades. This would consist of the new design of filters in the wastewater treatment plant and additional piping in the water distribution system. The remainder of the water distribution infrastructure at FRA should be adequate to meet demand.

Construction activities could affect surface water by localized increases in erosion and runoff. Potential impacts would include increased overland flow and runoff and decreased percolation to groundwater. Impacts from construction runoff are expected to be temporary. The installation's stormwater monitoring and compliance program could manage additional stormwater runoff. Any construction that disturbs more than one acre of land would require a stormwater pollution prevention plan (SWPPP). A SWPPP would prescribe measures that the installation would implement to channel stormwater and decrease turbidity and sedimentation. Construction BMPs such as sediment/silt fences would be used to ensure no sediment tracks off or flows off construction sites.

Operation of construction vehicles could cause spills of POLs and other hazardous and toxic substances, which could result in indirect impacts to surface and/or groundwater if accidentally released into the environment. The Army has implemented BMPs, an SPCC, and an SWPPP to address leaks or spills of hazardous materials. With these established measures, impacts are expected to be less than significant.

Training Range Infrastructure Construction. Construction impacts in the range area would be similar to construction impacts in the cantonment area. During ground preparation for range expansion, grading, excavating, and trenching may expose erodible soils to stormwater runoff and increase the potential for sediments to migrate to surface waters. These potential impacts would be reduced to acceptable levels by implementing standard construction BMPs. Impacts from construction runoff are expected to be temporary. The installation's stormwater monitoring and compliance program is prepared to handle additional capacity.

Operation of construction vehicles could cause spills of POLs and other hazardous and toxic substances, which could result in indirect impacts to surface and/or groundwater if accidentally released into the environment. The Army has implemented BMPs, an SPCC, and an SWPPP to address leaks or spills of hazardous materials. With these established measures, impacts are expected to be less than significant.

Live-fire Training. There would be an increase of less than 20 percent in live-fire training on existing and expanded ranges. The increase in weapons qualification training would increase lead and other materials on ranges. A greater amount of runoff from impacted berms and exposed soils is possible. Installation DPW staff monitors impacts from live-fire activities and would continue to institute the required mitigations and BMPs (such as berm revegetation and regrading) to minimize effects off the firing ranges. Other chemical pollutants, such as petroleum hydrocarbon fuels or lubricants, may be indirect effects resulting from vehicles parked at the training sites. Overall impacts are expected to be less than significant given the limited increase in live-fire activities on ranges designed for weapons qualification at FRA.

There may be a small increase in the risk of wildland fires due to the increase in Soldiers using these ranges. Wildland fires can generate chemical contaminants, and loss of vegetation can increase the potential for soil erosion and sediment loading to streams resulting in impacts to water quality.

Maneuver Training. Additional traffic on the range road network and stream crossings during maneuver may contribute to increased sedimentation and turbidity in waterbodies. Efforts may be considered to reinforce stream crossings and ice bridge approaches and monitor those areas for decreased water quality. Further, bivouac sites in the training area may also need monitoring and maintenance to ensure against stormwater runoff that may stem from the effects of increased Soldier throughput in those areas.

Increased maneuver training would increase the use of fuels, solvents, and other hazardous and toxic substances, which might result in indirect impacts to surface and/or groundwater if accidentally released into the environment. However, implementing BMPs including SPCC would minimize potential impacts resulting from leaks or spills of hazardous materials. Impacts are expected to be less than significant.

Fires Brigade (1,600), CSS (3,000), CS (3,000): (Less than Significant).

Cantonment Construction. There is more than adequate water supply to accommodate these stationing scenarios. However the stationing of more than 1,000 Soldiers would require construction in an area to the east of the cantonment area. As there is currently no infrastructure there, Doyon (privatized utilities provider) would need to add new water distribution and collection lines and make slight upgrades to the wastewater collection system. The results of Doyon's water system characterization study should determine the need for additional capacity if the proposed action were to be implemented at FRA. Further power and telecommunication systems would need to be constructed to this area. The wastewater treatment plant may not currently have adequate capacity to accommodate this level of growth; however, upgrades would be relatively simple and would consist of the addition of new filters in the wastewater treatment plant

Construction activities could affect surface water by localized increases in erosion and runoff. Potential impacts would include increased overland flow and runoff and decreased percolation to groundwater. Impacts from construction runoff are expected to be temporary. The installation's stormwater monitoring and compliance program could manage additional stormwater runoff. Any construction that disturbs more than one acre of land would require a stormwater pollution prevention plan (SWPPP). A SWPPP would prescribe measures that the installation would implement to channel stormwater and decrease turbidity and sedimentation.

Construction BMPs such as sediment/silt fences would be used to ensure no sediment tracks off or flows off construction sites.

Operation of construction vehicles could cause spills of POLs and other hazardous and toxic substances, which could result in indirect impacts to surface and/or groundwater if accidentally released into the environment. The Army has implemented BMPs, an SPCC, and an SWPPP to address leaks or spills of hazardous materials. With these established measures, impacts are expected to be less than significant.

Training Range Infrastructure Construction. Construction impacts in the range area would be similar to construction impacts in the cantonment area. During ground preparation for range expansion, grading, excavating, and trenching may expose erodible soils to stormwater runoff and increase the potential for sediments to migrate to surface waters. These potential impacts would be reduced to acceptable levels by implementing standard construction BMPs. Impacts from construction runoff are expected to be temporary. The installation's stormwater monitoring and compliance program is prepared to handle additional capacity.

Operation of construction vehicles could cause spills of POLs and other hazardous and toxic substances, which could result in indirect impacts to surface and/or groundwater if accidentally released into the environment. The Army has implemented BMPs, an SPCC, and an SWPPP to address leaks or spills of hazardous materials. With these established measures, impacts are expected to be less than significant.

Live-fire Training. There would be an increase of less than 60 percent in live-fire training on existing and expanded ranges. The increase in weapons qualification training would increase lead and other materials on ranges. A greater amount of runoff from impacted berms and exposed soils is possible. Installation DPW staff monitors impacts from live-fire activities and would continue to institute the required mitigations and BMPs (such as berm revegetation and regrading) to minimize effects off the firing ranges. Other chemical pollutants, such as petroleum hydrocarbon fuels or lubricants, may be indirect effects resulting from vehicles parked at the training sites. Overall impacts are expected to be less than significant given the limited increase in live-fire activities on ranges designed for weapons qualification at FRA.

The risk of wildfires is expected to remain at about the same level as under existing conditions or slightly higher due to the increase in Soldiers using these ranges. Wildfires can generate chemical contaminants, and loss of vegetation can increase the potential for soil erosion and sediment loading to streams resulting in impacts to water quality.

Maneuver Training. Additional traffic on the range road network and stream crossings during maneuver may contribute to increased sedimentation and turbidity in waterbodies. Efforts may be considered to reinforce stream crossings and ice bride approaches and monitor those areas for decreased water quality. Further, bivouac sites in the training area may also need to be monitored and maintained more closely to ensure against stormwater runoff that may stem from the effects of increased Soldier throughput in those areas.

Increased maneuver training would increase the use of fuels, solvents, and other hazardous and toxic substances, which might result in indirect impacts to surface and/or groundwater if accidentally released into the environment. However, implementing BMPs including SPCC would minimize potential impacts resulting from leaks or spills of hazardous materials. Impacts are expected to be less than significant.

4.7.11 Facilities

4.7.11.1 Affected Environment

USAG Alaska facilities include housing; community facilities for education and recreation, emergency responders, healthcare, shopping, and banking, among others; installation support facilities including power, heating, and water utilities and their distribution/collection networks; range and training infrastructure used for the research, testing, and training of personnel, equipment, and weapons systems.

The total of USAG Alaska's range and training land acreage is listed below in Table 4.7-7. USAG Alaska has multiple corridors to move supplies and units throughout the Garrison; these include air, railroad, and a road network that provide accessibility from south central Alaska to the interior of the state. South Central Alaska also utilizes cargo shipments via sea to transport supplies to and from the state.

The quality and condition of Army ranges training lands are managed and monitored as a part of the Army's Sustainable Range Program (SRP) which includes the Range and Training Land Program (RTLP) and the Integrated Training Area Management (ITAM) program.

Table 4.7-7. Acres of USAG Alaska Range And Training Land Facilities

Installation	Small Arms Ranges	Major Weapons Systems Ranges	Non Live-fire Ranges	Maneuver Training Areas	Total
Fort Richardson	330	2,884	116	51,086	**54,416**

Transformation Environmental Impact Statement, U.S. Army Alaska (USAG Alaska, 2004).

Housing: In 2007, Fort Richardson and Elmendorf AFB developed a Joint Housing Market Analysis to assess the private sector housing market's potential to accommodate military Families through transition to privatization and for the military to achieve the minimum number of authorized housing units from 2007 to 2012 due to BRAC Commission recommendations (BRAC 2005). The growth covered by this market analysis does not include potential growth associated with the proposed action. During this transition period, both FRA and Elmendorf AFB are projecting growth in mission and personnel. The study reviewed housing requirements for both Soldiers with Families and unaccompanied/ bachelor Soldiers. The study concluded that based on current housing inventories there was an overall surplus of family housing units (when combining the available number of housing units for both installations) to accommodate known growth through 2012. Elmendorf AFB had a surplus of approximately 875 housing units, FRA showed a deficit of 615 units, equating to a total available surplus of 260 housing units. When reviewing the requirements for unaccompanied Soldiers, the study identified a total deficit of 798 housing units. Housing requirements for accompanied Soldiers in USAG Alaska will be privatized, and will be met by the Residential Communities Initiative (RCI) beginning 1 January 2009.

Table 4.7-8. Total military Family housing units requirement covering non-GTA growth through 2012

Component	Elmendorf AFB HRMA Through 2012	Fort Richardson HRMA Through 2012
Authorized Permanent Party	**6,625**	**6,959**
Accompanied Personnel	4,264	4,091
Unaccompanied Personnel	2,361	2,868
Accompanied Personnel	**4,264**	**4,091**
Military Couples & Army voluntary Separations	277	352
Military Families	3,987	3,739
In Military Housing	423	385
In Private Sector Housing	3,564	3,354
Homeowners	1,636	502
Renters	1,928	2,852
Suitable Rental Market Share	1,204	1,377
Not Allocated Suitable Housing	724	1,475
Military Family Floor Housing Requirement	**423**	**385**
Private Sector Shortfall	**724**	**1,475**
Total Military Family Housing Requirement	**1,147**	**1,860**
Military Family Housing Inventory	2,022	1,245
Deficit/(Surplus)	**(875)**	**615**

Table 4.7-9. Total unaccompanied personnel housing requirement covering non-GTA growth through 2012

Component	2012 Elmendorf AFB	Fort Richardson	Total
Unaccompanied Personnel	**2,361**	**2,868**	**5,229**
In Military Housing	1,010	2,511	3,521
In Private Sector Housing	1,351	357	1,708
Homeowners	310	-	1,708
Renters	1,041	357	1,398
Suitable Rental Market Share	839	283	1,122
Not Allocated Suitable Housing	202	74	276
Unaccompanied Personnel Floor Housing	**1,010**	**2,511**	**3,521**
Private Sector Shortfall	**202**	**74**	**276**
Total Unaccompanied Personnel Housing Requirement	**1,212**	**2,585**	**3,797**
Unaccompanied Housing Inventory	831	2,168	2,999
Deficit/(Surplus)	**381**	**417**	**798**

Currently, there are seven Family Housing neighborhoods consisting of 1,435 units and 273 acres. These are adjacent by hills and forest to the south and east (respectively), which work as a barrier against most noise and pollution generated from use of Glenn Highway. The installation has begun a revitalization program for a few of these neighborhoods. It should be noted that revitalization and reconstruction efforts have been initiated for much of the barracks and housing (for enlisted unaccompanied personnel).

Community facilities at Fort Richardson include the commissary and Post Exchange, child development center, a movie theater, and a fast food restaurant. Additional facilities support facilities include those that offer gasoline, chapel, and emergency response and a medical facility. The installation is also home to the Fort Richardson National Cemetery. The cantonment area also has general –purpose storage, cold storage, deployment equipment storage, shipping and receiving, and ammunition storage units.

4.7.11.2 Environmental Consequences

No Action Alternative: (Less than Significant)

Under the No Action Alternative, the current uses of the affected environment would not change from the conditions described in 4.7.11.1. FRA's current operations would continue at current levels. Ongoing military activities would continue and new mission essential projects would be developed as needed.

Cantonment Construction. Under the No Action Alternative, no additional Soldiers would be stationed at FRA so no cantonment construction is required. The garrison has adequate facilities to support the existing units' requirements for living, administration, and vehicle maintenance. Some construction; however, may occur on an as needed basis in the future. Therefore, no impacts to facilities in the cantonment at FRA are expected.

Range Infrastructure Construction. No new range construction would occur under the No Action Alternative. The current number of Soldiers training at FRA would remain the same and no additional ranges would be constructed. In addition, none of the current ranges would be expanded as described for the action alternatives. Therefore, no effects to range facilities are expected.

Live-Fire Training. Under the No Action Alternative, the number of Soldiers stationed and training at FRA would remain the same. The number of required live-fire user days per year at FRA would continue at present levels. Therefore, no changes are expected in the amounts of ammunition that would be used or in the generation of UXO and lead contamination on training ranges. With the continued implementation of Army SOPs, impacts are expected to continue to be less than significant.

Maneuver Training. The intensity and frequency of maneuver training at FRA would remain at current levels because the number of Soldiers training at FRA would remain the same. In addition, no new maneuver areas would be required and maneuver training would be conducted in the footprint of existing ranges and trails at FRA. Ongoing use of maneuver training areas would continue to affect these facilities. With continued implementation of regulatory and administrative mitigation, such as ITAM, INRMPs, ecosystem management, and the sustainable range management program, impacts to maneuver training facilities are expected to be less than significant.

CSS (1,000), CS (1,000): (Significant but Mitigable).

Cantonment Construction. There is not currently enough vacant space at FRA to accommodate the addition of 1,000 Soldiers. Construction at the main cantonment area would occur as infill to

accommodate these Soldier stationing scenarios; and would include COFs, Motor Pools, Brigade and Battalion Headquarters buildings, additional storage, military and vehicle parking, among other facilities. These facilities would be tied in to existing utilities and infrastructure, but some upgrades to the water distribution and wastewater collection system would be required. Additionally, the wastewater treatment plant would require minor upgrades.

The potential difficulties in providing adequate housing on the installation itself are coupled with a lack of potential new housing sites outside the installation. Fort Richardson is surrounded by park land, Elmendorf AFB, the City of Anchorage, the Town of Eagle River, and assorted private land holdings. Furthermore, Elmendorf AFB is a major competitor for space in the Anchorage area and is currently growing.

According to the Joint Housing Market Analysis cited above, there may be a shortfall in housing units available to accommodate both unaccompanied Soldiers and Soldiers with Families. For the 1,000 Soldier stationing scenarios approximately 450 Soldiers may be accompanied by Families and would exceed the number of available housing units currently projected for the FRA/Elmendorf AFB region. This number may be expanded under the Fires Brigade (1,600 Soldier scenario) and 3,000 Soldier CS or CSS scenarios. The additional housing requirements for both accompanied and unaccompanied Soldiers may need to be absorbed by both the military and surrounding areas.

Training Range Infrastructure Construction. As cited in Chapter 4.7, range expansion would occur at several ranges in order to meet the increase in training needs. Under current conditions, the ranges would not meet Standards in Training Commission (STRAC) requirements or range requirements cited in Training Circular 25-8 (US Army 2004).

Any ranges constructed would provide limited sanitation in the form of self-contained waste collection points that would be emptied on a regular basis.

Live-fire Training. Long-term impacts would be the increase in range use, resulting in the increase of ammunition and the generation of lead and other materials on FRA ranges. Also, there may be an expected increase in demand for utilities with any new ranges.

Maneuver Training. FRA would have an adequate amount of maneuver space to accommodate squad and platoon level training. Anything at Company level training and above would need to occur at DTA. Current institutional programs, such as the ITAM program, would mitigate impacts to training lands. Additionally, the proposed implementation of institutional programs, such as ITAM, INRMPs, ecosystem management, and the sustainable range management program would mitigate this impact.

Fires Brigade (1,600), CSS (3,000), CS (3,000): (Significant Adverse).

Cantonment Construction. To accommodate more than 1,000 Soldiers, the installation would need to consolidate units at an area away from the main cantonment area (to the east). The amount of land required could be 75 to 200 acres depending on the size of the units. There are currently no facilities in this area. Construction would involve all new facilities including headquarters buildings, motorpools and maintenance, new utility (power, water, wastewater) distribution and collection lines, and telecommunication. Additional coordination with commercial contractors, planners, and state and federal agencies may also be needed for permitting and consultation.

Training Range Infrastructure Construction. Range expansion would occur at several ranges in order to meet the increase in training needs. Under current conditions, the ranges would not meet Standards in Training Commission (STRAC) requirements or range requirements cited in Training Circular 25-8 (US Army 2006).

Live-fire Training. Long-term impacts would be the increase in range use, resulting in the increase of ammunition and the generation of lead and other materials on FRA ranges. Also, there may be an expected increase in demand for utilities with any new ranges.

Maneuver Training. There are no plans to extend utilities to these areas therefore the impact would continue to be minimal. Other support infrastructure at training sites is adequate to accommodate these stationing scenarios.

4.7.12 Energy Demand/Generation

4.7.12.1 Affected Environment

FRA obtains its energy from the Railbelt Transmission Grid. Presently the installation purchases power from Anchorage Municipal Light and Power. The current peak draw is approximately 12 MW, however the current feeder system to the installation is overloaded. All utility services provided to USAG Alaska will be privatized in August of 2008. Beginning at that time, Doyon Utilities update the electrical distribution system, which would increase the carrying capacity of the existing feeder system and eliminate power overloads after October 2008. During the first five years of operation, all electric facilities will be completely rebuilt, feeders will have 50 percent extra capacity, and three new substations (one at each post: FRA, FWA, and DTA) are planned for construction within the first 18 months of privatization. In addition, the utility is planning to install new substations and transformers, and add a new standby generating facility with a minimum of 7.5 MW to replace the obsolete 6.5 MW facility currently located at the installation.

Studies by Doyon are proposed which explore the use of alternative energy supplies including harvesting natural gas from the Anchorage municipal landfill. Natural gas for heating is currently being provided by Fairbanks Natural Gas (Letter from Doyon Utilities, June 2008).

4.7.12.2 Environmental Consequences

No Action Alternative: (Minor)

Under the No Action Alternative, the current uses of the affected environment would not change from the conditions described in 4.7.12.1. FRA's current operations would continue at current levels. Ongoing military activities would continue and new mission essential projects would be developed as needed.

Cantonment Construction. Under the No Action Alternative, no additional Soldiers would be stationed at FRA so no cantonment construction is required. The garrison has adequate facilities to support the existing units' requirements for living, administration, and vehicle maintenance. Some construction; however, may occur on an as needed basis in the future

under Doyon Power's commitment to improve infrastructure on FRA. Therefore, only minor impacts to facilities in the cantonment at FRA are expected.

Range Infrastructure Construction. No new range construction would occur under the No Action Alternative. The current number of Soldiers training at FRA would remain the same and no additional ranges would be constructed. In addition, none of the current ranges would be expanded as described for the action alternatives. Therefore, no effects to range energy use are expected.

Live-Fire Training. Under the No Action Alternative, the number of Soldiers stationed and training at FRA would remain the same. The number of required live-fire user days per year at FRA would continue at present levels. Energy required by live-fire facilities is minimal compared to other facilities at FRA.

Maneuver Training. The intensity and frequency of maneuver training at FRA would remain at current levels because the number of Soldiers training at FRA would remain the same. In addition, no new maneuver areas would be required and maneuver training would be conducted in the footprint of existing ranges and trails at FRA. During maneuver training, power generation is typically self-contained (generators) and does not tap into the existing power infrastructure. Therefore, continued maneuver training would not affect energy demand/generation.

CSS (1,000), CS (1,000), Fires Brigade (1,600), CSS (3,000), CS (3,000): (Minor).

Cantonment Construction. Long-term minor impacts are expected. Doyon Power has committed to improve infrastructure on the installation. These upgrades to the power generation capability and distribution system should be able to accommodate the increased demands on the power plant, energy distribution lines, and infrastructure that are presented by these stationing scenarios.

Training Range Infrastructure Construction. There may be additional long-term demand in training areas; though anticipated demand is slight and inconsequential compared to system capacity. Range expansion projects would also require energy distribution capacity.

Live-fire Training. Live-fire training would increase under these stationing actions, and the addition of a firing range would add demand to the power supply. However, impacts from energy use are expected to be less than significant as the power required by live-fire facilities is minimal compared to other facility types (such as housing or headquarters buildings).

Maneuver Training. Maneuver training would increase under this alternative; however, impacts to energy use and costs are expected to be less than significant. During maneuver training units power generation is typically self-contained (generators) and does not tap into existing power infrastructure.

4.7.13 Land Use Conflict/Compatibility

4.7.13.1 Affected Environment

Specific acreage for range and maneuver lands can be found in Chapter 4.7.9 Facilities. Additional data can be found within the Transformation of U.S. Army Alaska Final Environmental

Impact Statement (USAG Alaska, 2004). FRA has 61,376 total acres of land; the breakdown of which is found in Table 4.7-10 below.

Table 4.7-10. Acres of USAG Alaska Land Use Planning Categories

Location	Facilities								
	Transportation	Housing	Community	Installation Support	Range & Training Land	Maintenance	Outdoor Recreation	Miscellaneous	Total
FRA	339	336	187	40	54,416	2,019	901	2,828	61,376

Transformation Environmental Impact Statement, U.S. Army Alaska (USAG Alaska, 2004).

Parts of FRA are accessible to the public for recreational use. Most of the northern part of FRA is open to recreational use, while the southern part of the installation is only open to non-motorized forms of recreation. The public has access to the installation for camping, hunting, fishing, skiing, dog sledding; and in some areas there is access for off-road recreational vehicles (ORRV) such as snowmobiles, all terrain vehicles, and airboats. Subsistence hunting is largely considered a right and is permitted on the installation. The installation also offers access to the Moose Run Golf Course and Otter Lake.

4.7.13.2 Environmental Consequences

No Action Alternative: (Less than Significant)

Under the No Action Alternative, the current uses of the affected environment would not change from the conditions described in 4.7.13.1. FRA's current operations would continue at current levels. Ongoing military activities would continue and new mission essential projects would be developed as needed.

Cantonment Construction. Under the No Action Alternative, no additional Soldiers would be stationed at FRA so no cantonment construction is required. The garrison has adequate facilities to support the existing units' requirements for living, administration, and vehicle maintenance. Some construction; however, may occur on an as needed basis in the future. Therefore, no impacts to land uses are expected.

Range Infrastructure Construction. No new range construction would occur under the No Action Alternative. The current number of Soldiers training at FRA would remain the same and no additional ranges would be constructed. In addition, none of the current ranges would be expanded as described for the action alternatives. Therefore, no effects to land uses are expected.

Live-Fire Training. Under the No Action Alternative, the number of Soldiers stationed and training at FRA would remain the same. The number of required live-fire user days per year at FRA would continue at present levels. Implementation of the USAG Alaska institutional programs and associated land management practices would continue. Consequently, impacts to land use, including recreational activities such as hunting, caused by live-fire training would continue to be less than significant.

Maneuver Training. The intensity and frequency of maneuver training at FRA would remain at current levels because the number of Soldiers training at FRA would remain the same. In addition, no new maneuver areas would be required and maneuver training would be conducted in the footprint of existing ranges and trails at FRA. Implementation of the USAG Alaska institutional programs and associated land management practices would continue. Consequently, impacts to land use, including recreational activities such as hunting, caused by maneuver training would continue to be less than significant.

CSS (1,000), CS (1,000): (Less than Significant).

Cantonment Construction. Construction would occur within the main cantonment area. Short-term direct and indirect effects may stem from construction noise impacting nearby Garrison staff (noise would not be audible off the installation boundary) and dust from the use of heavy construction equipment, which would be short-term and localized to the cantonment area. There may be short-term effects to land use compatibility from construction noise and activities that create dust. Construction projects would be located within areas of FRA that are not currently used for recreational or subsistence activities. Overall impacts to land uses, including recreational and subsistence activities, are expected to be less than significant.

Training Range Infrastructure Construction. Range expansion would occur within the footprint of existing ranges and pre-disturbed areas, minimizing conflicts with existing land uses. Nearby land uses may be indirectly affected by noise, dust, and the sight of equipment and human activities. However, these impacts would be localized and temporary, and are expected to be less than significant. Range surface danger zones may preclude some existing land use during range operations, but no impacts from live-fire activities are anticipated during construction.

Live-fire Training. Long-term effects are expected. The additional live-fire training at FRA ranges would conflict with recreational use of surrounding areas due to the increase in frequency that Soldiers would train on these ranges. As a result of the increased training, recreational activities such as hunting could be directly affected. The surrounding areas are uninhabited federal lands and no residential areas, schools, hospitals, or businesses are expected to be affected. The impacts from live-fire facilities would be localized to the vicinity around the ranges and are expected to be less than significant.

Maneuver Training. The increase in training frequency may result in some restrictions on public access in some training areas. These impacts may be long-term. Impacts associated with public access closures are expected to be less than significant because alternate areas on USAG Alaska lands would still be available for recreational and subsistence activities. Site-specific evaluation may identify in greater detail where the additional training would occur and may identify specific conflicts with public recreational use such as possible restrictions to some areas during hunting season.

Fires Brigade (1,600), CSS (3,000), CS (3,000): (Significant but Mitigable).

Cantonment Construction. Construction to accommodate more than 1,000 Soldiers at FRA would occur in an area roughly 75 to 200 acres in size to the east of the existing cantonment area. There may be short-term effects to land use compatibility from construction noise and activities that create dust. Long-term, permanent effects would occur as a result of modifying

existing land use in the FRA cantonment area (e.g., existing antennae field) to accommodate installation support and other land use categories.

Range expansion would occur within the footprint of existing ranges and pre-disturbed areas, minimizing conflicts with existing land uses. Nearby land uses may be indirectly affected by noise, dust, and the sight of equipment and human activities. However, these impacts would be localized and temporary, and are expected to be less than significant. Range surface danger zones may preclude some existing land use during range operations, but no impacts from live-fire activities are anticipated during construction.

Live-fire Training. Long-term effects are expected. The additional live-fire training at FRA ranges would slightly conflict with recreational use of surrounding areas due to the increase in frequency that Soldiers would train on these ranges. As a result of the increased training, recreational activities such as hunting could be directly affected. The surrounding areas are uninhabited federal lands and no residential areas, schools, hospitals, or businesses are expected to be affected. The impacts from live-fire facilities would be localized to the vicinity around the ranges and are expected to be less than significant.

Maneuver Training. The increase in training frequency may result in some restrictions on public access in some training areas. These impacts may be long-term. Impacts associated with public access closures are expected to be less than significant because alternate areas on USAG Alaska lands would still be available for recreational and subsistence activities. Site-specific evaluation may identify in greater detail where the additional training would occur and may identify specific conflicts with public recreational use.

4.7.14 Hazardous Material/Hazardous Waste

4.7.14.1 Affected Environment

Hazardous materials and wastes at USAG Alaska facilities include ammunition, UXO, POLs, lead, asbestos, PCBs, pesticides, radon, and contamination found at Installation Restoration Program (IRP) sites. USAG Alaska Pamphlet (PAM) 200-1 Hazardous Materials and Regulated Waste Management (May, 2000) governs all aspects of managing hazardous materials at all USAG Alaska facilities. The Garrison's Hazardous Materials/Waste policy is founded on the four environmental pillars which are pollution prevention, conservation, compliance, and restoration; and the document established policy and responsibilities for complying with all relevant regulations, decision documents, and Records of Decision (ROD) that have been established by federal and state regulatory agencies. Further guidance has also been established in DoD Directive 4715.11 Environmental and Explosives Safety Management on Operational Ranges within the United States.

The Garrison also have well developed pollution prevention plans to reduce or eliminate hazardous materials. As a part of this program, USAG Alaska recycles fuel and oil, antifreeze, batteries, brass from shell casings, aluminum cans, and in addition the Garrison has set policy for substituting products that pose a risk to the environment.

42 USC 6921 defines hazardous materials based on "…toxicity, persistence, degradability in nature, potential for accumulation in tissue, and other related factors such as flammability, corrosiveness, and other hazardous characteristics." Munitions items might be considered hazardous under the following conditions: 1) If contents or by products are identified as

hazardous under appropriate Federal or State statute and regulations; 2) If these hazardous substances are deposited at Army rangelands in quantities or densities which require them to be managed as hazardous wastes; 3) Residues of hazardous materials remain on the scrap material (uncombusted portions of the cartridge after detonation); and /or 4) Contents of cartridges that fail to function (duds) in need of demilitarization or disposal (to be addressed under Human Health and Safety).

Ammunition, Live-fire, and UXO**:** The impact area at Eagle River Flats, where UXO and other hazardous materials may be found, has been restricted to unauthorized personnel. This is indicated by warning signs posted around the area, and through other forms of notice.

Petroleum, Oils, Lubricants (POL), and Storage Tanks and IRP Sites: The installation has 22 above ground storage tanks (AST) ranging in capacity from 300 gallons to 50,000 gallons. These ASTs are located throughout the cantonment area; they generally contain fuels and fuel oil. The installation has a total fuel capacity that does not exceed 420,000 gallons; therefore an Oil Discharge Prevention and Contingency Plan is not required; however, the installation does have a spill prevention plan for all storage areas. FRA also has 42 underground storage tanks (UST). Thirty-nine of these USTs are located on the main cantonment area. The other three are located at National Guard facilities located within Fort Richardson's boundaries.

IRP: Over time, past military activities have contributed to contaminant releases to the environment. These included sources such as motorpools, industrial operations, and munitions use in impact areas, and from aircraft hangars. Some of the hazardous materials include PCBs, white phosphorus, petroleum products, and chlorinated solvents. The Army has identified and is or has conducted remediation activities at approximately 114 of these sites. More information on these sites can be found in the Final Environmental Impact Statement for the Permanent Stationing of the 2/25th Stryker Brigade Combat Team (February 2008).

Lead: Lead has been identified in Family housing units within paint, and has been identified in elevated levels in dust and exterior soils. All buildings have been inspected for lead on the interior and exterior surfaces (HartCrowser 1997).

Asbestos: 1997 surveys of facilities and Family housing units uncovered asbestos in most of the units surveyed. While much of the material appeared to be intact and in good condition, any materials that seemed damaged were abated or removed completely. Additionally, neighborhood revitalization programs have resulted in the removal of asbestos from many of the Family housing units. All of the materials removed are documented for disposal as a hazardous waste at the local landfill. Asbestos may be found in linoleum and floor tile, as part of adhesive, wallboard, pipe insulation, pipe-fitting insulation, and tarpaper. In addition to guidance found in USAG Alaska PAM 200-1, the Garrison has an Asbestos Management Plan in place to reduce exposure to unit occupants and workers.

Pesticides and Herbicides: Pest control materials used by the installation are handled in accordance with Fort Richardson's Integrated Pest Management Plan.

Radon: Radon testing is conducted throughout USAG Alaska facilities to ensure compliance with the Army's Radon Reduction Program identified in AR 200-1. The Garrison documents radon surveys and results of all surveys. While many of the structures at FRA were found to have exceeded the 4 pCi/L regulatory limit, FRA's radon records were inadvertently destroyed so the installation maintains a robust radon monitoring and mitigation program in an effort to

replace that documentation. In accordance with regulation all new facilities constructed at FRA will undergo radon surveys.

Hazardous Wastes/Biomedical Waste: The installation is registered with EPA as a Large Quantity Generator of hazardous waste due to the installation's many activities that support military operations and readiness. These wastes are stored properly in locations throughout the installation at Satellite accumulation points, in accordance with USAG Alaska PAM 200-1, and are centrally processed (Building 45-125) for off-post disposal. While previous years the installation generated a significant amount of hazardous waste (2001 for example saw a spike due to IRP restoration of PCB contaminated soil), the average for FRA is less than 100,000 pounds per year.

Very little biomedical waste is generated by the installation, and is stored in medical or dental facilities. These wastes are handled in accordance with Army policy.

4.7.14.2 Environmental Consequences

No Action Alternative: (Less than Significant)

Under the No Action Alternative, the current uses of the affected environment would not change from the conditions described in 4.7.14.1. FRA's current operations would continue at current levels. Ongoing military activities would continue and new mission essential projects would be developed as needed.

Cantonment Construction. Under the No Action Alternative, no additional Soldiers would be stationed at FRA so no cantonment construction is required. The garrison has adequate facilities to support the existing units' requirements for living, administration, and vehicle maintenance. Some construction; however, may occur on an as needed basis in the future. Therefore, no impacts to hazardous materials/hazardous wastes are expected.

Range Infrastructure Construction. No new range construction would occur under the No Action Alternative. The current number of Soldiers training at FRA would remain the same and no additional ranges would be constructed. In addition, none of the current ranges would be expanded as described for the action alternatives. Therefore, no effects to hazardous materials/hazardous wastes are expected.

Live-Fire Training. Under the No Action Alternative, the number of Soldiers stationed and training at FRA would remain the same. The number of required live-fire user days per year at FRA would continue at present levels and no new types of weapons are expected to be introduced to training areas. Therefore, no changes are expected in the amounts of ammunition that would be used or in the generation of UXO and lead contamination on training ranges. With the continued implementation of Army SOPs, impacts are expected to continue to be less than significant.

Maneuver Training. The intensity and frequency of maneuver training at FRA would remain at current levels because the number of Soldiers training at FRA would remain the same. In addition, no new maneuver areas would be required and maneuver training would be conducted in the footprint of existing ranges and trails at FRA. Implementation of the USAG Alaska institutional programs, including its current BMPs, SPCC, and SWPPP, would address the

ongoing effects of maneuver training. Therefore, effects to hazardous materials/hazardous wastes from maneuver training would continue to be less than significant.

CSS (1,000), CS (1,000): (Less than Significant).

Cantonment Construction. Short-term effects would be expected. If either of these scenarios were implemented at FRA, construction and de-construction of structures would generate wastes, some of which may be hazardous due to the presence of asbestos and lead in many of the existing structures. The installation would ensure that any removal and disposal of these materials would be in accordance with well established federal, Army, and USAG Alaska policy for handling hazardous materials and hazardous wastes. Any new construction would involve the testing, recordation, and mitigation (if necessary) for Radon. Furthermore, the installation would ensure that none of the identified construction sites would be collocated with IRP sites.

The addition of Soldiers may drive the need for additional motorpools where POL and other materials would be generated and temporarily stored. The additional tactical and fleet vehicles may require additional ASTs/USTs, wash racks, and thus oil-water separators.

Additional short-term and long-term effects could occur from an increase in construction equipment (short-term) and Soldier fleet vehicles and POVs (long-term). More vehicles would increase the potential for spills or releases of hazardous materials to the environment. Additionally, the amount of recyclable waste (from petroleum products) would increase throughout the Garrison.

Additional Soldiers may increase the amount of biomedical wastes generated from dental and medical facilities on-post. These wastes would be processed in accordance with current standard operating procedure and regulations. Because the installation is already considered a Large Quantity Generator no additional permitting or significant actions are likely to be required.

Pesticides existing in soils at the FRA may have adverse effects to nearby waterbodies during construction due to stormwater runoff. Implementation of BMPs and mitigations to minimize runoff from construction sites would be required.

Training Range Infrastructure Construction. The installation is currently exploring the expansion of some of its training ranges. Any material uncovered in expansion areas (expansion areas are likely to be in locations that have been previously used or disturbed) would be handled in accordance with established policy.

Live-fire Training. Long-term effects are expected. These scenarios would increase the frequency of Soldier live-fire training on ranges at FRA; thus increasing the amount of lead bullets and other munitions expended in the range area. Live-fire small arms ranges would retain their berms to stop projectiles fired at the ranges. Although a great deal more lead would be fired into impact berms, the installation has mitigation measures in place to ensure berms are well maintained and re-graded as needed.

DUD items may also be produced from the use of the MK-19 grenade machine gun. Activities supported by combat engineers or EOD units may train with explosive material. The use of explosive material would be consistent with current uses, and would not pose a significant impact to human health or the environment as these materials would be consumed, stored, or disposed of in accordance with all appropriate safety regulations.

No new weapon types may be introduced to training areas, thereby precluding the need for additional ammunition storage classification areas. Therefore, handling and storage methods, disposal protocols, and safety procedures would continue to be conducted in accordance with existing regulations.

Maneuver Training. Transportation of personnel and use of flammable or combustible materials, such as fuel or ordnance (i.e., weaponry or equipment), could increase the potential for spills or releases of hazardous materials, especially in areas not previously used frequently. Best management practices would be practiced at each of these proposed facilities, and project area personnel would follow USEPA protocol for using and handling hazardous materials, such as POLs. Spill prevention control countermeasure plans would be updated to reflect changes implemented as part of stationing scenarios.

Fires Brigade (1,600): (Less than Significant).

Cantonment Construction. Construction of new structures would generate wastes in new areas outside the main cantonment area. Some of these materials may be hazardous (pesticides and herbicides, POLs, and other materials). The installation would continue to ensure proper handling and storage of these materials in accordance with well established federal, Army, and USAG Alaska policy for handling hazardous materials and hazardous wastes. New construction would also involve the testing, recordation, and mitigation (if necessary) for Radon. Furthermore, the installation would ensure that none of the identified construction sites would be collocated with IRP sites.

The addition of Soldiers may drive the need for additional motorpools where POL and other materials would be generated and temporarily stored. The additional tactical and fleet vehicles may require additional ASTs/USTs, wash racks, and thus oil-water separators.

Additional short-term and long-term effects could occur from an increase in construction equipment (short-term) and Soldier fleet vehicles and POVs (long-term). More vehicles would increase the potential for spills or releases of hazardous materials to the environment. Additionally, the amount of recyclable waste (from petroleum products) would increase throughout the Garrison.

Additional Soldiers may increase the amount of biomedical wastes generated from dental and medical facilities on-post. These wastes would be processed in accordance with current standard operating procedure and regulations. Because the installation is already considered a Large Quantity Generator no additional permitting or significant actions are likely to be required.

Training Range Infrastructure Construction. The installation is currently exploring the expansion of some of its training ranges. Any material uncovered in expansion areas (expansion areas are likely to be in locations that have been previously used or disturbed) would be handled in accordance with established policy.

Live-fire Training. Long-term effects are expected. These scenarios would increase the frequency of Soldier live-fire training on ranges at FRA; thus increasing the amount of lead bullets and other munitions expended in the range area. Live-fire small arms ranges would retain their berms to stop projectiles fired at the ranges. Although a great deal more lead would

be fired into impact berms, the installation has mitigation measures in place to ensure berms are well maintained and re-graded as needed.

DUD items may also be produced from the use of the MK-19 grenade machine gun. Activities supported by combat engineers or EOD units may train with explosive material. The use of explosive material would be consistent with current uses, and would not pose a significant impact to human health or the environment as these materials would be consumed, stored, or disposed of in accordance with all appropriate safety regulations.

The proposed alternatives do not contemplate the introduction of any new weapons types to Fort Richardson ranges. The amount of ammunition required however may not exceed the ammunition storage capacity in these areas; and handling and storage methods, disposal protocols, and safety procedures would continue to be conducted in accordance with existing regulations.

Maneuver Training. Transportation of personnel and use of flammable or combustible materials, such as fuel or ordnance (i.e., weaponry or equipment), could increase the potential for spills or releases of hazardous materials, especially in areas not previously used frequently. Best management practices would be practiced at each of these proposed facilities, and project area personnel would follow USEPA protocol for using and handling hazardous materials, such as POLs. Spill prevention control countermeasure plans would be updated to reflect changes implemented as part of stationing scenarios.

CSS (3,000), CS (3,000): (Significant but Mitigable).

Cantonment Construction. The addition of facilities away from the main cantonment area would be required to support this level of Soldier growth at FRA. This would mean the generation of more wastes from the new Soldiers and their activities. A scenario of 3,000 Soldiers would mean the construction of additional motorpools that may potentially double the amount of motorpool hazardous material storage, resulting in the doubling of staff dedicated to monitoring and maintaining those sites, ultimately increasing storage and staff requirements for the installation. Furthermore, the addition of 3,000 Soldiers would require additional ASTs/USTs, wash racks, and thus oil-water separators; increase the potential for spills or releases of hazardous materials to the environment.

Training Range Infrastructure Construction. The installation is currently exploring the expansion of some of its training ranges. Any material uncovered in expansion areas (expansion areas are likely to be in locations that have been previously used or disturbed) would be handled in accordance with established policy.

Live-fire Training. Long-term effects are expected. These scenarios would increase the frequency of Soldier live-fire training on ranges at FRA; thus increasing the amount of lead bullets and other munitions expended in the range area. Live-fire small arms ranges would retain their berms to stop projectiles fired at the ranges. Although a great deal more lead would be fired into impact berms, the installation has mitigation measures in place to ensure berms are well maintained and re-graded as needed.

DUD items may also be produced from the use of the MK-19 grenade machine gun. Activities supported by combat engineers or EOD units may train with explosive material. The use of explosive material would be consistent with current uses, and would not pose a significant

impact to human health or the environment as these materials would be consumed, stored, or disposed of in accordance with all appropriate safety regulations.

No new weapon types may be introduced to training areas there. The amount of ammunition required however may not exceed the ammunition storage capacity in these areas; and handling and storage methods, disposal protocols, and safety procedures would continue to be conducted in accordance with existing regulations.

Maneuver Training. Transportation of personnel and use of flammable or combustible materials, such as fuel or ordnance (i.e., weaponry or equipment), could increase the potential for spills or releases of hazardous materials, especially in areas not previously used frequently. Best management practices would be practiced at each of these proposed facilities, and project area personnel would follow USEPA protocol for using and handling hazardous materials, such as POLs. Spill prevention control countermeasure plans would be updated to reflect changes implemented as part of stationing scenarios.

4.7.15 Traffic and Transportation

4.7.15.1 Affected Environment

FRA is accessible via air, rail, road, and sea. Nearby Anchorage has two primary highways; Glenn Highway offers access to FRA from the northeast; and it connects to Parks Highway in Palmer where it continues to Glennallen and ultimately connects to Richardson Highway (offering access to Fairbanks approximately 350 miles to the north).

The installation has two gates offering access to the main cantonment area; one main gate from Glenn Highway, and one gate from Elmendorf AFB. There are also four primary roads and secondary roads allowing access throughout the cantonment area. The installation periodically experiences traffic flow issues at the main gate, especially due to the morning commute. FRA is currently considering commissioning a traffic study to evaluate alternatives and mitigations.

The Alaska Railroad travels near to the installation to the north of the cantonment area and offers access to Fort Wainwright and central Alaska. Garrison staff is currently considering upgrading and adding access to the Alaska Railroad to points located on the installation. The Alaska Railroad also offers access to the Ports of Seward and Whittier.

The military ships a variety of types of cargo through the Port of Anchorage as well, which also services Elmendorf AFB. During winters, the Port of Anchorage is sometimes closed due to ice; however, supplies may be shipped through the Ports of Seward and Whittier which are ice-free year-round.

4.7.15.2 Environmental Consequences

No Action Alternative: (Less than Significant)

Under the No Action Alternative, the current uses of the affected environment would not change from the conditions described in 4.7.15.1. FRA's current operations would continue at current levels. Ongoing military activities would continue and new mission essential projects would be developed as needed.

Cantonment Construction. Under the No Action Alternative, no additional Soldiers would be stationed at FRA so no cantonment construction is required. The garrison has adequate facilities to support the existing units' requirements for living, administration, and vehicle maintenance. Some construction; however, may occur on an as needed basis in the future. Therefore, no impacts to traffic conditions are expected.

Range Infrastructure Construction. No new range construction would occur under the No Action Alternative. The current number of Soldiers training at FRA would remain the same and no additional ranges would be constructed. In addition, none of the current ranges would be expanded as described for the action alternatives. Therefore, no effects to traffic conditions are expected.

Live-Fire Training. Under the No Action Alternative, the number of Soldiers stationed and training at FRA would remain the same. The number of required live-fire user days per year at FRA would continue at present levels. In addition, Soldiers would continue to access live-fire training areas using military roads and trails, which would not interfere with civilian traffic. Therefore, impacts on traffic are expected to continue to be less than significant.

Maneuver Training. The intensity and frequency of maneuver training at FRA would remain at current levels because the number of Soldiers training at FRA would remain the same. In addition, no new maneuver areas would be required and maneuver training would be conducted in the footprint of existing ranges and trails at FRA. Soldiers would continue to access FRA's maneuver training areas using military roads and trails, which would not interfere with civilian traffic. Therefore, impacts on traffic are expected to continue to be less than significant.

CSS (1,000), CS (1,000), Fires Brigade (1,600): (Less than Significant).

Cantonment Construction. The addition of any of these scenarios would generate additional traffic from construction equipment and workers. Traffic impacts would be short-term, and would be experienced at the main gate to the cantonment area and on FRA's primary and secondary streets. While traffic flow may have minimal impacts to Glenn Highway, there could be back-ups at the gate entering the installation, driving the possible redistribution of traffic to the secondary gate entering the installation from Elmendorf AFB, or altering flow at the main gate.

Long-term effects would be expected to general traffic conditions in the cantonment area. There would be an expected shortfall of organizational and motorpool parking associated with this level of Soldier strength. The action would increase the amount of Soldiers, their Families, and any support personnel (including military fleet vehicles and POVs) operating within the cantonment area. The installation may consider construction of additional motorpool and parking facilities to accommodate this level of growth.

Training Range Infrastructure Construction. Short-term effects from construction equipment in the range areas are anticipated. The action would temporarily increase construction traffic to construction sites, effecting flow at the front gate, on the cantonment area, and potentially the communities surrounding the installation.

Live-fire Training. No new range roads or trails would be considered for construction outside existing training areas. A majority of military traffic would be designated on military roads and trails, therefore military traffic would not interfere with civilian traffic.

Maneuver Training. No new range roads or trails would be considered for construction outside existing training areas. A majority of military traffic would be designated on military roads and trails, therefore military traffic would not interfere with civilian traffic.

Company level training and above would occur at DTA. Effects to traffic on the Glenn, Parks, and Richardson Highways are likely to be short-term because in order to meet training requirements these units would travel to DTA only a few times per year. The Garrison enforces a convoy procedure permitting groups of vehicles (or serials) to travel in no more than 20 vehicles per serial, and maintaining a gap of approximately 20 minutes between serials. Following this procedure reduces the impact to traffic on these major Highways.

CSS (3,000), CS (3,000): (Significant Adverse).

Cantonment Construction. Depending on the siting and location of construction to accommodate either of these scenarios, the traffic patterns on post may need to be further evaluated. Construction equipment and worker vehicles would have short-term impacts at the main gate and at the roads around the designated construction site. There would be a considerable increase in vehicles at the main gate, further exacerbating traffic flow there and possibly driving the installation to consider temporary redirection alternatives. Because the main gate is one of only two entrances to the installation the options for flow control may be limited.

Long-term effects would be expected to general traffic conditions in the cantonment area. There would be an expected shortfall of organizational and motorpool parking associated with this level of Soldier strength. The action would increase the amount of Soldiers, their Families, and any support personnel (including military fleet vehicles and POVs) operating within the cantonment area. The installation may consider construction of additional motorpool and parking facilities to accommodate this level of growth.

Training Range Infrastructure Construction. Short-term effects from construction equipment in the range areas are anticipated. The action would temporarily increase construction traffic to construction sites, effecting flow at the front gate, on the cantonment area, and potentially the communities surrounding the installation.

Live-fire Training. No new range roads or trails would be considered for construction outside existing training areas. A majority of military traffic would be designated on military roads and trails, therefore military traffic would not interfere with civilian traffic.

Maneuver Training. No new range roads or trails would be considered for construction outside existing training areas. A majority of military traffic would be designated on military roads and trails, therefore military traffic would not interfere with civilian traffic.

Company level training and above would occur at DTA. Effects to traffic on the Glenn, Parks, and Richardson Highways are likely to be short-term because in order to meet training requirements these units would travel to DTA only a few times per year. The Garrison enforces a convoy procedure permitting groups of vehicles (or serials) to travel in no more than 20

vehicles per serial, and maintaining a gap of approximately 20 minutes between serials. Following this procedure reduces the impact to traffic on these major Highways.

4.7.16 Socioeconomics

4.7.16.1 Affected Environment

FRA is located approximately 9 miles to the northeast of the City of Anchorage. The ROI is considered the Anchorage region which also includes Elmendorf AFB. The Matanuska-Susitna Borough and some communities associated with the Kenai Peninsula Borough are also located near FRA. According to the U.S. Census Bureau 2000 data, Anchorage had (at that time) a population of 260,283 which is estimated to be 40 percent of the population of the State of Alaska[10]. The Cook Inlet Region, Inc serves as the regional Native Corporation for this area that is subject to the Alaska Native Claims Settlement Act. The Chugach Alaska Corporation and Ahtna, Inc also have peripheral interests in the region. The Transformation of U.S. Army Alaska EIS (USAG Alaska, 2004) provides more information on the villages and corporations within these regions. According to 2006 estimates by the Census Bureau, the estimated Anchorage population in the workforce is 158,353, and has a median household income of $63,656. There are approximately 110,284 housing units located in the region.

In 2007, Fort Richardson and Elmendorf AFB developed a Joint Housing Market Analysis to assess the private sector housing market's potential to accommodate military Families through transition to privatization and for the military to achieve the minimum number of authorized housing units from 2007 to 2012. During this transition period, both FRA and Elmendorf AFB are projecting growth in mission and personnel. The study reviewed housing requirements for both Soldiers with Families and unaccompanied/ bachelor Soldiers. The study concluded that based on current housing inventories there was an overall surplus of Family housing units (when combining the numbers for both installations) to accommodate known growth through 2012[11]. When reviewing the housing units for unaccompanied Soldiers, the study identified a total deficit of 798 units. Although the rental supply of housing units is expected to increase dramatically over the next five years at an average annual growth rate of 0.6 percent; the growth covered by this market analysis may not include potential growth associated with the proposed action.

Currently, there are seven Family Housing neighborhoods consisting of 1,435 units and 273 acres. These are adjacent by hills and forest to the south and east (respectively), which work as a barrier against most noise and pollution generated from use of Glenn Highway. The installation has begun a revitalization program for a few of these neighborhoods. It should be noted that revitalization and reconstruction efforts have been initiated for much of the barracks and housing (for enlisted unaccompanied personnel).

The state-owned Anchorage International Airport is the largest airport in Alaska and is also the largest air cargo handler and transfer site in the United States. Additionally, the Port of Anchorage handles approximately 85 percent of the general cargo for the regions serviced by the Alaska Railroad. Healthcare services are offered by numerous providers in the region.

[10] The U.S. Census Bureau Web site did not show updated information representing 2006 population estimates as was represented for the Fairbanks North Star Borough.

[11] Elmendorf AFB had a surplus of approximately 875 housing units, Fort Richardson showed a deficit of 615 units, equating to a total available surplus of 260 housing units.

Military healthcare facilities include the U.S. Army medical clinic at FRA, the Air National Guard Medical Squadron, and the 3rd Medical Group at Elmendorf AFB.

Schools in Anchorage fall within the Anchorage School District. The student-to-teacher ration is much lower than the national average and expenditures for students is much higher than the national average, largely because the local contribution to the school district is approximately 30 percent of the operating budget (the contributions are considerably less in rural areas).

4.7.16.2 Environmental Consequences

No Action Alternative: (Less than Significant)

Under the No Action Alternative, the current uses of the affected environment would not change from the conditions described in 4.7.16.1. FRA's current operations would continue at current levels. Ongoing military activities would continue and new mission essential projects would be developed as needed.

Cantonment Construction. Under the No Action Alternative, no additional Soldiers would be stationed at FRA so no cantonment construction is required. The garrison has adequate facilities to support the existing units' requirements for living, administration, and vehicle maintenance. Some construction; however, may occur on an as needed basis in the future. Therefore, impacts to the local population, economy, employment, income, and schools are expected to be less than significant.

Range Infrastructure Construction. No new range construction would occur under the No Action Alternative. The current number of Soldiers training at FRA would remain the same and no additional ranges would be constructed. In addition, none of the current ranges would be expanded as described for the action alternatives. Therefore, impacts to the local population, economy, employment, income, and schools are expected to be less than significant.

Live-Fire Training. Under the No Action Alternative, the number of Soldiers stationed and training at FRA would remain the same. The number of required live-fire user days per year at FRA would continue at present levels. Consequently, no impacts from live-fire training are expected on the local population, economy, employment, income, and schools.

Maneuver Training. The intensity and frequency of maneuver training at FRA would remain at current levels because the number of Soldiers training at FRA would remain the same. In addition, no new maneuver areas would be required and maneuver training would be conducted in the footprint of existing ranges and trails at FRA. Therefore, no impacts are expected on the local population, economy, employment, income, and schools from maneuver training.

CSS (1,000), CS (1,000), Fires Brigade (1,600): (Less than Significant).

A preliminary socioeconomic analysis of potential effects was conducted for each of the stationing scenarios identified to be suitable for USAG Alaska. This includes the potential stationing 1,000 or 3,000 Soldiers as a result of Army Growth activities. The results of this analysis can be found in Appendix A of this document.

The addition of Soldiers and their Families may have a beneficial effect to the local economy; however, the 2007 Joint Housing Market Analysis conducted by Fort Richardson and Elmendorf

AFB concluded that there may be shortfalls in currently available housing units to accommodate new growth. There may be some flexibility in the City of Anchorage and local communities to accommodate a limited amount of growth. Installation staff indicated there may be as many as 270 buildable lots within the Anchorage Metropolitan area. Competing factors include growth in the local economy and growth at Elmendorf AFB.

There would be an expected increase in school-aged children. As indicated above the City of Anchorage has a lower student-to-teacher ratio than the national average. Appendix A indicates through preliminary analysis that the addition of 1,000 Soldiers may add approximately 225 school-aged children to the school system, spread out from grades K-12. The school system may be able to accommodate this level of growth. If either of these growth scenarios were to be implemented at Fort Richardson the Army would need to determine a more accurate number of school-aged children eligible to enter the local school system.

Cantonment Construction. Construction of new facilities at Fort Richardson may have a beneficial short-term effect to the local commercial construction contractor market. The requirement for new facilities equates to MILCON funding being spent on commercial services which could in-turn improve employment outside the installation boundaries.

Training Range Infrastructure Construction. Short-term beneficial effects are expected. Construction of ranges would have a temporary beneficial effect from an increase in military spending on commercial goods and construction services; therefore resulting in a positive influence to employment and income.

Live-fire Training. No impact.

Maneuver Training. No impact.

CSS (3,000), CS (3,000): (Significant but Mitigable).

There would be a significant shortfall in housing creating short- and long-term effects to the local market. As indicated in the Joint Housing Market Analysis there may be both a shortfall in existing vacant space and in buildable space directly affecting the military and local community's ability to absorb the excess Soldiers and Family members.

Appendix A indicates through preliminary analysis that the addition of 3,000 Soldiers could equate to approximately 745 additional school-aged children enrolling in the local school district. FRA currently leases a Family Center from the city of Anchorage. As a result of the increased school-aged children attending public schools under these scenarios, the installation may lose the use of a Family Center back to the local school district. A determination of potential effects would need to be coordinated with the anchorage school district.

Cantonment Construction. Construction of new facilities at Fort Richardson may have a beneficial short-term effect to the local commercial construction contractor market. The requirement for new facilities equates to MILCON funding being spent on commercial services which could in-turn improve employment outside the installation boundaries.

Training Range Infrastructure Construction. Short-term beneficial effects are expected. Construction of ranges would have a temporary beneficial effect from an increase in military spending on commercial goods and construction services; therefore resulting in a positive influence to employment and income.

Live-fire Training. No impact.

Maneuver Training. No impact.

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4.8 Fort Wainwright, Alaska

Fort Wainwright Summary

This section provides an overview of the actions the Army would take to implement the Proposed Action under each stationing scenario at FWA. The Army would undertake four primary types of actions to support new unit stationing. These actions include cantonment construction, training infrastructure construction, live fire training, and maneuver training activities. The discussion of environmental consequences to each resource discusses the impacts of each type of activity and assesses the combined impact of these activities on a given resource. Table 4.8-1 below lists the environmental impacts which are anticipated to occur if the Army were to implement various different unit stationing assignments to FWA to support the growth of the Army needed to support operations in the Pacific Theater. Stationing scenarios possible at FWA include the stationing of 1,000 additional Combat Support (CS) or Combat Service Support Soldiers (CSS), 3,000 additional CS or CSS Soldiers, or a new Fires Brigade. A summary of the symbology which discusses intensity of anticipated environmental impacts is provided below:

Description of VEC Impact Ratings	
○	No impact, minimal or minor impacts are anticipated
⊙	Less than Significant
⊘	Significant but Mitigable
⊗	Significant Adverse impacts
+	Beneficial Impact
N/A	Not Applicable

Table 4.8-1. Fort Wainwright VEC Ratings

Fort Wainwright, Alaska						
VEC	Combat Service Support (1,000 Soldiers)	Combat Support (1,000 Soldiers)	Fires Brigade (1,600)	Combat Service Support (3,000 Soldiers)	Combat Support (3,000 Soldiers)	No Action Alternative
Air Quality	⊗	⊗	⊗	⊗	⊗	⊘
Air Space	○	○	○	○	○	○
Cultural	⊘	⊘	⊘	⊘	⊘	⊘
Noise	⊙	⊙	⊙	⊙	⊙	⊙
Soil Erosion Effects	⊙	⊙	⊙	⊙	⊙	⊙
Biological Resources	○	⊙	⊙	⊙	⊙	⊙
Wetlands	⊘	⊘	⊘	⊘	⊘	○
Water Resources	⊙	⊙	⊙	⊙	⊙	⊙
Facilities	⊘	⊘	⊘	⊘	⊘	⊙
Energy Demand/ Generation	⊙	⊙	⊙	⊙	⊙	○
Land Use Conflict/ Compatibility	⊘	⊘	⊘	⊘	⊘	⊙
Hazardous Materials/ Hazardous Waste	⊘	⊘	⊘	⊘	⊘	⊙
Traffic and Transportation	⊙	⊙	⊙	⊘	⊘	⊙
Socioeconomics	⊘	⊘	⊘	⊗	⊗	⊙

Fort Wainwright Introduction

Fort Wainwright (FWA) is located in central Alaska and is approximately 120 miles south of the Arctic Circle, adjacent to the City of Fairbanks. The installation and its training areas encompass over 1 million acres of land, 13,423 acres of that being the main cantonment area. FWA is home to the 1/25th Stryker Brigade Combat Team and subordinate units, the 507th Signal Company, Northern Warfare Training Center, Cold Regions Test Center and the Cold Regions Research and Engineering Laboratory, among other units.

FWA training areas include Tanana Flats Training Area (TFTA), and Yukon Training Area (YTA) and Donnelly Training Area (DTA). If Soldiers are stationed at either FWA or Fort Richardson under a given stationing scenario, the impacts at DTA would be expected to be the same in either instance. U.S. Army Alaska training policy is the same at both FWA and FRA and company and larger units would conduct maneuver training at DTA rather than at their home station. Figure 4.8-1 below identifies the interior Alaska training areas, and illustrates their geographic location in relation to Fort Richardson.

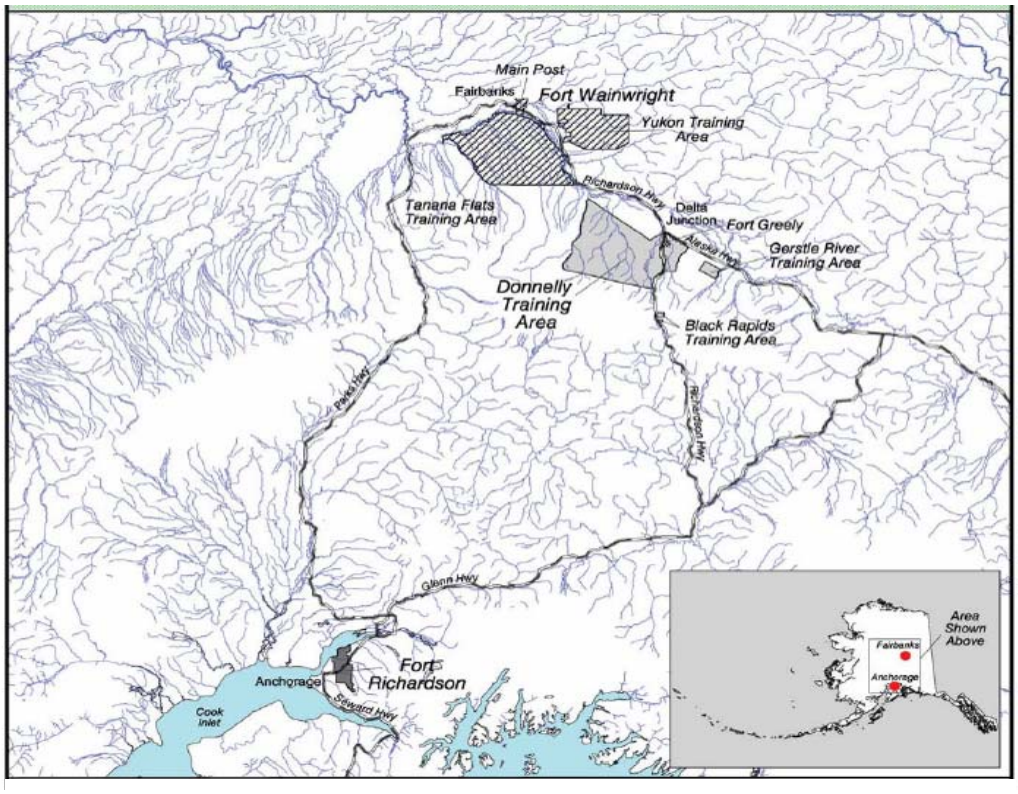

Figure 4.8-1. Map of Fort Wainwright, Tanana Flats Training Area, Yukon Training Area, Donnelly Training Area, and their geographic location in relation to Fort Richardson

4.8.1 FWA Proposed Actions to Support Army Stationing Scenarios

This section discusses actions that the Army would undertake to support each of the five stationing scenarios that the Army might choose from to implement at FWA to support operations in the Pacific Theater. These scenarios include the stationing of up to 3,000 CS or CSS Soldiers and the possibility of stationing a Fires Brigade at FWA. The units, equipment and training are described more fully in Chapter 2 of the SPEIS.

Scenario 1: Growth by 1,000 Additional Combat Service Support Soldiers

Cantonment Construction: As part of this alternative, additional Garrison infrastructure such as company operations facilities (COFs), Brigade and Battalion Headquarters buildings, storage buildings, motor pools for military vehicle parking, and other maintenance facilities would be sited on FWA. Growth by 1,000 additional Soldiers would drive requirements to demolish some existing facilities and replace them with the necessary facilities in the existing cantonment area. Table 4.8-2 lists the space and size requirements for key facilities associated with the growth of 1,000 CSS Soldiers.

Table 4.8-2. Estimated Facilities Requirements at Fort Wainwright

Garrison Facilities	Requirement
Fuel Storage (gallons)	30,000
Brigade Offices (sf)	40,000
Battalion Offices (sf)	18,000
Company Offices (sf)	12,000
Unit Storage Buildings (sf)	17,000
Barracks Space (sf)	38,800
Military Vehicle Parking (sf)	400,000
Vehicle Maintenance Shop (sf)	30,00

Range Construction: To accommodate the stationing of new CSS Soldiers, Fort Wainwright will need to upgrade several training range facilities to meet doctrinal training requirements of 1,000 additional combat service support Soldiers. These Soldiers will primarily need to engage in basic marksmanship tasks and qualifications with individual and crew served weapons. As part of this scenario an existing modified record fire range for Soldier rifle qualifications would be expanded and a new combat pistol range would be sited on an existing range footprint. Figure 4.8-2 depicts the current location of each of the ranges below. The scope of the necessary expansion and purpose of each range is described below:

Modified Record Fire Range (MRF): This range is used to train support unit Soldiers in basic marksmanship tasks. The range teaches Soldiers to quickly aim and engage stationary infantry targets. To implement the proposed action 8 lanes would need to be added to the existing range to expand its training capacity.

Combat Pistol Qualification Course (CPQC): This combat pistol range is used to train Soldiers to identify, engage, and defeat an array of targets using the 9mm, .38 caliber, or .45 caliber

pistol. This project involves the siting of the CPQC on another existing range to allow for increased throughput capacity to meet increased training requirements at Ft. Wainwright.

Live Fire Training: Training activities of CSS units would primarily involve weapons qualifications with individual (pistols, rifle and light machine gun) weapons and crew served weapons qualification with heavy machine guns. Firing activities would be conducted on existing qualification ranges on FWA and on those ranges expanded to accommodate increased live-fire training activities. In comparison to the 1/25th SBCT and other units stationed at FWA, 1,000 additional CSS Soldiers would increase existing live fire requirements on qualification ranges by between 10-15%. These units do not typically engage in CALFEX training events though they would participate in some urban training scenarios at DTA.

Maneuver Training: This scenario would not involve an appreciable increase in the amount, type, or scale of maneuver training that takes place in Alaska. CSS units stationed at FWA under this scenario would increase light and heavy military cargo truck traffic and would not include armored personnel carrier traffic. CSS units will support the maneuver training exercises of existing combat units by supporting their logistics and support requirements. Off-trail maneuver by these units would be limited, with major operations consisting of resupply, transport of equipment and command and control functions. Much of this maneuver would occur on existing road and trail infrastructure. Additional small unit maneuver support missions at the platoon level would be supported at FWA's existing maneuver sites. Overall maneuver impacts would increase by less than 10% at FWA with a bulk of maneuver impacts occurring on roads and trails.

Scenario 2: Growth by 1,000 Additional Combat Support Soldiers

Cantonment Construction: No Change from Scenario 1. Cantonment construction would take place in the existing cantonment area by demolition of unneeded facilities and replacement with required barracks, offices, motor pools and other facilities.

Range Construction: To accommodate the stationing of 1,000 new CS Soldiers, FWA will need to conduct the same firing range construction as discussed in Scenario 1. These upgrades of existing ranges will allow FWA to properly meet the training range certification requirements of its Soldiers. In addition to the upgrades of the CPQC and MRF ranges, the increased numbers of crew served weapons (machine gun systems, .50 Caliber systems, MK-19 grenade machine gun) will require an upgrade of the Multi-purpose Machine Gun range as part of this stationing scenario. The MPMG would be upgraded at its current location to the south of the main cantonment area. Combat Support units will require additional urban training facilities (Urban Assault Course (UAC)) as well. A description of the MPMG and UAC are provided below.

Multipurpose Machine Gun Range (MPMG): This range is designed to train Soldiers to engage stationary infantry and mobile vehicular targets with the full range of Army machine guns to include the M249, M60, M240, and .50 caliber machine guns. This range would be extended and upgraded with additional firing lanes to allow for sniper field fire and the qualification of additional machine gun crews.

Urban Assault Course (UAC): This facility is used to train individual Soldiers, squads, and platoons on tasks necessary to operate within a built-up/urban area. Primary features of this

course include individual and team trainer station, squad and platoon trainer station, grenadier gunnery trainer station, an underground trainer station, and an offense/defense house.

Live Fire Training: Training activities of CS units would primarily involve many of the same weapons qualifications discussed under Scenario 1, with individual weapons (pistols, rifle and light machine gun) and crew served weapons qualification with heavy machine guns. CS units would also be required to conduct certifications with MK-19 grenade launching systems and also demolitions in the case of combat engineering units. Firing activities would be conducted on existing qualification ranges on FWA. In comparison to the 1/25th SBCT and other units stationed at FWA, 1,000 additional CS Soldiers would increase existing live fire requirements on qualification ranges by 15-20%. These units do not typically engage in CALFEX training events though they would participate in some urban training scenarios at DTA.

Maneuver Training: CS units stationed under this scenario would participate in small unit (platoon and below) maneuvers at FWA. These units would also support combat maneuver units during Combined Arms Live Fire Exercises (CALFEX) and maneuver training rotations at Donnelly Training Area and other USAG Alaska maneuver areas. Engineer and military police units under this stationing scenario would be anticipated to execute a majority of their small unit maneuver training at FWA and the remainder of their maneuver training during integrated large-scale maneuver training rotations in support of combat units at DTA, YTA, and TFTA. The total increase in maneuver impact would not be anticipated to be more than 10-20% over what currently takes place on FWA's small unit maneuver training areas. While CS units are supporting combat units and executing small unit maneuvers, both on and off-road maneuver would be required. CS units would conduct maneuvers in most cases in tracked personnel carriers, armored HMMWVs, and light and medium tactical trucks. In some events, shallow excavation activities may also be required as part of standard operations for engineers and other CS units.

Scenario 3: Growth by 3,000 Additional Combat Service Support Soldiers

Cantonment Construction: As part of this alternative, additional Garrison infrastructure such as company operations facilities (COFs), Brigade and Battalion Headquarters buildings, storage buildings, motor pools for military vehicle parking, and other maintenance facilities would be sited on FWA. Growth by 3,000 additional Soldiers would increase the current Soldier population by just under 50%. In addition, this increase would be accompanied by a large increase in the Family dependent population of Fort Wainwright, which would also increase by approximately 50%. Such an increase would drive requirements to expand construction to areas outside the current built-up portion of the FWA cantonment area. Construction and demolition of facilities in the existing cantonment area would take place to support new unit stationing to the extent allowable given the available space, but additional non-built-up area would be modified. Power, sewage lines, water lines and roads would need to be extended to the expansion location for the new cantonment area. This area would consist of between 100-150 acres of land to the North of the current cantonment area (See blue shaded area Figure 4.8-2 below). In addition, a larger Family housing area would need to be set aside to accommodate this level of growth. A potential area for such growth in Family residential housing is the area in the Southeastern corner of the installation highlighted in the lavender shaded area in Figure 4.8-2 below.

Table 4.8-3 lists the space and size requirements for key facilities associated with the growth of 3,000 CSS Soldiers.

Table 4.8-3 Fort Wainwright Facilities Requirements for Scenario 3 and 4

Garrison Facilities	Requirement
Fuel Storage (gallons)	90,000
Brigade Offices (sf)	40,000
Battalion Offices (sf)	54,000
Company Offices (sf)	300,000
Unit Storage Buildings (sf)	40,000
Barracks Space (sf)	300,000
Military Vehicle Parking (sf)	1,200,000
Vehicle Maintenance Shop (sf)	90,00

Range Construction: To accommodate the stationing of 3,000 new CSS Soldiers, Fort Wainwright will need to upgrade training ranges. Upgrades will be required to meet doctrinal training requirements of 3,000 additional combat support Soldiers. These Soldiers will primarily need to engage in basic marksmanship tasks and qualifications with individual and crew served weapons. As part of this scenario range upgrades to the MRF, CPQC and MPMG would occur as described in scenario 2. In addition, another MRF range would be constructed in the south end of the installation to accommodate the increased weapons qualification requirements. Range upgrades and construction would occur in the green shaded area in Figure 4.8.2 below.

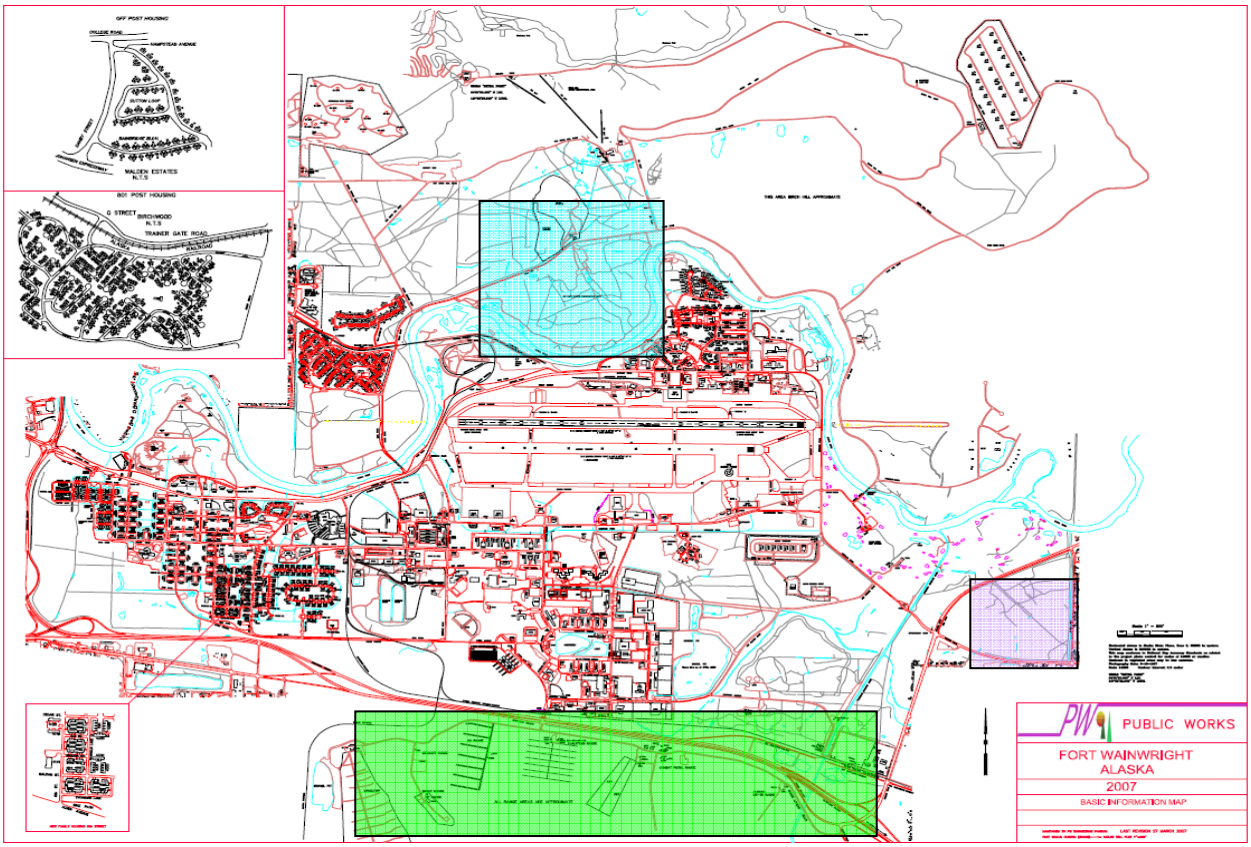

Figure 4.8-2. Construction location for additional cantonment facilities under stationing scenarios 3 to 5

Live Fire Training: Training activities of CSS units would primarily involve weapons qualifications with individual (pistols, rifle and light machine gun) weapons and crew served weapons qualification with heavy machine guns. Firing activities would be conducted on existing qualification ranges on FWA and newly constructed ranges. In comparison to the 1/25th SBCT and other units stationed at FWA, 3,000 additional CSS Soldiers would increase existing live fire requirements on qualification ranges by 30-45%. These units do not typically engage in CALFEX training events though they would participate in some urban training scenarios at DTA.

Maneuver Training: CSS units will support the maneuver training exercises of combat units; supporting their logistics and support requirements. Off-trail maneuver by these units would be limited, with major operations consisting of resupply, transport of equipment and command and control functions. A majority of maneuver operations would take place at Donnelly Training Area and other USAG Alaska maneuver areas. Much of this maneuver would occur on existing road and trail infrastructure. Additional small unit maneuver support missions at the platoon level would be supported at FWA's existing maneuver sites. Off-road travel would be minimal and significant off-road maneuver requirements are not anticipated as part of this scenario.

Scenario 4: Growth by 3,000 Additional Combat Service Support Soldiers

Cantonment Construction: Same proposed action as scenario 3.

Range Construction: All range upgrades discussed in Scenario 3 would take place. In addition, another specialized range would be constructed (either an Engineer demolition or qualification range; or Urban Assault Course) depending on the specific types of combat support units. This range would be sited in proximity to existing ranges to the south of FWA's main cantonment area and would be used to maintain the special weapons skills and training that would be required of CS units stationed at FWA.

Live-Fire Training: Training activities of CS units would primarily involve many of the same weapons qualifications discussed under scenario 3, with individual (pistols, rifle and light machine gun) weapons and crew served weapons qualification with heavy machine guns. CS units would also be required to conduct certifications with MK-19 grenade launching systems and also demolitions training and certification in the case of combat engineering units. Firing activities would be conducted on newly constructed and existing qualification ranges at FWA. In comparison to the 1/25th SBCT and other units stationed at FWA, 3,000 additional CS Soldiers would increase existing live fire requirements on qualification ranges by 45-60%.

Maneuver Training: CS units stationed under this scenario would participate in small unit (platoon and below) maneuvers at FWA, AK. These units would support combat units during Combined Arms Live Fire Exercises (CALFEX) and maneuver training rotations at Donnelly Training Area and other USAG Alaska maneuver areas. Engineer and military police units under this stationing scenario would be anticipated to execute a majority of their small unit maneuver training at FWA and the remainder of their maneuver training during integrated large-scale maneuver training rotations in support of combat units at DTA, YTA, and TFTA. The total increase in maneuver impact would be anticipated to be 30-60% over what currently takes place on FWA's small unit maneuver training areas. While CS units are supporting combat units and executing small unit maneuvers, both on and off-road maneuver would be required. In some events, shallow excavation activities may also be required as part of standard operations.

Scenario 5: Growth by an additional Field Artillery (Fires) Brigade

Cantonment Construction: As part of this alternative, additional Garrison infrastructure such as company operations facilities (COFs), Brigade and Battalion Headquarters buildings, storage buildings, motor pools for military vehicle parking, and other maintenance facilities would be constructed at FWA. The stationing of a Fires Brigade at FWA would involve the stationing of approximately 1,600 additional Soldiers which would increase the current Soldier population by about 25%. In addition, this increase would be accompanied by a corresponding increase in the dependent population of FWA, which would also increase by approximately 25%. Administratively, the units of the Fires Brigade would need to be co-located to effectively coordinate training and command and control of its subordinate units. Such an increase in Soldier stationing requirements would drive a need to expand the cantonment area outside the current footprint of the FWA as discussed in scenarios 3 and 4. Facilities could not be sited in the current cantonment area and power, sewage lines, water lines and roads would need to be extended to the expansion location for the new cantonment area. This area would consist of between 75-120 acres of land to the north of the Chena River and the current cantonment area. The footprint would be sited in the same vicinity as depicted by figure 4.8-2 (blue shaded area), though the overall cantonment expansion would only be slightly more than half the size of what

was proposed in scenario 3. In addition, acreage would need to be utilized for residential housing construction, though only half as much land for additional residential housing would be required. Senior enlisted Soldiers and single officers would live off-post in the Fairbanks community.

Table 4.8-4 listed the space and size requirements for key facilities associated with the stationing of a new Fires Brigade at FWA.

Table 4.8-4. Fort Wainwright Facilities Requirements for Scenario 5

Garrison Facilities	Requirement
Fuel Storage (gallons)	50,000
Brigade Offices (sf)	40,000
Battalion Offices (sf)	36,000
Company Offices (sf)	150,000
Unit Storage Buildings (sf)	20,000
Barracks Space (sf)	150,000
Military Vehicle Parking (sf)	800,000
Vehicle Maintenance Shop (sf)	50,000

Range Construction: All range upgrades discussed in Scenario 3 would take place. Additional firing points, from which 155 artillery and MLRS could fire munitions into the impact areas, would be sited at DTA and FWA.

Live Fire Training: Live fire training activities of the Fires Brigade would primarily involve many of the same small-arms and crew served weapons qualifications discussed under scenario 3, with individual (pistols, rifle and light machine gun) weapons and crew served weapons qualification with heavy machine guns. Firing activities would be conducted on existing qualification ranges and upgraded ranges on FWA. In comparison to the 1/25th IBCT and other units currently stationed at Fort Richardson, additional Fires Brigade Soldiers would increase existing live fire requirements on qualification ranges by 25-40%.

In addition to small arms qualifications, however, units of the Fires Brigade, including a battalion of 155 mm howitzer artillery pieces and Multiple Launch Rocket System (MLRS) Artillery would conduct firing activities into the impact area at Donnelly training area. These systems would elevate the risk of potential wildfire, the level of explosive residue contamination in the impact area and produce more noise. Firing would take place from dozens of firing points to which artillery units would maneuver before firing into existing impact areas.

Maneuver Training: Fire Brigade units stationed under this scenario would participate in small unit (platoon and below) maneuvers at FWA, AK. These units would support combat units during Combined Arms Live Fire Exercises (CALFEX) and maneuver training rotations at Donnelly Training Area and other USAG Alaska maneuver areas. Field artillery units stationed under this stationing scenario would be anticipated to execute about 25-30 percent of their maneuver training at FWA as small units and the remainder during large-scale maneuver training rotations within the boundaries of USAG Alaska training areas. The total increase in maneuver impact would be anticipated to be 20-40% over what currently takes place on Fort Wainwright's small unit maneuver training areas. While Fires Brigade units are supporting

combat units and executing small unit maneuvers, both on and off-road maneuver would be required.

Baseline description for Fort Wainwright No Action Alternative

The 927,881-acre FWA borders the east and southeast sides of Fairbanks in the Chena River watershed. As with all USAG Alaska installations, FWA has undergone modular transformation. It is now home to the modularized 1/25th SBCT and Aviation Task Force 49. Approximately 6,350 Soldiers are stationed at FWA. As part of transformation, various facilities in the cantonment area and range development projects in the training areas have been implemented and various new facilities and ranges have been constructed. For example, a new BAX and CACTF were approved and constructed at DTA for training Soldiers from FRA and FWA. Additional projects continue to be developed over time to facilitate the ability of Soldiers at FRA and FWA to train to doctrinal standards. In addition to range development projects and facilities, USAG Alaska recently developed a new ICRMP (2001), ITAM Plan (2005), and INRMP (2007). Together, these plans direct the management of natural and cultural resources at USAG Alaska installations, including FWA. All of these developments and plans comprise the No Action Alternative for FWA.

Baseline description for Donnelly Training Area No Action Alternative

The 636,599-acre DTA is south of Delta Junction in the Tanana Basin watershed, which is an interior glacial waterway. DTA is solely a training facility for Soldiers from FRA and FWA, so no Soldiers are permanently stationed here. As part of transformation, various range development projects have been implemented at DTA. For example, a new BAX and CACTF were approved and constructed at DTA for training Soldiers from both FRA and FWA. Earlier this year, USAG Alaska approved and began constructing an expansion to the Donnelly Drop Zone, upgrading the DTA East Trail Network, and constructing hardened bivouac sites. Additional projects continue to be identified and developed over time to facilitate the ability of Soldiers at FRA and FWA to train to doctrinal standards. In addition to range development projects and facilities, USAG Alaska recently developed a new ICRMP (2001), ITAM Plan (2005), and INRMP (2007). Together, these plans direct the management of natural and cultural resources at USAG Alaska installations and training areas, including DTA. All of these developments and plans comprise the No Action Alternative for DTA.

4.8.2 Fort Wainwright Affected Environment and Environmental Consequences

This section discusses the existing baseline conditions for each environmental resource as well as the anticipated consequences to FWA should the Army implement one of the stationing scenarios discussed in Chapter 4.8.1.

4.8.3 Air Quality
4.8.3.1 Affected Environment

"The climate in Fairbanks is conditioned mainly by the response of the land mass to large changes in solar heat received by the area during the year. The sun is above the horizon from 18 to 21 hours during June and July. During this period, daily average maximum temperatures reach the lower 70s. Temperatures of 80 degrees or higher occur on about 10 days each summer. In contrast, from November to early March, when the period of daylight ranges from 10 to less than 4 hours per day, the lowest temperature readings normally fall below zero quite regularly. Low temperatures of -40 degrees or colder occur each winter. The range of temperatures in summer is comparatively low, from the lower 30s to the mid 90s. In winter, this range is larger, from about 65 below to 45 degrees above. This large winter range of temperature reflects the great difference between frigid weather associated with dry northerly airflow from the Arctic to mild temperatures associated with southerly airflow from the Gulf of Alaska, accompanied by chinook winds off the Alaska Range, 80 miles to the south of Fairbanks. In some months, temperatures in the uplands will average more than 10 degrees warmer than Fairbanks. During summer, the uplands are a few degrees cooler than the city. Precipitation in the uplands around Fairbanks is heavier than it is in the city. Fairbanks exhibits an urban heat island, especially during winter. Low lying areas nearby, such as the community of North Pole, are often colder than the city (National Climate Data Center, http://climate.gi.alaska.edu/Stations/Interior/Fairbanks.html)."

During winter, with temperatures of -20 degrees or colder, ice fog frequently forms in the city. Cold snaps accompanied by ice fog generally last about a week, but can last three weeks in unusual situations. The fog is almost always less than 300 feet deep, meaning the surrounding uplands are usually in the clear, with warmer temperatures. Visibility in the ice fog is sometimes quite low, and this can hinder aircraft operations for as much as a day in severe cases.

While historically some problems associated with ice fog were generated at Fort Wainwright (FWA), a military construction project to replace the power plant's cooling ponds with air-cooled condensers was completed in 2007. Implementation of this new design has eliminated the generation of ice fog from the power plant.

FWA is located within the Northern Alaska Intrastate Air Quality Control Region. The installation is in attainment for all criteria pollutants; however it is classified as a major facility within the existing maintenance area for Carbon Monoxide (CO) because it is within the boundary of the former Fairbanks North Star Borough CO non-attainment area. As a result, proposed federal actions must undergo a general conformity review. FWA is also classified as a Prevention of Significant Deterioration (PSD) Major Facility because it has the potential to emit >250 tons of at least one regulated pollutant. Fort Wainwright (the cantonment area) is currently classified as a major stationary source under the following sections of the Clean Air Act (CAA): the Title I (Part D) Nonattainment New Source Review (NSR) and Title I (Part C) PSD programs; Section 112 air toxics program; and the Title V Operating Permit program.

FWA has a variety of air emission sources ranging from large, stationary boilers to smaller emergency generators, and prescribed burning (coordinated through BLM).

FWA possess 12-months of PSD-quality monitoring data, collected in 2003 from two monitoring stations situated within the cantonment area. There were no recorded violations of National Ambient Air Quality Standards (NAAQS) during the 12-month monitoring period. A table listing federal NAAQS is found in chapter 4.7-5 (FRA Air Quality).

Donnelly Training Area (DTA) is not considered a major source facility. Emission sources associated with 7,000 acres now known as Fort Greely were transferred to the Space Missile Defense Command on 01 October 2002. The Title V Permit Application originally submitted by USAG Alaska in December 1997 was transferred from USAG Alaska to the Space Missile Defense Command. DTA is covered under the Title V permit.

4.8.3.2 Environmental Consequences

No Action Alternative: (Significant, but Mitigable)

Under the No Action Alternative, the current uses of the affected environment would not change from the conditions described in 4.8.3.1. FWA would remain in attainment for all current criteria pollutants; however, it is classified as a major facility within the existing maintenance area for CO. Impacts to air quality at FWA from emissions and fugitive dust would continue at current levels, which are significant, but mitigable. Impacts to air quality at DTA from emissions and fugitive dust also would continue at current levels, which are minor. Ongoing military activities would continue and new mission essential projects would be developed as needed. Implementation of CAA regulations, including the PM2.5 NAAQS, will continue under the No Action Alternative.

Cantonment Construction. Under the No Action Alternative, no additional Soldiers would be stationed at FWA so no cantonment construction is required. The garrison has adequate facilities to support the existing units' requirements for living, administration, and vehicle maintenance. No construction of cantonment facilities would be required so increases in mobile source emissions or fugitive dust from construction vehicles are not expected.

Range Infrastructure Construction. No new range construction would occur under the No Action Alternative. The current number of Soldiers training at FWA would remain the same and no additional ranges would be constructed. In addition, none of the current ranges would be expanded as described for the action alternatives.

Live-Fire Training. Under the No Action Alternative, the number of Soldiers stationed and training at FWA would remain the same. Consequently, the number of required live-fire user days per year at FWA and DTA would continue at present levels. Overall impacts to air quality from live-fire training would continue to be less than significant.

Maneuver Training. The intensity and frequency of maneuver training at FWA and DTA would remain at current levels because the number of Soldiers training at FWA and DTA would remain the same. Impacts (emissions and fugitive dust) generated by tactical and non-tactical vehicles maneuvering on DTA would remain at current levels, which are less than significant.

CSS (1,000), CS (1,000): (Significant Adverse).

Cantonment Construction. These scenarios would involve the demolition of some facilities and construction of new facilities within the existing cantonment area. Construction related impacts would be temporary and would include an increase in dust mobile source emissions from construction vehicles and limited demolitions activity.

Long-term effects from stationing these units at FWA could include an increase in stationary source emissions such as from boiler units and generators used in new facilities and by units using transportable generators during training operations. The use of this equipment may require FWA to apply for a major or minor air quality permit through the Alaska Department of Environmental Conservation (ADEC).

These stationing scenarios would add POVs and 200-300 additional fleet vehicles (tactical and non-tactical vehicles that would require an additional maintenance facility. Additional vehicles would contribute to air pollutants (for example CO and ozone (O_3)) in the vicinity of FWA's cantonment area.

If this stationing scenario is selected, the need for conformity review would be determined when exact unit equipment and facilities requirements are known and can be more fully assessed at the installation. Air conformity determination may be required.

Training Range Infrastructure Construction. Short-term effects would occur. Construction vehicles involved with some range expansion would cause soil disturbance that may generate fugitive dust leading to additional air quality impacts. Additionally, fugitive emissions and dust generated from expansion of ranges would affect the areas adjacent to ranges, but are likely to be contained within the range area. Best management practices would be used to mitigate fugitive dust emissions during construction. Short-term effects from the added use of generators and from construction vehicles would occur. Follow-on effects would be generated during training events as units utilize generators.

Live-fire Training. Localized emissions from the increase in live-fire from small arms weapons firing would add to the emissions on ranges. Air emissions from firing qualifications are released at the firing point; however, data published by the EPA indicates emissions from weapons fire is relatively minor (www.epa.gov/ttn/chief/ap42/ch15/index.html, n.d.). Rifles and Machine Guns generally have very low emissions rates.

Live-fire activities may also increase the risk of wildfires, which may create short-term adverse impacts to air quality.
Fires can add Carbon Monoxide (CO), Particulate Matter (PM_{10} and $PM_{2.5}$), and Polycyclic Aromatic Hydrocarbons (PAH), among other combustion byproducts. In addition, the smoke created from fires can travel great distances and potentially impact on-post housing and off-post communities.

Maneuver Training. These scenarios would involve an increase in maneuver activities by about 10 to 20 percent. Smaller unit maneuvers would continue to be supported at FWA, while Company-level and above would be supported at DTA, TFTA, and YTA. Vehicles associated with CSS or CSS training occurring on roads, trails, or hardened surfaces would increase the occurrence of opacity or fugitive dust emissions; however these effects are anticipated to be localized to the range area. Vehicle emissions would also add to the pollutants currently being released in maneuver areas including PM, CO, and O_3.

In addition, CS units would have an increased (localized) effect to air quality from off-road maneuvering. The increase in off-road maneuvers would denude soils of vegetation and could lead to increased opacity and fugitive dust within the range area. The USAG Alaska Integrated Training Area Management (ITAM) program is an existing Army program that would continue to monitor vegetation loss and soil erosion, and conduct maneuver damage repair and revegetation, as needed.

Fires Brigade (1,600), CS (3,000), CSS (3,000): (Significant Adverse).

Cantonment Construction. Fort Wainwright does not have an adequate amount of vacant space within the existing cantonment area to accommodate more than 1,000 Soldiers. Cantonment construction would occur in two primary locations outside the existing cantonment area, to the north and to the southeast as required. Impacts from new construction would include dust generated from the construction areas resulting in increased opacity during the construction timeframe. There would also be a temporary increase in mobile source emissions from construction vehicles, and stationing sources from the use of generators and smaller equipment. The use of this equipment may require FWA to apply for a major or minor air quality permit through the ADEC. The installation would undergo general air quality conformity review and potentially a determination which could involve modeling of air quality impacts, if determined to be necessary.

Long-term effects from stationing these units at FWA would include an increase in stationary source emissions such as from boiler units and generators, or the possible extension of utilidors to new facilities. However, as indicated through the public comment process, additional power generation could be added without increasing air quality emissions, through the use of higher efficiency equipment that would be installed during utility privatization (Doyon Utilities, 18 June 2008).

Implementing these stationing scenarios would increase the Soldier and Family population at FWA by 25 to 50 percent. This increase would mean an increase of 2,000-4,000 more privately owned vehicles operating at FWA and in the Fairbanks region. In addition, between 400 (Fires Brigade) and 900 tactical vehicles would accompany units under these stationing scenarios resulting. Vehicle emissions would contribute to air contaminants such as CO, O_3, NOx, and SOx, primarily within the cantonment area. Areas of elevated emissions may occur around installation motorpools and the installation cantonment area.

Training Range Infrastructure Construction. Short-term effects would occur. As with the 1,000 Soldier stationing scenario, most existing range infrastructure could accommodate training, some ranges needing only minor expansion; however FWA would need to construct an additional Modified Record Fire (MRF) Range while conducting upgrades to existing rifle, pistol and machine gun qualification ranges. Under these stationing scenarios, construction vehicles would operate more frequently on a short-term basis. Construction vehicles would cause soil disturbance that would result in the generation of fugitive dust. Fugitive emissions and dust generated from expansion of ranges could affect the areas adjacent to ranges, but would mostly be contained within the range area. Best management practices would be used to mitigate fugitive dust emissions during construction. Short-term effects from the added vehicle emissions and the use of small generators would occur.

Live-fire Training. Live-fire ranges would be utilized more frequently and by more Soldiers. Vehicle emission would be generated en-route to live-fire ranges and in the parking areas. Emissions from weaponry would increase, but generally would not result in any degree of significance as indicated by EPA AP42 studies (www.epa.gov/ttn/chief/ap42/ch15/index.html, n.d.). Rifles and Machine Guns generally have very low emissions rates and the impacts of firing more small arms rounds on facilities designated for this activity are not anticipated to have detectable effects in regard to air quality emissions from firing of weapon systems.

The increase in live-fire activities could also increase the risk of igniting wildfires. The emissions generated from wildfires can be significant and could be experienced at great distances from the source if the fire is not immediately managed. FWA's wildfire management programs and mitigations would continue.

Live-fire ordnance and artillery training associated with the Fires Brigade would occur at DTA. These activities would cause an increase in particulate matter in a localized area within the existing impact area at DTA.

Maneuver Training. These scenarios would involve an anticipated 20-40% increase in maneuver activities for a Fires Brigade or 30 to 60 percent increase for 3,000 additional CS or CSS Soldiers. These units would also utilize the Tanana Flats Training Area (TFTA), Yukon Training Area (YTA), and Donnelly Training Area (DTA) for a majority of their maneuver training. The increased training would occur primarily on roads, trails, or hardened surfaces for CSS units. CS units and the Fires Brigade would conduct off-road maneuvers when training. In addition to vehicle emissions, maneuver would increase the occurrence of fugitive dust and opacity; however these effects are anticipated to be localized to the range area.

The increase in off-road maneuvers would denude soils of vegetation and could increase opacity and fugitive dust, though fugitive dust problems are currently not a major issue within USAG Alaska maneuver training areas and are limited due to wet conditions. Air quality effects from maneuver training are anticipated to be contained within existing maneuver areas. Stationing scenarios would not be anticipated to increase the frequency of large unit maneuver rotations at DTA, TFTA, or YTA, and existing installation programs like ITAM would be expected to limit loss of vegetative cover and any subsequent air quality issues from maneuver training.

Donnelly Training Area

CS (1,000), CSS (1,000), Fires Brigade (1,600), CS (3,000), CSS (3,000): (Minor).

Live-fire Training. Live-fire associated with this stationing scenario may have long-term impacts. Air emissions would be emitted at the firing points where small arms are fired, and from vehicles used during training exercises. Vehicle emissions would contribute to air contaminants such as CO, O_3, NOx, and SOx. Emissions at the firing point would be generated from small arms. Rifles and Machine Guns used on qualification training ranges have very low emissions rates and these emissions are generally dispersed quickly (depending on wind speed and direction).

Live-fire activities may also increase the risk of wildfires, which may create short-term adverse impacts to air quality. Fires may also occur in the ordnance impact area at DTA. Access to the impact area could limit the response of fire crews; however, the installation employs the use of prescribed burns and other mitigations to minimize these effects.

Yukon Training Area, Tanana Flats Training Area, Donnelly Training Area

CSS (1,000), CS (1,000), Fires Brigade (1,600), CS (3,000), CSS (3,000): (Minor).

Maneuver Training. Long-term effects are expected. Vehicles associated with CSS or CSS, or field artillery training occurring on roads, trails, or hardened surfaces would increase the occurrence of opacity or fugitive dust emissions; however these effects are anticipated to be localized to the range area. Vehicle emissions would also add to the pollutants currently being released in maneuver areas including PM, CO, and O_3. These levels of Soldier growth would add approximately 25 to 50 percent more vehicle emissions to the training areas as a whole.

In addition, CS units and Field Artillery units would have an increased (localized) effect to air quality from off-road maneuvering. The increase in off-road maneuvers would denude soils of vegetation and increase opacity and fugitive dust within the range area.

Fugitive emissions from road, trail, and range maneuver do not generally travel outside the training area boundaries.

Only short-term, intermittent minor impacts from mobile source emissions are expected along roadways during convoy between the Soldiers' home station (whether at FRA or FWA), and on roads and trails. The emissions from vehicles traveling on highways would be dispersed over a wide area.

4.8.4 Airspace

4.8.4.1 Affected Environment

Aviation is an essential component of transportation in the Fort Wainwright region and across the state of Alaska. The civilian aviation community utilizes Fairbanks International Airport as well as numerous smaller airfields within the region. The military, in cooperation with the State of Alaska and the FAA has established no-fly zones and altitude restrictions in airspace to minimize the impact on commercial and general aviation. The FNSB has established policies of planning and zoning to control or prohibit residential or commercial activities that may conflict with military activities. In addition, a 2006 Joint Land use Study (JLUS) (FNSB, 2006) established compatible use zones and air safety zones around both Fort Wainwright and Eielson Air Force Base.

FWA has its own airfield and also uses nearby Eielson Air Force Base for large-scale deployments. Both the airfield and the Air Force Base can support the aerial operations of most military aircraft. Ladd Army Airfield has one active runway; several ancillary taxiways, and hangars. The airspace surrounding Ladd Army Airfield is classified as Class D.

Yukon Training Area has special air-space limits that extend from 100 feet to 17,999 feet above mean sea level (amsl). The training area also contains MOAs that extend from 500 to 10,000 feet and 10,001 to 17,999 feet amsl. There is restricted airspace over YTA that covers the eastern portion of the training area and the Stuart Creek Impact Area. The remaining restricted airspace extends from the ground surface to 20,000 feet amsl.

Tanana Flats Training Area is under an MOA with Eielson AFB that extends from 100 to 17,999 feet amsl. Restricted airspace overlays the southern portion of TFTA.

At DTA, Special Use Airspace limits range from 300 feet amsl to 6,999 feet amsl. Most of DTA West is within the Restricted Area. The areas are closed to all civilian aviation during periods of scheduled activity. Nearby Allen Army Airfield is capable of supporting C5/C141 aircraft in winter and C130 aircraft at all other times. There is also a small unpaved light aircraft landing strip north at Delta Junction.

Two civilian flight corridors have been established. One is along the Alaska Highway near Delta Junction and the other is along the Richardson Highway near Donnelly Dome. These corridors, which extend from ground surface to 3,500 feet amsl, were established to maintain civil aviation access along major VFR flyways along the Alaska Highway, Richardson Highway, and the Trans-Alaska Pipeline. Both the corridors are highly used for civil aviation. For example, the corridor along the Richardson Highway leads to Isabel Pass, which is one of two passes through the central Alaska Range between Fairbanks and south-central Alaska. Civilian air traffic primarily uses Isabel Pass because of its higher probability of favorable weather conditions.

4.8.4.2 Environmental Consequences

No Action Alternative: (Minor)

Under the No Action Alternative, the current uses of the affected environment would not change from the conditions described in 4.8.4.1. FWA and DTA's current air traffic operations would continue at present levels and airspace restrictions would remain as they currently exist. Ongoing military activities would continue and new mission essential projects would be developed as needed.

Cantonment Construction. Under the No Action Alternative, no additional Soldiers would be stationed at FWA so no cantonment construction is required. The garrison has adequate facilities to support the existing units' requirements for living, administration, and vehicle maintenance. Consequently, this alternative would not require modifications to controlled or special use airspace.

Range Infrastructure Construction. No new range construction would occur under the No Action Alternative. The current number of Soldiers training at FWA and DTA would remain the same and no additional ranges would be constructed. In addition, none of the current ranges would be expanded as described for the action alternatives. Therefore, no effects to airspace are expected.

Live-Fire Training. Under the No Action Alternative, the number of Soldiers stationed and training at FWA and DTA would remain the same. Consequently, the number of required live-fire user days per year at FWA and DTA would continue at present levels. No modifications to CFAs above existing ranges and no increases in the number of hours of airspace time over FWA or DTA's ranges are expected.

Maneuver Training. The intensity and frequency of maneuver training at FWA and DTA would remain at current levels because the number of Soldiers stationed at FWA would remain the same. Maneuver training of these ground-based units would have no effect on airspace at FWA.

Although use of the Donnelly Drop Zone at DTA would not be affected by the current expansion project, the expanded drop zone surfaces would allow for additional aircraft configuration within the existing designated airspace.

CSS (1,000), CS (1,000), Fires Brigade (1,600), CS (3,000), CSS (3,000): (No Impact).

Cantonment Construction. Construction at FWA is not expected to require modifications to controlled or special use airspace. Therefore, no additional affects are expected.

Training Range Infrastructure Construction. The various range expansion projects that would be required to support any of these stationing scenarios (respectively) would not require modifications to controlled or special use airspace, as the modifications would involve small arms ranges already located within special use airspace. Therefore, no additional affects are expected.

Live-fire Training. Training would generally involve the use of small arms ranges for all stationing scenarios. Range expansion or construction would not result in the need to modify existing airspace designations at FWA.

Maneuver Training. Maneuver training of these ground-based units will have no effect to airspace at FWA. Airspace is not required to accommodate nonlive-fire, ground-based maneuvers.

Donnelly Training Area

CSS (1,000), CS (1,000), Fires Brigade (1,600), CS (3,000), CSS (3,000): (Minor).

Training Range Infrastructure Construction. No additional range construction may be required under CSS or CS stationing scenarios. However, additional firing points (accommodating the Fires Brigade) may be added near the impact area. Construction would not involve any modifications to airspace; therefore, no additional affects are expected.

Live-fire Training. The CS and CSS stationing scenarios would not require additional ranges at DTA; therefore they would continue to operate under current CFAs. Although CFAs pose no problems to flights, activities within a CFA must be suspended immediately when radar, spotter aircraft, or ground lookouts detect an approaching aircraft. The frequency of Soldiers training on live-fire ranges at DTA would increase thereby further restricting access to airspace to the public during live-fire exercises. The percentage of additional annual airspace time needed may be between 15 and 60 percent.

Field artillery live-fire training would occur at DTA. The training area would experience additional use of the 105mm and 155mm munitions being fired into DTA impact areas. In addition, the Fires Brigade may employ the use of the High Mobility Artillery Rocket System (HIMARS) launcher, multiple launch rocket system. HIMARS fires the M26 Tactical Rocket (firing 644 submunitions over a 0.23 km^2 area) that has a maximum range of 32 km; the M28A1 Reduced Range Practice Rocket with a range of 8-15 km; the M26A1/M26A2 Extended Range Rocket (ER-MLRS) that contains 518 submunitions and has a maximum range of 45 km; the XM30 Guided MLRS Rocket that has a range of 60 km and carries a payload of 400+ grenades; and the Guided MLRS Unitary Rocket, a rocket containing High Explosive (HE) that has a maximum

range of 60 km (HIMARS Acquisition Status Sheet, February 2008). Additional use of these systems may result in reduced public access to the training area during live-fire activities; and may require the modification of restricted airspace to accommodate this weapons system.

Yukon Training Area, Tanana Flats Training Area, Donnelly Training Area

CSS (1,000), CS (1,000), Fires Brigade (1,600), CS (3,000), CSS (3,000): (No Impacts).

Maneuver Training. Maneuver training of these ground-based units will have no effect to airspace at FWA. Airspace is not required to accommodate nonlive-fire, ground-based maneuvers.

4.8.5 Cultural

4.8.5.1 Affected Environment

The prehistory of interior Alaska is characterized by a varied, often nomadic settlement pattern with a focus on hunting of terrestrial animals. The Paleoarctic and Northern Archaic tool traditions included stone, bone, antler, and ivory tools. The lithic technologies included the use of microblades. With the Athabascan Tradition, materials culture begins to reflect distinct cultural groups.

In the late Pleistocene, the interior of Alaska was a relatively ice-free bowl surrounded by the extensive continental ice sheet to the east and the Cordilleran glacier to the west. The Alaska Range forced storm systems from the south upwards creating a rain shadow and a broad, ice-free, steppe-tundra environment to the north. This environment supported large herbivores such as bison, mammoth, mastodon, horse, camel, moose, caribou, antelope, elk, and yak. Most of the earliest evidence of human occupation in Alaska is found in the interior. The first humans could have crossed from Asia into Alaska as early as 30,000 BP, but the earliest known sites in the interior date from 11,000 to 12,000 BP.

Paleoarctic Tradition sites (12,000 to 6,000 BP) are typically camps on terraces, buttes, and bluffs or other high ground from which they could locate and track large mammals, such as bison and mammoth, in the treeless environment. The nomadic lifestyle of these groups, the perishable organic materials that they used, and subsequent environmental changes have made it difficult to find traces of their cultures. This tradition includes the Denali Complex and the Chidadn Complex. The Denali Complex includes distinctive microblade cores, core tablets and their derivative microblades, large blades, biconvex bifacial knives, certain end-scraper forms, and burins. The Chidadn Complex is characterized by Chidadn points, and bifacially flaked triangular or teardrop shaped projectile points.

The Northern Archaic Tradition (6,000 to 1,000 BP) was an adaptation to expanding boreal forests. Settlement patterns and the range of terrestrial animals exploited were more varied in this period. The hallmark of the Northern Archaic Tradition is the presence of side-notched points.

The Athabascan Tradition (2,000 to 150 BP) begins to exhibit distinct traits of subgroups within general geographic areas. These traditions develop into the historic subgroups of the region. The Athabascan Tradition includes a reorganization of raw materials, which de-emphasized

stone tool making and increased the emphasis on the manufacture of items from native copper and organic materials.

History. Interior Alaska's history is divided into four historic themes according to the types and levels of Euro-American activities. These are the Early Contact history (1810s to 1880s), Gold Rush (1880s to 1928), Development of Infrastructure (1890s to 1910s), and Military Activities (1890s to present); these are discussed below.

Early Contact: First contact between the Athabascan and European cultures probably commenced with trade goods from Russian fur trading posts on the Copper and Yukon Rivers and a British trading post established where the Porcupine River joins the Yukon River in 1847. Contact between Tanana Athabascans and white traders increased steadily in the 1860s. Several village sites associated with the early contact period have been reported near the Fort Wainwright Main Post, two just northwest of the fort's boundary and one near Fairbanks. With the U.S. purchase of Alaska in 1867, control of the trading stations fell to the Americans, and American traders established new posts on the Yukon and Tanana Rivers. Natives became increasingly exposed to trade and established permanent settlements.

Gold Rush: Gold discoveries in 1886 and 1894 northeast of Fairbanks led to an influx of Anglo-American settlements in the Tanana Valley. The first settlers established themselves in the Tanana Valley in the 1890s. A trading post was established at Chena in 1900, and another was established by E. T. Barnette at the future town site of Fairbanks in 1902. Further gold discoveries in 1902 and 1903 near Fairbanks led to a dramatic increase in the town's population to 15,000 in 1909. Most of the mining activity occurred on creeks north of Fairbanks, and no workings associated with early mining have been found in the in DTA. Cabin remains, sites, and trails from the Gold Rush period have been identified.

Development of Infrastructure: The initial means of transport to interior Alaska was by riverboat along the Yukon River to the Tanana River, either upstream from St. Michael or downstream from the White Pass and Yukon railhead at Whitehorse in Canada. An overland trail was established in by the U.S. Army 1899, from Valdez to Eagle, and later to Fairbanks. The original Valdez to Fairbanks Trail crossed the Main Post and followed what is now Gaffney Road. Portions of the trail were upgraded to a wagon road and an automobile road over the years. Roadhouses were established along the route to cater to the travelers. Traces of several of these roadhouses have been identified including Gordon's Roadhouse and Sullivan's Roadhouse on Fort Greely (DTA). The Alaska Railroad was later completed, linking Fairbanks to Anchorage.

Military Activities: Military aviation activities began in the Fairbanks area in 1913. The town became the aviation hub for interior Alaska by 1928. Federal legislation in 1935 and 1937 established Ladd Airfield near Fairbanks, which became the home of the Cold Weather Detachment in 1940. Ladd Field was affected by World War II, following Japan's invasion of the Aleutian Islands in June 1942. The facilities at Ladd Field expanded rapidly due to increased activities of the Sixth Air Depot Group, the Cold Weather Test Station, and the Air Transport Command. Auxiliary bases were established to assist Ladd Field with the traffic of the Alaska-Siberia Lend-Lease Program between 1942 and 1945, including Big Delta (Fort Greely). After the formation of the U.S. Air Force in 1947, Ladd Field was designated Ladd Air Force Base. However, the Army's mission at Ladd Field continued, with anti-aircraft and ground defense and cold-weather testing and training. The Army's cold-weather testing and training missions shifted from Ladd Field to the Arctic Training Center at Fort Greely, including Donnelly Flats, in the mid-1950s. Construction at Fort Greely in the 1950s included the military's first nuclear power plant.

In 1961, the U.S. Air Force transferred Ladd Air Force Base to the Army, which was then renamed Fort Jonathan Wainwright. With the introduction of the Intercontinental Ballistic Missile in the 1960s, Fort Wainwright's anti-aircraft mission diminished, and the post's primary mission became peacetime Army deployment. In the 1970s, Arctic training, including exercises at Fort Greely began to be emphasized. In 1986, the 6th Infantry Division (Light) was activated at Fort Wainwright to function as a rapid deployment force.

Known sites in interior Alaska have been identified predominantly through discoveries by area residents and road construction crews, and other chance discoveries. Consultation with Alaskan Native Tribes to identify Traditional Cultural Properties (TCP's) or other sites of cultural or sacred significance has been on-going. Multiple contracts with Alaskan Native communities are in the process of being conducted, but currently no TCP's or other cultural resources have been identified. Due to the sensitive nature of such consultation and the need for continued outreach and trust-building with Alaskan Native Tribes, these continue to be conducted.

Archaeology: The basic cultural context for interior Alaska sites is found in the Integrated Cultural Resources Management Plan (ICRMP). Management of these resources include FWA's main post and each of the training areas.

FWA Main Post: Archaeology. Twelve archaeological surveys have been conducted on FWA Main Post. These surveys have either focused on high potential areas of Fort Wainwright, or have been related to construction projects. Survey sites include the southern slopes of Birch Hill, various borrow sources south of the cantonment area, and small arms ranges between the Richardson Highway and the Tanana River. As a result of the surveys, nine archaeological sites have been identified on FWA Main Post, located north of Chena River and along the southern slopes of Birch Hill. Four sites of the nine sites have been evaluated for eligibility for inclusion in the National Register, and were determined not eligible. The remaining five sites have not been evaluated to date.

Tanana Flats Training Area: Five archaeological surveys have been conducted in the TFTA starting 1973. Survey sites include Blair Lakes, CC Buttes, WR Buttes, Blair Lakes Range, and the Alpha Impact Area. As a result, fifty sites have been identified and two archaeological districts have been designated. A third archaeological district exists in the vicinity of Wood River Buttes. Of the sites identified, thirteen have been determined eligible for inclusion in the National Register of Historic Places, twenty-eight have been determined not eligible, and eight are pending or remain to be evaluated for eligibility. If the Tanana Flats are used for military operations, the areas that will be potentially impacted would be subject to archaeological inventory. Previous surveys conducted in the Tanana Flats would be used as a research tool to better understand the potential archaeology in the area. The majority of the areas that were surveyed should be resurveyed due to the amount of time that has passed -- over 30 years for some areas. Due to its remote setting, the archaeology of the TFTA is not well understood and represents a gap in USAG Alaska's current inventory of archaeological and cultural sites.

Yukon Training Area: Nine archaeological surveys have been conducted on YTA. As a result, fourteen archaeological sites have been identified. Of these, twelve sites have been determined not eligible for listing in the National Register of Historic Places. One location has not been evaluated due to its location in a heavily used portion of the Stuart Creek Impact Area. A determination of eligibility on the final location is pending further fieldwork.

Donnelly Training Area: Since 1963, twenty-three archaeological surveys have been conducted in the DTA. As a result, 358 sites have been found. Fourteen of these sites make up two archaeological districts. Sixty sites have been evaluated and 25 of these are eligible for listing on the National Register of Historic Places. Of the sites evaluated at DTA, the majority of them have been limited to DTA East, specifically the portion of DTA East on the Delta River. DTA East comprises only about 25 percent of the land on DTA. Due to the remote setting, the archaeology of DTA is not well understood.

Architectural Surveys. In 1984, the entire FWA main post was inventoried and evaluated for eligibility for inclusion in the NRHP under the World War II and Cold War historic contexts. Under the WWII context, Ladd Field has been designated as a National Historic Landmark. This area includes thirty-seven buildings and structures.

Under the Cold War context the main post has been identified and determined eligible for inclusion in the NRHP; however it has not been formally nominated for listing. In that area, there are seventy buildings and structures identified as contributing to the Ladd Air Force Base Historic District. In 2000, USAG Alaska developed a Cold War context for Ladd Air Force Base and based on this study, all buildings on FWA were evaluated under this context (USAG Alaska 2004). The SHPO currently is requesting additional buildings to be considered under additional themes.

A survey of range structures in the TFTA was conducted in 2001 and none were evaluated as eligible for listing on the NRHP (Price 2001).

At YTA, two Nike Missile Sites exist; these are Site Mike and Site Peter. Each consists of a Battery Control Area and a Launch Area. Cleanup efforts occurring in the late 1980s and early 1990s precluded these sites for inclusion in the NRHP.

Early mining studies indicated that no significant mining activities occurred at YTA. The Pine Creek mining complex in the northeastern corner of the training area was listed as a potential historic property; however, based on an early mining study (Neely 2001) that site is not eligible for listing in the NRHP.

Systematic investigations in the DTA area began with site investigations around Donnelly Ridge in 1964. In the 1970s, several studies involved a pipeline route and upgrades on Fort Greely. Less than 1 percent of the DTA had been systematically surveyed prior to the FEIS. Twelve surveys were conducted on DTA. Through these surveys, 105 known sites were recorded. Eighteen of the sites are recommended eligible for the NRHP, 56 need to be evaluated, and 31 are recommended not eligible.

24 archaeological surveys have been conducted on DTA since 1963 identifying approximately 400 sites. Between 1960 and 2001 16 surveys were conducted that resulted in the identification of 107 sites. USAG Alaska began archaeological surveys of large blocks, particularly in DTA East, in 2002. In contrast to earlier surveys, these block surveys covered entire areas and employed an aggressive sub-surface testing strategy (Robertson et al. 2006). Robertson et al. 2006 lists 52,617 acres of new archaeology surveys on DTA between 2002 and 2005. This is approximately a tenfold increase in the percentage of land surveyed on DTA, but still encompasses a small portion of DTA. 293 new sites have been identified and 110 of the new sites have been evaluated for eligibility for listing in the NRHP.

4.8.5.2 Environmental Consequences

No Action Alternative: (Less than Significant)

Under the No Action Alternative, the current uses of the affected environment would not change from the conditions described in 4.8.5.1. FWA's current operations would continue at current levels. Ongoing military activities would continue and new mission essential projects would be developed as needed.

Cantonment Construction. Under the No Action Alternative, no additional Soldiers would be stationed at FWA so no cantonment construction is required. The garrison has adequate facilities to support the existing units' requirements for living, administration, and vehicle maintenance. Future as needed construction of additional facilities on the cantonment would be likewise analyzed for any potential impacts on the facilities and their contribution to FWA's unique distinction as a National Historic Landmark. Consequently, this alternative would not affect cultural resources present in the cantonment area beyond current levels.

Range Infrastructure Construction. No new range construction would occur under the No Action Alternative. The current number of Soldiers training at FWA and DTA would remain the same and no additional ranges would be constructed. In addition, none of the current ranges would be expanded as described for the action alternatives. Therefore, no effects to cultural resources are expected.

Live-Fire Training. Under the No Action Alternative, the number of Soldiers stationed at FWA and training at FWA and DTA would remain the same. Consequently, the number of required live-fire user days per year at FWA and DTA would continue at present levels. All the areas used for live-fire training have been surveyed for cultural resources and protective measures have been implemented for all known sites. Thus, no change in effects to cultural resources is expected.

Maneuver Training. The intensity and frequency of maneuver training at FWA and DTA would remain at current levels because the number of Soldiers stationed at FWA would remain the same. In addition, no new maneuver areas would be required. Although maneuver training would be conducted in the footprint of existing ranges, trails, drop zones, and hardened bivouac sites, at FWA and DTA that have been surveyed for cultural resources, it may still affect cultural resources. New cultural resources currently not identified could be impacted through maneuver training. Mechanisms and procedures are in place to monitor the effects of operations, maintenance, and training exercises and to respond to any unanticipated discoveries, so the effects would be less than significant.

CSS (1,000), CS (1,000): (Significant but Mitigable).

Cantonment Construction. Construction supporting these stationing scenarios could potentially disturb or damage cultural resources, or could alter properties and districts. Infill construction in the main post may require the demolition of barracks to make room for new construction within FWA's current Historic District. Section 106 consultation would be required. Any construction occurring at the borders of the designated historic district within the main post area may require additional consultation. Depending on the size of the facilities needed, the SHPO may need to be involved in the design process to minimize potential impacts. All construction under these

scenarios would occur on previously disturbed ground and no other cultural resources have been identified within the installation's main post.

Training Range Infrastructure Construction. Construction equipment would involve grading/re-grading site surfaces, grubbing vegetation, and using heavy equipment to excavate the subsurface. Expansion of some ranges would be required. Although range expansion projects would be located on previously disturbed ground, construction activities have the potential to result in damage to undocumented cultural resources.

Live-fire Training. No effects are anticipated. Range expansion and new targetry would be sited to avoid cultural resources at FWA following identification of these sites during cultural resource surveys. Live-fire activities would not have a significant impact to cultural resources. The installation also has an established Integrated Cultural Resources Management Plan (ICRMP) that would be closely followed by military personnel.

Maneuver Training. The frequency and intensity of maneuver training would increase under these stationing scenarios. Under these scenarios, no new maneuver areas would be required and all maneuver training would be conducted in the footprint of existing ranges and trails at FWA. However, undocumented cultural resources currently not identified could be impacted through maneuver training discussed in these scenarios. Stationing scenarios involving CS units, particularly engineer or combat engineer units, may involve some surface excavation, which could potentially uncover or damage undocumented cultural resources.

Fires Brigade (1,600), CS (3,000), CSS (3,000): (Significant but Mitigable).

Cantonment Construction. Similar to the 1,000 Soldier stationing scenarios, construction supporting these stationing scenarios could disturb or damage cultural resources, or could alter properties and districts. Any construction occurring at the borders of the designated historic district may require Section 106 Consultation. Construction supporting these stationing scenarios would likely occur north of the river and at the southeast corner of the main post. Surveys have been conducted across the river north of the hospital and south of the landfill. Some archaeological sites are present but are not eligible. Additional surveys may be needed in the area identified for potential Family housing construction (Figure 4.8-2).

Training Range Infrastructure Construction. Construction equipment would involve grading/re-grading site surfaces, grubbing vegetation, and using heavy equipment to excavate the subsurface. As with the 1,000 Soldier scenarios, expansion of some ranges would be required. These range expansion projects would be located on previously disturbed ground; however, construction activities have the potential to result in damage to undocumented cultural resources. New ranges could be sited in an area to the south of the railroad tracks. New construction would occur within the footprint of existing ranges or previously disturbed ground. New ranges would be sited to avoid known cultural resources.

Live-fire Training. No effects are anticipated. Range expansion and new targetry would be sited to avoid cultural resources at FWA following identification of these sites during cultural resource surveys. Live-fire activities would not have a significant impact to cultural resources. The installation also has an established Integrated Cultural Resources Management Plan (ICRMP) that it utilizes to ensure the protection and preservation of cultural resources.

Maneuver Training. The frequency and intensity of maneuver training would increase under these stationing scenarios. Under these stationing scenarios, no new maneuver areas would be required and all maneuver training would be conducted in the footprint of existing ranges and trails at FWA. Stationing scenarios involving CS units, particularly engineer or combat engineer units, may involve some surface excavation, which could potentially uncover or damage undocumented cultural resources. If cultural resources are discovered, USAG Alaska cultural resources managers will implement procedures to notify the SHPO and follow procedures designated in the ICRMP.

Donnelly Training Area

CSS (1,000), CS (1,000), Fires Brigade (1,600), CSS (3,000), CS (3,000): (Less than Significant).

Training Range Infrastructure Construction. No range construction is anticipated with the CS or CSS stationing scenarios. Existing facilities at DTA would continue to meet semi-annual training requirements for these units.

Construction of new firing points to accommodate the Fires Brigade may be required. Construction equipment would involve grading/re-grading site surfaces, grubbing vegetation, and using heavy equipment to excavate the subsurface. These activities have the potential to result in damage to cultural resources. DTA is rich in archaeological and cultural resources and continues to conduct surveys on its lands; however, the areas where range construction may occur (yet to be identified) is likely to be highly disturbed. Garrison Cultural Resources personnel would ensure proper siting of new firing points to avoid any documented sites, or conduct further evaluation if necessary.

Yukon Training Area, Tanana Flats Training Area, Donnelly Training Area

CSS (1,000), CS (1,000), Fires Brigade (1,600), CS (3,000), CSS (3,000): (Minor).

Maneuver Training. Maneuver training may impact cultural resources. Maneuver training is restricted to prevent impacts to known cultural resources sites. No new maneuver areas would be required to support these stationing scenarios. Maneuver training under all scenarios would be conducted in the footprint of the training installations. However, new cultural resources sites currently not identified could be impacted through maneuver training discussed in these scenarios. Stationing scenarios involving CS units, particularly engineer or combat engineer units, may involve some surface excavation, which could potentially uncover or damage undocumented cultural resources.

4.8.6 Noise

4.8.6.1 Affected Environment

The existing noise environment for FWA including YTA, TFTA, and DTA is documented in the Fort Wainwright Installation Environmental Noise Management Plan. The more common sources of noise at interior Alaska sites are from traffic, aircraft, and large and small caliber weapons firing. A Joint Land Use Study (FNSB 2006) assessed land use and noise contours

around both Fort Wainwright and Eilsen AFB, and identified areas where non-military construction should not occur due to noise created by military activities. These areas are clearly identified and the FNSB has place limitations on these areas for future development.

FWA receives few complaints from the surrounding community each year. Common responses from the public to military activities involve questions regarding the source of noise, and when the installation expects those noise events to cease. The number of complaints has decreased as the installation staff began providing the public advanced notice on training schedules.

For FWA and TFTA, NZ II and NZ III are both contained within the installation boundary. However, portions of the cantonment area are affected by NZs II. Figure 4.8-3 illustrates the noise contours at FWA and TFTA.

All NZs for TFTA are contained within the installation's boundary. This area is used primarily for Soldier maneuver (in the winter) and some demolitions activity and large caliber weapons firing into an existing impact area.

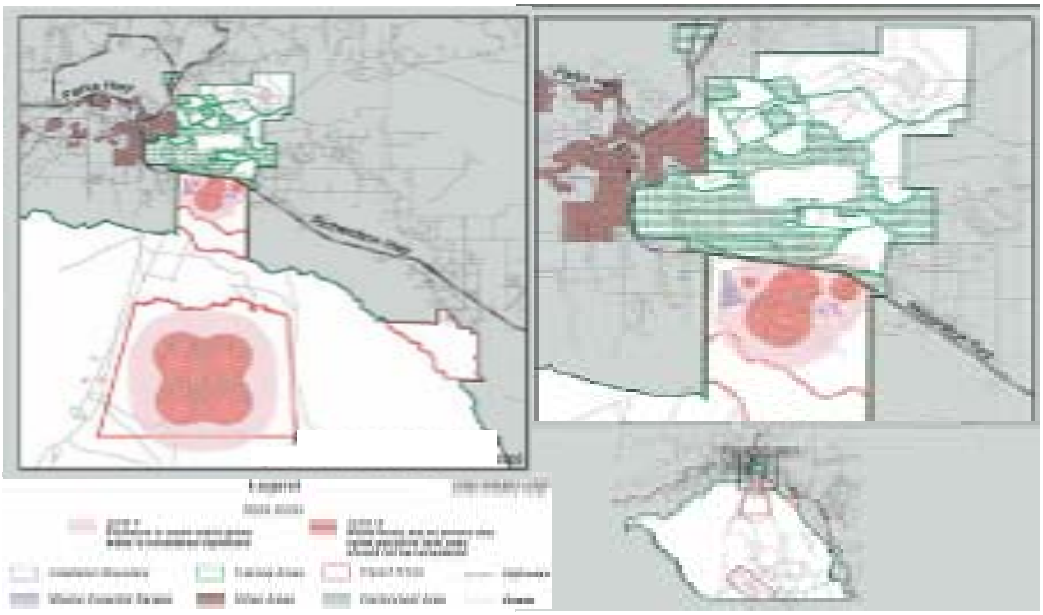

Figure 4.8-3. Noise contours for FWA and TFTA

Similar to TFTA, YTA generates noise from Soldier maneuver, demolitions, and artillery firing. Noise contours are located towards the center of the training area, more than four miles from the installation boundary. Figure 4.8-4 illustrates noise contours for YTA.

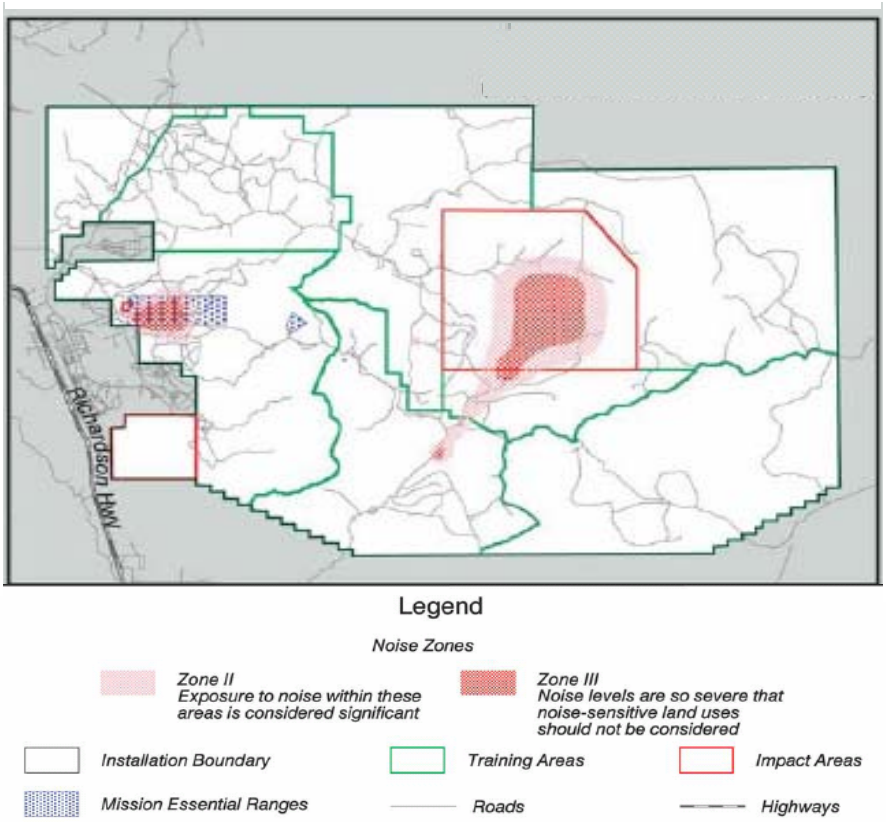

Figure 4.8-4. Noise contours for YTA

The general noise environment at DTA is associated with the operations of helicopters, artillery training, and bomb detonation. Other minor noise sources include but are not limited to construction, traffic, and recreation. Based on documented noise contours the noise generated from DTA generally stays within the boundaries of the installation. DTA receives only a few noise complaints from the public each year; to reduce these complaints and any burden to the public, the installation as altered some training schedules, has moved toward the use of newer and quieter equipment, and has begun providing the public advance notice of unusual sources of noise such as flight patterns or training that is not common to the installation. Figure 4.8-5. illustrates the noise contours at DTA.

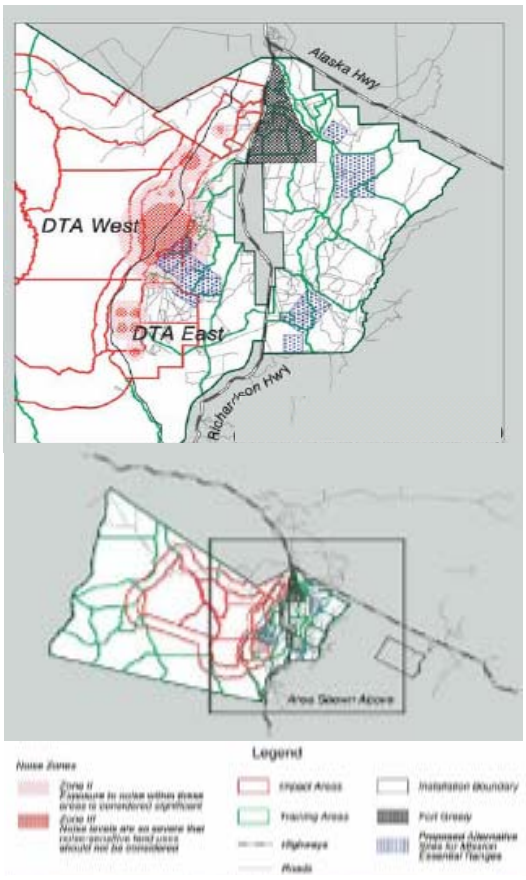

Figure 4.8-5. Noise contours for DTA

4.8.6.2 Environmental Consequences

No Action Alternative: (Less than Significant)

Under the No Action Alternative, the current uses of the affected environment would not change from the conditions described in 4.8.6.1. FWA's current operations would continue at current levels. Ongoing military activities would continue and new mission essential projects would be developed as needed.

Cantonment Construction. Under the No Action Alternative, no additional Soldiers would be stationed at FWA so no cantonment construction is required. The garrison has adequate facilities to support the existing units' requirements for living, administration, and vehicle maintenance. Consequently, no additional noise from new construction in the cantonment at FWA is expected.

Range Infrastructure Construction. No new range construction would occur under the No Action Alternative. The current number of Soldiers training at FWA would remain the same and no additional ranges would be constructed. In addition, none of the current ranges would be expanded as described for the action alternatives. At DTA, the DTA East enhancements would generate minor temporary noise during clearing and grading. Noise associated with the use of these enhancements would not change from current levels. Therefore, no effects to noise are expected at FWA or DTA.

Live-Fire Training. Under the No Action Alternative, the number of Soldiers stationed at FWA and training at FWA and DTA would remain the same. The number of required live-fire user days per year at FWA and DTA would continue at present levels. Noise from live-fire training would continue to occur as it does currently and is not expected to result in any increased effects to the public, primarily because the ranges are located at the remote DTA and in the southern portion of FWA.

Maneuver Training. The intensity and frequency of maneuver training at FWA and DTA would remain at current levels because the number of Soldiers stationed at FWA would remain the same. In addition, no new maneuver areas would be required and maneuver training would be conducted in the footprint of existing ranges and trails at FWA and DTA. Therefore, no increase in noise due to maneuver training would occur and impacts would remain at less than significant levels.

CSS (1,000), CS (1,000), Fires Brigade (1,600), CS (3,000), CSS (3,000): (Less than Significant).

Cantonment Construction. Impacts from construction would be temporary. Noise associated with construction would result mainly from the movement of vehicles and equipment. An assessment of specific impacts would be conducted upon final siting of facilities required to support these stationing scenarios.

Noise associated with construction equipment generally produce noise levels of 80 to 90 dBA at a distance of 50 feet. Permissible noise exposures identified by the Occupational Safety and Health Administration (OSHA) (29 CFR 1910.95) for an 8-hour work day is 90 dBA. Therefore construction noise in the cantonment area would likely be compliant with these levels. The zone of relatively high construction noise may extend to distances of 400 to 800 feet from major equipment operations; and those locations that are more than 1,000 feet from construction sites generally do not experience significant noise levels. However, temporary noise impacts may occur to wildlife. These effects would be discussed in Chapter 4.8.8 Biological Resources.

Training Range Infrastructure Construction. Similar to cantonment construction, range construction and expansion would result from the movement of construction vehicles and equipment. Significant effects are not anticipated to the public due to distance from expansion locations to off-post communities. However, temporary noise impacts may occur to wildlife. This would be discussed in Chapter 4.8.8 Biological Resources.

Live-fire Training. Long-term effects would occur. Although the same intensity of noise would continue, stationing 1,000 or more Soldiers would increase the frequency of noise generating events. The frequency of live-fire events that generate noise may increase by 15 to 60 percent depending on the stationing scenario (10 to 20 percent for 1,000 Soldiers; 25 to 40 percent for 1,600 Soldiers; and 30 to 60 percent for 3,000 Soldiers). Because units will be using the same weapons systems as are currently being used during live-fire training at the installation, the types of noise will not change; however, the number of noise generating events would increase. Residential areas located in the vicinity of the range complex may experience an increase in noise events by up to 60 percent depending on the stationing scenario. Due to the limitations on development near the installation, coupled with an approximate distance of 200 meters between the nearest civilian facilitiy to the small arms range complex at FWA, the effect from increased live-fire activities at the small arms range complex is anticipated to be less than significant.

The Fires Brigade would utilize different equipment but would train with artillery and ordnance at DTA. Impacts to wildlife receptors at DTA could occur in areas that bison, caribou, moose, and other wildlife frequently utilize. Firing points are in close proximity to bison calving areas and prime moose browse areas as well. The stationing of a Fires Brigade could result in greater disturbance to wildlife due to increased noise from live-fire training events. If decisions are made to station a Fires brigade in Alaska, studies may be needed to characterize direct and indirect impacts to wildlife.

Maneuver Training. Although there would be an increase in Soldiers maneuvering, the type of noise would be consistent with ongoing maneuver activities. The increased frequency of noise generating events would correspond to the increased maneuvers associated with these stationing scenarios (10 to 60 percent).

Noise levels along on-post roadways and along military vehicle trails would increase. However, overall traffic volumes and vehicle speeds generally are low for these types of roadways. As a result, noise increments attributable to vehicle traffic would remain within the Army's land use compatibility guidelines.

The noise effects that would be produced from convoy travel on public roads would be limited, though they would have long-term intermittent effects. Vehicle convoys traveling between FWA and interior Alaska training areas would increase in frequency. These effects are usually mitigated through standard operating procedures for convoy maneuver. A convoy is normally defined as six or more military vehicles moving simultaneously from one point to another under a single commander, ten or more vehicles per hour going to the same destination over the same route, or any one vehicle requiring a special haul permit. Convoys normally maintain a gap of 15 to 30 minutes between serials (a group of military vehicles moving together), 330 feet between vehicles on highways, and 7.5 to 15 feet while in town traffic. These procedures are followed to minimize the noise and traffic impacts to the public.

Donnelly Training Area

CSS (1,000), CS (1,000), Fires Brigade (1,600), CSS (3,000), CS (3,000): (Less then Significant).

Live-fire Training. Long-term effects are expected. Although the same intensity of noise would continue, stationing 1,000 or more Soldiers would increase the frequency of noise generating events. The frequency of live-fire events that generate noise may increase by 15 to 60 percent depending on the stationing scenario. However, noise contours would not change and the noise generated from these activities would continue to be contained within the boundaries of the installation. There may be some expected noise effects to wildlife from use of firing points along the Delta River where bison, caribou and moose are known to inhabit.

The Army will continue to communicate live-fire training operations with Delta Junction and local residences. There have been no significant impacts to these residences from noise in the past.

Yukon Training Area, Tanana Flats Training Area, Donnelly Training Area

CSS (1,000), CS (1,000), Fires Brigade (1,600), CS (3,000), CSS (3,000): (Less than Significant).

Maneuver Training. Although there would be an increase in Soldiers maneuvering in these areas, the type of noise would be consistent with ongoing maneuver activities. The increased frequency of noise generating events would correspond to the increased maneuvers associated with these stationing scenarios (10 to 60 percent). Noise levels along on-post roadways and along military vehicle trails would increase, but would remain within the Army's land use compatibility guidelines.

The noise effects that would be produced from convoy travel on public roads (when traveling between installations and maneuver sites) would be short-term as these activities are intermittent and are usually mitigated through standard operating procedures for convoy maneuver.

4.8.7 Soil Erosion Effects

4.8.7.1 Affected Environment

USAG Alaska conducts both planning level soil surveys and soil resource monitoring. The first program, planning level surveys, inventories the soil and topography resources present across the entire installation. The Integrated Training Area Management program conducts annual monitoring of soils and vegetation through the Range and Training Land Assessment program. Current and past disturbance resulting from military training and recreational use is delineated and quantified in terms of "land condition." Annual Range and Training Land Assessment reports detail the levels of disturbance and land condition on FWA. Soil resources management for interior Alaska sites consists primarily of prevention activities and actual restoration of disturbed areas. The ITAM Five Year Management Plan contains BMPs, which are utilized in conjunction with installation storm water prevention techniques. Restoration of disturbed areas is conducted through installation management erosion control and streambank stabilization programs, as well as through the Land Rehabilitation and Maintenance program (USAG Alaska INRMP 2007 to 2011).

The soils at FWA are poorly developed, mainly as a result of the cold climate and the relatively young age of parent materials (compared to elsewhere in the United States). Swanson and Mungoven (2001) characterized the soils there based on their parent material properties, consisting of alluvium, loess, and bedrock. The soil surface generally contains an organic layer of peat (made up of decaying plant and animal matter) builds up on cold and wet soils and is inhibited from decomposition because of colder temperatures for much of the year.

The installation's INRMP (2007 - 2011) indicates that the military impact is greatest on soil productivity in the Main Post area due to construction. Soil disturbance has been minimally found around small arms ranges, roads, and other facilities. However, the soils at Stuart Creek Impact Area have been exposed to erosion as a result of military activities and construction. Army activities have had limited impact on soils at FWA. Throughout the post, the presence of permafrost allows a higher bearing strength to soils when they are frozen; but when those soils have thawed they experience compaction problems and rutting which can increase sheet and rill erosion. The presence of permafrost and loess works to inhibit drainage and may lend to a very low bearing strength when those soils are thawed. In addition to the Garrison's INRMP, detailed information on the characterization of soils at FWA may also be found in the *Ecological Land Survey for Fort Wainwright* (Jorgenson et al. 1999).

The soils at TFTA have been formed in various unconsolidated materials. These soils are distributed in elongated meander scars and in broad basins. Generally, coarse gravel may be found at the heads of alluvial fans where soils are well drained; and sand and silt can be found at the base of alluvial fans where soils are poorly drained. The permafrost layer there may lie approximately as low as 20 inches below the soil surface and may be as thick as 128 feet. Permafrost is not present beneath the rivers and lakes there but generally exists where there is an absence of surface water or circulating groundwater. TFTA is more frequently used for maneuver training during winter because the presence of snow acts as a protective layer against impacts to permafrost. TFTA has both continuous and discontinuous areas of permafrost. The permafrost layer is susceptible to thermokarst as a result of disturbance of surface soils and vegetation removal.

At YTA, the south slopes of mountains consist of soils that are well drained and composed mainly of silt and loams (generally free of permafrost). Where the silt loams may be shallow near ridge tops and mid-slopes, they may be deeper on lower slopes. The bottoms of depressions have shallow gravelly silt loam covered with a thick layer of Peat underlain by permafrost. YTA is located in a discontinuous permafrost zone there perennially frozen soils

are widespread. Permafrost there may be absent on hill tops and south-facing mountain slopes. Similar to TFTA, areas of unfrozen ground lie beneath large waterbodies.

A comprehensive soil survey was completed for DTA in 2005. Glacial and alluvial processes, as well as isolated discontinuous patches of permafrost, primarily formed soils in the DTA. The NRCS has only mapped soils in the Main Post cantonment area, in which 12 soil associations have been identified. Generally, soils at DTA are derived from glacial actions and modified by streams and discontinuous permafrost. Soils in the northern, west-central, and eastern portions of DTA are silt loam associations, while DTA East is predominantly shallow silt loam over gravelly sand. Soils in the river floodplains consist of alternate layers of sand, silt loam, and gravelly sand. Highly organic wet soils, underlain by permafrost, and having a high water table characterize muskeg soils. Upland foothills have moist, loamy soils, while mountain soils are rocky, steep, and unvegetated (USAG Alaska INRMP 2007-2011). Soils on river floodplains in the DTA comprise alternate layers of sand, silt-loam, and gravelly sand. Floodplain soils are known to have moderate erosion potential, while foothill soils have moderate to high erosion potential. Permafrost is found in irregular patches throughout a large portion of the DTA, particularly in morainal areas where slope and aspect change abruptly (Jorgenson et al. 2001). Predicting permafrost in the DTA is difficult due to heterogeneous soil types, topography, and microclimate variability. Areas containing existing and abandoned river channels, lakes, wetlands, and other low-lying areas tend to be free of permafrost. Known isolated patches of permafrost are found from 2 to 40 feet below ground surface (bgs), with thicknesses varying from 10 to 118 feet, underlying sandy gravel in the alluvial plains. Permafrost controls groundwater movement in these areas.

4.8.7.2 Environmental Consequences

No Action Alternative: (Less than Significant)

Under the No Action Alternative, the current uses of the affected environment would not change from the conditions described in 4.8.7.1. FWA's current operations would continue at current levels. Ongoing military activities would continue and new mission essential projects would be developed as needed.

Cantonment Construction. Under the No Action Alternative, no additional Soldiers would be stationed at FWA so no cantonment construction is required. The garrison has adequate facilities to support the existing units' requirements for living, administration, and vehicle maintenance. Consequently, no soil erosion impacts from construction in the cantonment at FWA are expected.

Range Infrastructure Construction. No new range construction would occur under the No Action Alternative. The current number of Soldiers stationed at FWA would remain the same and no additional ranges would be constructed. In addition, none of the current ranges would be expanded as described for the action alternatives. The current expansion of the Donnelly Drop Zone, upgrade of the DTA East trail network, and hardening of bivouac sites will directly disturb soils at these limited locations. Mitigation and BMPs are in place to help reduce the levels of impact by controlling the amount of soil erosion both during and after construction. Therefore, effects to soil erosion are expected to be less than significant under the No Action Alternative.

Live-Fire Training. Under the No Action Alternative, the number of Soldiers stationed and training at FWA would remain the same. The number of required live-fire user days per year at

FWA and DTA would continue at present levels. Weapons firing can involve the disturbance of vegetation and soils, which can cause increases in soil erosion rates. Implementation of the INRMP and ITAM program work plans and associated management practices along with additional soil erosion mitigation measures would continue to ensure soil erosion-related impacts caused by live-fire training would be less than significant.

Maneuver Training. The intensity and frequency of maneuver training at FWA and DTA would remain at current levels because the number of Soldiers stationed at FWA would remain the same. In addition, no new maneuver areas would be required and maneuver training would be conducted in the footprint of existing ranges and trails at FWA and DTA. Implementation of the INRMP and ITAM program work plans and associated management practices along with additional soil erosion mitigation measures would continue to ensure soil erosion-related impacts caused by maneuver training at FWS and DTA would be less than significant.

CSS (1,000), CS (1,000), Fires Brigade (1,600), CS (3,000), CSS (3,000): (Less than Significant).

Cantonment Construction. Short-term and long-term effects would occur. Construction supporting the 1,000 Soldier stationing scenarios would occur as infill among existing structures within the main cantonment area where stormwater management practices may already be in place to mitigate potential adverse effects from sediment runoff.

This project is greater than one acre and requires the submission of a Notice of Intent (NOI) to the U.S. Environmental Protection Agency (EPA) seven days prior to project initiation. The implementation of a Storm Water Pollution Prevention Plan (SWPPP) is also required. The facility design will be consistent with EPA and State of Alaska Construction General Permit Storm Water Pollution Prevention requirements and Fort Wainwright's Storm Water Pollution Prevention Plan to eliminate runoff contamination.

Construction activities accommodating growth of more than 1,000 Soldiers would occur to the north of the river and in the southeast portion of the installation. The use of construction equipment would remove vegetation and disturb soils. Disturbed soils could be transported away from the construction site through wind or water erosion. Soils could also be compacted during construction, making it difficult to support the growth of natural vegetation while increasing the potential for soil erosion. Direct and indirect short-term impacts could occur to nearby waterbodies from site runoff; however, due to the installation's existing monitoring and mitigation activities these effects are not expected to occur.

Long-term effects could occur from the compaction of soils, reducing the likelihood for vegetation to re-establish itself and increasing the effects from wind erosion or precipitation. Soils transported away from the construction area may accumulate in gullies or to other areas where post-precipitation event water may carry sediments to other waterbodies. Other direct long-term effects would include a change in soil function due to permanent modification of the area (construction of a building on top of previously undisturbed soil).

Training Range Infrastructure Construction. Short-term and long-term effects are expected. Range construction and expansion projects would have similar impacts to soils as would cantonment construction. Heavy construction machinery or vehicles would disturb the soil surface through excavation, digging of wheels into the surface media, and physically moving soils from place to place. Long-term direct effects would occur from the loss of vegetation,

exposing the soils beneath; and may also include the compaction of some soils making it difficult to support future vegetative growth; and permanent modification of soil function. Short-term effects would occur from soil transport and loading into nearby waterbodies. The installation would continue to use existing construction BMPs to mitigate any potential effects.

Live-fire Training. Weapons firing typically involve the disturbance of soils, denuding the soil surface of vegetation and increasing the erodibility of soils. The implementation of any of these stationing scenarios would increase the frequency of live-fire activities on ranges, potentially causing a greater amount of soil disturbance. Installation DPW staff monitors impacts from live-fire activities and would continue to institute the required mitigations and BMPs (such as berm revegetation and regrading) to minimize effects off the firing ranges.

For CS and field artillery units the use of ordnance items or explosives could cause wildfires resulting in the removal of vegetation that normally protects soil from erosion. The presence of vegetation slows surface water runoff by intercepting raindrops before they reach the soil surface, and works to anchor the soil with roots. Without surface vegetation the top layer of soils may be transported away due to natural processes, and the soil remaining may become compacted leaving little opportunity for vegetation to re-establish itself. Vegetation removal resulting from wildland fires could result in increased soil erosion by water and wind, indirectly causing large-scale removal and redeposition of soils, gullying, or unstable slopes in areas of steep slopes and rapid runoff. The impact would be directly proportional to the size of the fire. Fuel maps were created indicating concentrations of fire-prone vegetation and areas recommended for hazard fuel reduction projects; these may be found in the 2004 USAG Alaska Transformation EIS.

Maneuver Training. There would be an expected increase in maneuver training at FWA. The addition of 1,000 Soldiers may increase the frequency of maneuvers by 10 to 20 percent; 1,600 Soldiers would increase maneuver training by 20 to 40 percent; and 3,000 Soldiers by 30 to 60 percent. The increase in maneuver frequency is expected to correlate with resulting damage to vegetation and disturb soils to an extent that would increase soil erosion rates and alter drainage patterns in the training areas. This could lead to gullying, and indirectly to downstream sedimentation, particularly when the vehicles travel off-road. CSS stationing scenarios, which involve travel on existing roads and trails, are anticipated to lead to very limited new soil erosion impacts.

During summer months, there is a great deal more open or standing water located on FWA. During the warmer seasons the risk of sediment transport and loading to waterbodies on the installation is much greater. In many areas, maneuver is reduced or restricted to minimize or eliminate effects of training to water and to the soils underlain with permafrost. The amount of land available on which to train is reduced, significantly in some areas during the summer months.

Any permafrost in maneuver areas is particularly vulnerable if the vegetative layer is disrupted. Removal of the vegetation layer may result in perched water tables or saturated conditions. The vegetative layer and organic layer of the soils often insulate permafrost soils. When this is removed the permafrost can melt creating saturated conditions or subsidence. The potential for this occurs on most of our frozen soils particularly when the permafrost is shallow. The Garrison has BMPs in place to avoid impacts to permafrost, these include avoiding areas where permafrost is known or thought to occur during warmer weather conditions, and the limitation of maneuver over permafrost to wintertime when snow depth is sufficient enough to ensure an insulating layer can support maneuver while maintaining the integrity of the permafrost below.

Training maneuvers in Alaska can and often are conducted more frequently in the winter months when the ground is frozen to reduce impacts from soil erosion and to waterbodies. The Garrison is currently undertaking a project to improve roads and trails at DTA East, and is also proposing to improve a portion of the Winter Trail on DTA West. Currently, DTA West can only be accessed via vehicle in the winter because there is no bridge across the Delta River that would allow year-round access. The Garrison also currently maintains a maneuver corridor that connects DTA West with TFTA, but generally it is used during the winter.

Donnelly Training Area

CSS (1,000), CS (1,000), Fires Brigade (1,600), CS (3,000), CSS (3,000): (Minor).

Training Range Infrastructure Construction. No construction would occur to accommodate CS or CSS units training at DTA. Therefore, no effects are anticipated.

Adding firing points to accommodate field artillery units would create localized construction site impacts due to the rather small area that may be affected. Similar to cantonment construction, temporary direct and indirect effects to soils would occur. The use of heavy equipment would remove vegetation and disturb and compact soil, making it difficult to support the growth of natural vegetation while increasing the potential for soil erosion. Direct and indirect short-term impacts to vegetation and nearby waterbodies from site runoff may occur. Fugitive dust may also occur, however impacts from dust would likely to be localized and not have any lasting adverse effects to nearby waterbodies. Due to the relatively high occurrence of surface water and wetlands at DTA, construction may need to occur in the wintertime to mitigate any adverse effects from soil transport.

Live-fire Training. Weapons firing can typically involve the disturbance of soils, denuding the soil surface of vegetation and increasing the erodibility of soils. While weapons firing would typically occur in existing training areas the frequency of the training events would increase and potentially cause a greater amount of soil disturbance; however, DTA's ranges are adequate to accommodate the increase in training, and there are sediment control measures already in place to mitigate sediment transport off-range.

Field artillery units operating at impact areas in the summer can directly create craters and remove patches of vegetation, which normally protect soil from erosion by slowing runoff, intercepting raindrops before they reach the soil surface, and anchoring the soil. Compaction in the craters caused by larger ordnance explosions can alter the permeability and water-holding capacity of the soils affecting the ability of vegetation to recover in those areas. These direct impacts indirectly create large areas of bare ground and exposed soils that are susceptible to wind and water erosion, which can indirectly cause large-scale removal and redeposition of soils, gullying, or unstable slopes in areas of steep slopes and rapid runoff. Although weapons training events would be periodic, long-term impacts are expected because soil disturbance typically requires time and effort to amend.

Vegetation removal resulting from wildland fires could result in increased soil erosion by water and wind, indirectly causing large-scale removal and redeposition of soils, gullying, or unstable slopes in areas of steep slopes and rapid runoff. The impact would be directly proportional to the size of the fire. Wildfire plays an important role in Alaskan ecosystems and is considered a beneficial impact on the natural environment. However, fire starts generated by military training

activities often occur in elevated numbers and intervals, thereby causing unacceptable damage to critical vegetative cover that aids in stabilizing soils from wind and water erosion. Fuel maps were created indicating concentrations of fire-prone vegetation and areas recommended for hazard fuel reduction projects; these may be found in the 2004 USAG Alaska Transformation EIS.

Yukon Training Area, Tanana Flats Training Area, Donnelly Training Area

CSS (1,000), CS (1,000), Fires Brigade (1,600), CS (3,000), CSS (3,000): (Less than Significant).

Maneuver Training. Long-term effects are anticipated. The increase in maneuver frequency is expected to damage or remove vegetation and disturb soils to an extent that would increase soil erosion rates and alter drainage patterns in the training areas. This could lead to gullying, and indirectly to downstream sedimentation, particularly when the vehicles travel off-road. During summer months, there is a great deal more open or standing water located throughout the training areas; and the risk of sediment disturbance and transport to waterbodies is much greater. In many areas, maneuver is reduced or restricted to minimize or eliminate effects of training to water and to the soils underlain with permafrost.

CSS stationing scenarios, which involve travel on existing roads and trails, are anticipated to lead to limited new soil erosion impacts. However, activities associated with any Combat Engineers (CS units) could have adverse impacts to off-road areas that may include the use of heavy construction equipment and explosives to clear land and obstacles for training. Direct effects may occur from removal of vegetation and soil displacement or disruption. These activities may indirectly impact the permafrost layers. Any permafrost in maneuver areas is particularly vulnerable if the vegetative layer is disrupted. Removal of the vegetation layer may result in perched water tables or saturated conditions. The vegetative layer and organic layer of the soils often insulate permafrost soils. When this is removed the permafrost can melt creating saturated conditions or subsidence. The potential for this occurs on most of our frozen soils particularly when the permafrost is shallow. The Garrison has BMPs in place to avoid impacts to permafrost, these include avoiding areas where permafrost is known or thought to occur during warmer weather conditions, and the limitation of maneuver over permafrost to wintertime when snow depth is sufficient enough to ensure an insulating layer can support maneuver while maintaining the integrity of the permafrost below.

Between FWA's main post and its training areas (DTA, TFTA, and YTA) the installation has more than one million maneuver acres and capable of handling brigade-level training; and more than capable of handling maneuver associated with these stationing scenarios. Training maneuvers in Alaska can and often are conducted more frequently in the winter months when the ground is frozen to reduce impacts from soil erosion and to waterbodies.

Maneuvers may occur more frequently at TFTA during wintertime when soils are less affected. While maneuver could disrupt soil surfaces, training in TFTA would most likely occur when the ground is frozen and a layer of snow is covering the ground that would protect the soil surface and could act as an insulating layer against adverse effects to permafrost.

YTA is generally used year-round for light vehicle maneuver. Long-term effects may occur as more vehicles on the ranges there may dig into soils, disrupting the surface and removing vegetation; however, The ITAM program in conjunction with regular range maintenance would

prevent this from Occurring. Wintertime training is supported there for most other vehicle maneuver. Although rutting and disruption to soils is less significant during the colder temperatures, the potential exists for some damage to occur to vegetation, which may have indirect impacts to the permafrost layer below.

Training required by these field artillery units include the maneuver of towed artillery (105mm and 155mm weapons) and other large weapons systems such as the HIMARS over unimproved and improved trail and road infrastructure. The heavy towed weapons may cause additional rutting and digging on unimproved surfaces. While impacts to maneuver areas may cause long-term direct effects, and may have impacts to soils underlain by permafrost, these units would typically travel on existing roads and trails in previously disturbed areas, reducing the potential for significant impacts to the environment.

4.8.8 Biological Resources

4.8.8.1 Affected Environment

Fish and Wildlife

Wildlife throughout FWA and its training areas include a variety of mammals and avian species including migratory birds. A greater discussion of the wildlife found on Army lands throughout USAG Alaska may be found in Appendix E of the U.S. Army Alaska Transformation Environmental Impact Statement (USAG Alaska, 2004); a brief summary of species found at interior Alaska sites is discussed below.

Priority wildlife species include the Wolverine, Grizzly bear, Caribou, Wolf, Bison, Moose, the Sandhill crane, waterfowl, raptors, the Gyrfalcon, White-tailed ptarmigan, Sharp-tailed grouse, Great gray owl, Boreal owl, Black-backed woodpecker, American dipper, Hammond's flycatcher, Bohemian waxwing, Rusty blackbird, and the White-winged crossbill. More information on Priority species found throughout USAG Alaska's cantonment and range areas are found in Section 4.10 of the Transformation of U.S. Army Alaska, Final Environmental Impact Statement (USAG Alaska 2004).

No federally threatened or endangered species are found on Fort Wainwright or its training areas; however these areas do support priority species and species of concern or sensitive species. Priority bird species found at interior Alaska sites (as identified by the Boreal Partners in Flight Working Group (1999)) are listed in Table 3.9.c of the U.S. Army Alaska Transformation Environmental Impact Statement (USAG Alaska, 2004). Table 4.8-5 below lists the species of concern found on USAG Alaska's training areas (TFTA, YTA, DTA, GRTA), the list also includes species of management concern listed here due to the hunting interests by outside groups (USAG Alaska 2008).

Table 4.8-5. Species of Concern found on USAG Alaska training lands (TFTA, YTA, DTA, GRTA)

Training Area	Group	Species	Scientific Name
TFTA	Bird	Alaska Sharp-tailed Grouse	*Tympanuchus phasianellus caurus*
	Bird	Great Gray Owl	*Strix nebulosa*

Table 4.8-5. Species of Concern found on USAG Alaska training lands (TFTA, YTA, DTA, GRTA)

Training Area	Group	Species	Scientific Name
	Mammal	Wolverine	*Gulo gulo*
	Bird	Olive-sided Flycatcher	*Contopus cooperi*
	Bird	White-winged Scoter	*Melanitta fusca*
	Bird	Rusty Blackbird	*Euphagus carolinus*
	Bird	Western Wood-Pewee	*Contopus sordidulus*
	Bird	Red-winged Blackbird	*Agelaius phoeniceus*
	Bird	Yellow-bellied Sapsucker	*Sphyrapicus varius*
	Bird	Barrow's Goldeneye	*Bucephala islandica*
YTA	Bird	Great Gray Owl	*Strix nebulosa*
	Mammal	Wolverine	*Gulo gulo*
	Bird	Olive-sided Flycatcher	*Contopus cooperi*
	Bird	White-winged Scoter	*Melanitta fusca*
	Bird	Western Wood-Pewee	*Contopus sordidulus*
	Bird	Yellow-bellied Sapsucker	*Sphyrapicus varius*
	Bird	Barrow's Goldeneye	*Bucephala islandica*
	Bird	Blackpoll Warbler	*Dendroica striata*
	Bird	Great Horned Owl	*Bubo virginianus*
	Bird	Black Scoter	*Melanitta nigra*
DTA- East	Mammal	Wolverine	*Gulo gulo*
	Bird	Boreal Owl	*Aegolius funerereus*
	Bird	White-tailed Ptarmigan	*Lagopus leucura*
	Bird	Surfbird	*Aphriza virgata*
	Bird	Wilson's Snipe	*Gallinago delicata*
	Bird	Spruce Grouse	*Falcipennis canadensis*
	Bird	Sandhill Crane	*Grus canadensis*
	Bird	Upland Sandpiper	*Bartramia longicauda*
	Bird	Olive-sided Flycatcher	*Contopus cooperi*
	Mammal	Lynx	*Lynx canadensis*
DTA - West	Mammal	Wolverine	*Gulo gulo*
	Bird	Rusty Blackbird	*Euphagus carolinus*
	Bird	Boreal Owl	*Aegolius funerereus*
	Bird	Great Gray Owl	*Strix nebulosa*
	Bird	Wilson's Snipe	*Gallinago delicata*
	Bird	Spruce Grouse	*Falcipennis canadensis*
	Bird	Sandhill Crane	*Grus canadensis*
	Bird	Upland Sandpiper	*Bartramia longicauda*
	Bird	Olive-sided Flycatcher	*Contopus cooperi*
	Mammal	Lynx	*Lynx canadensis*
GRTA	Bird	Trumpeter Swan	*Cygnus buccinator*
	Mammal	Wolverine	*Gulo gulo*
	Bird	Rusty Blackbird	*Euphagus carolinus*
	Bird	Boreal Owl	*Aegolius funerereus*
	Bird	White-tailed Ptarmigan	*Lagopus leucura*
	Bird	Great Gray Owl	*Strix nebulosa*
	Bird	Surfbird	*Aphriza virgata*

Table 4.8-5. Species of Concern found on USAG Alaska training lands (TFTA, YTA, DTA, GRTA)

Training Area	Group	Species	Scientific Name
	Bird	Wilson's Snipe	*Gallinago delicata*
	Bird	Spruce Grouse	*Falcipennis canadensis*
	Bird	Sandhill Crane	*Grus canadensis*
Species of Management Concern	Moose Caribou Bison Dall Sheep Black Bear Brown Bear Wolf Sharp-tailed Grouse Ruffed Grouse Grayling	These species are a separate list due to hunting interests by outside groups.	

Recreational Hunting and Fishing

FWA main post and YTA lie within the Alaska Department of Fish and Game's Game Management Subunit 20B. The TFTA lies within Game Management Subunit 20A. DTA is located within the Game Management Subunit 20A and 20D. DTA hosts annually a variety of hunting activities based on access and available big game populations. A detailed map of Game Management Subunits and the wildlife species available for hunting (and their associated seasons and regulated hunting limits) is found in the Alaska Department of Fish & Game's 2007-2008 Alaska Hunting Regulations, No. 48 (Regulated by Title 5, Alaska Administrative Code and Title 16 of Alaska Statutes) (www.wildlife.alaska.gov, n.d.).

To promote recreational activities the Alaska Department of Fish and Game produces a "Statewide Stocking Plan for Recreational Fisheries" each year. Most ponds or lakes on FWA main post, TFTA, and YTA do not support fish populations during winter. These lakes freeze completely, or, when iced over they lack sufficient dissolved oxygen for fish to survive through the winter. These lakes and ponds are stocked with Rainbow Trout, Arctic Char, Grayling, and Chinook salmon. Wild fisheries are supported at TFTA and YTA. DTA West is within the Fairbanks Management Area for fisheries, and DTA East is within the Delta Junction Management Area. Sixteen lakes on DTA, ranging in size from 3 to 320 acres, are stocked. Naturally occurring populations of lake chub (*Couesius plumbeus*), northern pike (*Esox lucius*), sculpin, and the northern longnose sucker (*Catostomus catostomus*) are found in lakes at DTA (BLM and U.S. Army 1994). Major streams on DTA 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 DTA, 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 (*Oncorhynchus keta*). Grayling (*Thymallus arcticus (Pallus)*) migrate through these glacial streams to clear tributaries to spawn, and a few clear streams provide summer habitat for grayling (Parker 2004).

Anadromous fish stocks are not available on the training areas, but other freshwater fish can be harvested.

Subsistence Activities

FWA training areas fall in 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 Alaska communities near FWA training lands. Plant gathering continues to be a focus in the spring, summer, and fall.

Wildlife resources are readily available at interior Alaska sites. Due to the size and relatively remote locations of these areas, natural resources and wildlife populations are fairly well preserved. All training areas at FWA host a variety of hunting and trapping activities. Customary and traditional use has been determined for the following species: brown bear, moose, beaver, coyote, red fox, hare, lynx, marten, mink & weasel, muskrat, otter, wolf, wolverine, grouse, and ptarmigan. Subsistence permits can be obtained for the take of these species (Transformation of U.S. Army Alaska FEIS (USAG Alaska 2004)).

Healy Lake residents live a subsistence lifestyle (Alaska Department of Community and Economic Development 2002). The village is 29 miles east of DTA.

The towns of Delta Junction and Big Delta are located adjacent to DTA at the junction of the Richardson and Alaska highways. These towns are rural and therefore qualify for subsistence preference under current law.

Approximately 45 miles east-southeast of Delta Junction is the nonnative community of Dry Creek. According to the Alaska Department of Community and Economic Development (2002), at least 15 adult residents rely on the exploitation of natural resources and a number of Dry Creek residents can be characterized as subsistence hunters/trappers.

The Native Village of Dot Lake is about 60 miles east-southeast of Delta Junction along the Alaska Highway. Most of the village's historic subsistence harvest areas end at the Gerstle River (Marcotte 1991). Some residents of Dot Lake, however, travel the extra distance to hunt on DTA.

Vegetation

Vegetation inventory efforts are accomplished by conducting comprehensive "fence line-to-fence line" flora and vegetation community planning level surveys. Vegetation monitoring is accomplished through the Range and Training Land Assessment program. USAG Alaska conducts a baseline floristic survey at least once every ten years to identify all vegetative species that occur on all USAG Alaska lands. Floristic inventory activities set the foundation on which many decisions regarding land management are based.

A comprehensive survey of rare plants was included as part of the floristic inventory for Fort Wainwright conducted in 1995 and released in 1996 indicated that there were no federally listed endangered or threatened plant species on FWA. The survey report indicated that there are 491

plant species identified by the inventory, of which 16 species are currently recognized as "rare" by the Alaska Natural Heritage Program. A floristic survey of DTA was conducted in 1997. There are 497 plant species identified of which 17 species are currently recognized as "rare" by the Alaska Natural Heritage Program. Two plant species are ranked in USAG Alaska's short-list of species of concern for ecosystem management; these are the *Carex sychnocephala* which is rare and critically imperiled in Alaska; and the *Dodecatheon pulcchellum pauciflorum*.

FWA has four vegetation types: moist tundra; treeless bogs/fens; open, low-growing spruce forests; and closed spruce-hardwood forests. The white spruce-paper birch forest of interior Alaska is often called the boreal forest or taiga. Higher elevations on north-facing slopes are dominated by Black spruce; these are also found on lower hydric slopes. Above the treeline is generally considered barren or tundra and are dominated by sedges and mosses on hydric soils and scrub birch and willow shrubs on arid sites.

A more detailed ecological classification of vegetation in Alaska; forest management goals and objectives and responsibilities; and a listing of flora identified throughout USAG Alaska lands may be found in USAG Alaska's 2007 to 2011 INRMP.

Wildfire Management

Fire management on USAG Alaska installations is required by the Sikes Act and by Army Regulation. Fire management plans are required by the Resource Management Plan, which is mandated under Public Law 106-65, the Military Lands Withdrawal Act. Additional direction regarding fire management is stated in a 1995 Memorandum of Understanding (MOU) between the Bureau of Land Management (BLM) and USAG Alaska, as well as in the Army wildland fire policy guidance document (Department of the Army 2002).

These agencies developed inter-service support agreements that establish the Alaska Fire Service's responsibility for all fire detection and suppression on military installation lands (Alaska Fire Service and USAG Alaska 1995). In exchange, the Army provides the Alaska Fire Service the use of buildings, utilities, training services, air support, and other support services.

As a part of the Alaska Wildland Fire Management Plan, which is reviewed annually, certain areas have certain fire management designations that allow the land-owners to establish fire management options (these are Critical, Full, Modified, Limited) for their lands. These are based upon the risk of wildfires to those areas, the potential for damage to occur, and the amount of monitoring required. Additional fire management option categories have been developed specifically for lands managed by USAG Alaska; these include Unplanned Areas that are not officially designated but may receive service similar to the Full management option (maximum detection coverage, notification, fire suppression strategies, etc.); and the Restricted Areas (Hot Zones) that include impact areas and other locations where no "on the ground" fire fighting can be conducted due to the presence of UXO or other safety hazards.

Fire-prone areas take into consideration type of vegetation, climate, and human activity. Common "fuels" or stands of vegetation susceptible to wildfire include: Black Spruce, White Spruce, Mixed Spruce with hardwood stands, Bluejoint Reedgrass, and Tundra. For the areas on ranges that could be impacted, the installation generally uses prescribed burns and vegetation thinning to minimize the risk of wildfire.

Most of DTA West is classified for Limited fire management because few resources are at risk from fire, and USAG Alaska 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 DTA West, is given Full fire suppression status. The northern boundary of DTA West is classified for Modified fire management to provide a buffer to adjacent state lands that are classified under Full management status. DTA West is bounded by private parcels and state lands (USAG Alaska 2002a).

DTA East is a Full fire management area due to the close proximity of the community of Delta Junction. This area is subject to high winds and extreme fire behavior, further supporting the Full fire suppression status. The Army does have structures at risk throughout DTA East. These resources have been identified and mapped. DTA East is bounded by allotments, private parcels, and state lands, including a portion of private and state land known as the "Key Hole" (USAG Alaska 2002a).

Fires are common at DTA. Fifty-nine percent of DTA has burned since 1950, and a considerable portion has burned more than once (Jorgenson et al. 2001). Approximately 16 percent of DTA has burned within the past 30 years, and, based on fires recorded on the installation since 1950, 1.2 percent of the area has burned annually. From 1980 to 2000, 89 fires were reported at DTA (USAG Alaska 2002a). Of these, 78 were caused by humans and 11 were due to natural causes. Eighty-eight percent of all reported fires were caused by military training activities. Two large fires occurred between 1997 and 2000. The first was a 2,500-acre fire caused by lightning in 1997, and the second was a 53,720-acre fire in 1998. The average interval for recurrence of fire for any given area varies from 100 to 150 years (USAG Alaska 2002a). In 1999, the Donnelly Flats Fire burned approximately 18,000 acres of DTA East and Main Post.

Recent fuels management projects on DTA include the removal of dead spruce, the creation of a fuel break on the northern portion of DTA East, and a 3,000-acre prescribed burn on Texas Range. These projects reduce fuels by removing highly flammable spruce and promoting regeneration of less flammable hardwoods.

4.8.8.2 Environmental Consequences

No Action Alternative: (Less than Significant)

Under the No Action Alternative, the current uses of the affected environment would not change from the conditions described in 4.8.8.1. FWA's current operations would continue at current levels. Ongoing military activities would continue and new mission essential projects would be developed as needed.

Cantonment Construction. Under the No Action Alternative, no additional Soldiers would be stationed at FWA so no cantonment construction is required. The garrison has adequate facilities to support the existing units' requirements for living, administration, and vehicle maintenance. Consequently, no construction-related impacts are expected to vegetation, wildlife, species of concern, or populations of noxious weeds in the cantonment at FWA.

Range Infrastructure Construction. No new range construction would occur under the No Action Alternative. The current number of Soldiers training at FWA would remain the same and no additional ranges would be constructed. In addition, none of the current ranges would be expanded as described for the action alternatives. Therefore, no effects to vegetation, wildlife,

or species of concern are expected. Invasive species is a concern on all Army lands and USAG Alaska is committed to proactive management of non-native species, so no anticipated impacts from noxious weeds would occur.

Construction of the Donnelly Drop Zone Expansion, DTA East trail network upgrade, and hardened bivouac sites at DTA as authorized in the 2008 EA and FNSI (*Donnelly Training Area East Mobility and Maneuver Enhancement, May 2008*) would result in minor effects to vegetation and wildlife. All the associated disturbances would increase the potential for invasive species. This increase in potential is a concern on all Army lands and USAG Alaska is committed to proactive management of non-native species. Therefore, effects at DTA are expected to remain at less than significant.

Live-Fire Training. Under the No Action Alternative, the number of Soldiers stationed and training at FWA would remain the same. The number of required live-fire user days per year at FWA and DTA would continue at present levels. Noise from weapons firing can disturb wildlife, causing more sensitive species and individuals to move away from training ranges. In addition, weapons firing can remove vegetation directly and indirectly through the disturbance of vegetation and soils. Implementation of the INRMP and ITAM program work plans and associated management practices along with soil erosion mitigation measures would continue to ensure that impacts to vegetation, wildlife, and species of concern caused by live-fire training would be less than significant.

Maneuver Training. The intensity and frequency of maneuver training at FWA and DTA would remain at current levels because the number of Soldiers stationed at FWA would remain the same. In addition, no new maneuver areas would be required and maneuver training would be conducted in the footprint of existing ranges and trails at FWA and existing and previously approved facilities at DTA. Implementation of the INRMP and ITAM program work plans and associated management practices as well as soil erosion mitigation measures would continue to ensure that impacts to vegetation, wildlife, and species of concern caused by maneuver training would be less than significant.

CSS (1,000): (Minor).

Cantonment Construction. Short-term minor effects are expected. Construction would occur as infill within the main cantonment area. This area is highly disturbed and used by humans daily. Habitat destruction could occur for those species habituated to a more urbanized environment; however wildlife species that may currently habituate these areas (such as some bird species) are likely already adapted to the human presence and may adjust.

Construction activities (increase in vehicles and human presence) creates noise and disturbs wildlife, however, these activities have not shown to be detrimental to foraging behavior or reproductive success, but this observance may vary by location, species, and type of human activity (Bowles (1993), Holthuijzen et al. (1990), and Doresky et al. (2001)).

Impacts to vegetation from construction can include breaking and crushing of plants and direct mortality. This can directly or indirectly alter plant community composition and structure and vegetative cover. Fugitive dust from these construction projects could occur and result in short-term impacts to vegetation. Construction projects would occur in existing, disturbed cantonment areas, and there would be little or no direct impacts to native or sensitive vegetation.

Soils that are disturbed could be transported to surface water thereby causing temporary increases in turbidity, and degrading the water quality. Impacts to water quality have direct effects to the inhabitants (fish, invertebrates) and indirect effects to the wildlife that forage for food in these areas. Construction vehicles operating in the cantonment area could also spill hazardous materials such as POLs onto the soil surface which could remain in the soils for an extended period of time and may enter groundwater. POLs may also be transported to surface waters with runoff from the construction site. Hazardous materials that enter the soil media and water column may have detrimental effects to the wildlife that inhabit and use these areas. FWA has stormwater management plans in place to mitigate the effects of sediment and hazardous waste transport.

The land within the main cantonment area where construction would occur does not support any critical habitat, threatened or endangered species, or species of concern.

Construction would increase human presence and activity at construction sites. This increase is not expected to impact the risk of accidental wildfire ignition because fires at FWA are quickly identified and extinguished.

Training Range Infrastructure Construction. The stationing of 1,000 CSS Soldiers would drive the need to upgrade some ranges at FWA. Range expansion would occur over the footprint of previous ranges, or on highly disturbed soils. The impacts to vegetation would be both temporary from construction related traffic, and long term for vegetation that is removed and within a firing lane of upgraded ranges. The removal of native vegetation could result in the introduction of invasive weed or non-native plant species. Equipment and vehicles could introduce these species in tire tread (as seeds) or among construction materials. Management of invasive plant species is an issue of concern on USAG Alaska lands. The Range and Training Land Assessment program monitors vegetation and documents invasive plant species. These species are managed using integrated pest management techniques, whereby chemical control is minimized.

Construction noise in the FWA small arms complex could temporarily impact wildlife species using these areas for shelter and foraging. Some species of priority, which includes moose and waterfowl could be temporarily driven away due to the construction noise. However, most species would return due to the availability of food and shelter.

Soils that are disturbed could be transported to surface water thereby causing temporary increases in turbidity, and degrading the water quality. Impacts to water quality have direct effects to the inhabitants (fish, invertebrates) and indirect effects to the wildlife that forage for food in these areas. Construction vehicles operating in the cantonment area could also spill hazardous materials such as POLs onto the soil surface which could remain in the soils for an extended period of time and may enter groundwater. POLs may also be transported to surface waters with runoff from the construction site. Hazardous materials that enter the soil media and water column may have detrimental effects to the wildlife that inhabit and use these areas. FWA has stormwater management plans in place to mitigate the effects of sediment and hazardous waste transport.

Live-fire Training. The frequency and intensity of live-fire training in the FWA small arms range complex would increase by approximately 10 to 15 percent. These units would use the same weapons systems that are currently being utilized at FWA and qualitatively noise generating events would be the same. Wildlife using these areas would adjust to any live-fire training

modifications, short-term effects are anticipated. These may include the temporary avoidance of live-fire areas and the scattering of smaller mammals when firing is first initiated.

USAG Alaska Range Regulation 350-2 discusses live-fire training on ranges and range how use is managed when wildlife are present on the range.

Impacts from live-fire activities would also include the disturbance of soils and vegetation on ranges, increasing the erodibility of soils and requiring more monitoring and maintenance. Live-fire training could increase the frequency of wildfires. Several fire mitigation measures, such as prescribed burning and hazard fuels reduction, are being implemented throughout the Garrison on existing ranges and would be continued under all stationing scenarios.

Maneuver Training. The frequency of maneuver training could increase by approximately 10 percent. CSS units would support combat maneuver units by providing logistics support, mainly on roads and hardened surfaces. The increase in maneuver mileage would result in relatively minor effects to the existing range road network. Potential direct impacts include damage to soil surface and causing disruption to the permafrost layer below. Disruption of soils may create situations where permafrost melts, resulting in saturated conditions or subsidence. The potential for this occurs on most of our frozen soils particularly when the permafrost is shallow. The Garrison has BMPs in place to avoid impacts to permafrost, these include avoiding areas where permafrost is known or thought to occur during warmer weather conditions, and the limitation of maneuver over permafrost to wintertime when snow depth is sufficient enough to ensure an insulating layer can support maneuver while maintaining the integrity of the permafrost below. Any impacts to permafrost may considerably alter the landscape and habitat in training areas. However, these areas are avoided when possible and limited impacts would be anticipated as CSS units would mostly use existing roads and trails.

CS (1,000), Fires Brigade (1,600), CS (3,000), CSS (3,000): (Less Than Significant).

Cantonment Construction. Short and long-term minor effects are expected. New construction to the north and in the southeast corner of the installation cantonment area would be needed. Clearing of vegetation and soils may lead to the movement of animals away from the construction site.

Long-term impacts to vegetation from construction can include breaking and crushing of plants and direct mortality. This can directly or indirectly alter plant community composition and structure and vegetative cover. Fugitive dust from these construction projects could occur and result in short-term impacts to vegetation.

Several species of concern are found on USAG Alaska lands. Impacts to species of concern as part of these stationing scenarios would include increased habitat loss and disturbance. USAG Alaska's policies for management of these species are outlined in the Integrated Natural Resources Management Plan (USAG Alaska 2007).

Construction would disturb soils from excavation and digging. Soil could be transported to surface water, resulting in temporary increases in turbidity, and degrading the water quality for fish and invertebrate wildlife. Sediment impacts on aquatic wildlife could increase under scenarios to station either a Fires Brigade or 3,000 additional Soldiers at FWA as a result of cantonment construction on the northern side of the Chena River. FWA would continue to implement their BMPs to prevent increased turbidity and degradation to water quality.

Construction impacts could also make soils available for invasive plant species to become established. Equipment and vehicles could introduce these species in tire tread (as seeds) or among construction materials. Management of invasive plant species is an issue of concern on USAG Alaska lands. The Range and Training Land Assessment program monitors vegetation and documents invasive plant species. These species are managed using integrated pest management techniques, whereby chemical control is minimized.

Construction vehicles operating in the cantonment area could also spill hazardous materials such as POLs onto the soil surface which could remain in the soils for an extended period of time and may enter groundwater. POLs may also be transported to surface waters with runoff from the construction site. Hazardous materials that enter the soil media and surface water may have detrimental effects to the wildlife that inhabit and use these areas. FWA has stormwater management plans in place to mitigate the effects of sediment and hazardous waste transport.

Construction would increase human presence and activity at construction sites. This increase is not expected to impact the risk of accidental wildfire ignition because fires at FWA are quickly identified and extinguished.

Training Range Infrastructure Construction. The stationing of these Soldier scenarios would drive the need to upgrade some ranges at FWA, and for more than 1,000 Soldiers, would require new range construction. Range expansion would occur over the footprint of previous ranges on highly disturbed soils. The impacts to vegetation would be temporary as these ranges are monitored and managed closely for impacts from other range activities (such as live-fire). New construction that removes native vegetation could result in the introduction of invasive weed or non-native plant species. Equipment and vehicles could introduce these species in tire tread (as seeds) or among construction materials. Management of invasive plant species is an issue of concern on USAG Alaska lands. The Range and Training Land Assessment program monitors vegetation and documents invasive plant species. These species are managed using integrated pest management techniques, whereby chemical control is minimized.

Construction noise in the range areas could temporarily impact wildlife species that use these areas for shelter and foraging. Construction activities (increase in vehicles and human presence) create noise and disturbs habitat, however, these activities, as discussed above, have not shown to have lasting effects.

Construction vehicles operating in the range area could also have direct, long-term effects to vegetation (discussed above). Disturbance to vegetation and soils may make soils available for transport to surface water. These effects would be temporary, lasting the duration of the construction projects.

Construction vehicles may also cause spills of hazardous materials (POLs) onto the soil surface and potentially directly effecting wildlife in these areas, or may be transported to waterbodies that may be directly and indirectly affected through multiple exposure mechanisms. USAG Alaska has strict policies for quick cleanup of these materials as soon as they are identified (USAG Alaska PAM 200-1). FWA has stormwater management plans in place to mitigate these effects.

Live-fire Training. The live-fire training associated with these stationing scenarios could increase by 15 to 20 percent (for CS units), or 25 to 40 percent if a Fires Brigade is stationed at

FWA, 30 to 45 percent for 3,000 CSS Soldiers, and 45 to 60 percent for 3,000 CSS Soldiers. Live-fire operations on ranges have the potential to displace various wildlife species. Individual species mortality attributable to weapons qualification activity is highly unlikely. Firing lanes are cleared of vegetation and Soldiers fire weapons from designated firing points to designated targets.

Direct impacts to wildlife from noise associated with live-fire activities would be long-term. Some firing points are established to fire into the Alpha Impact Area and Stuart Creek Impact Area. Both of these sites have suitable moose habitat. The TFTA is one of the most dense moose populations in the state. Many of the ungulate species found throughout Alaska training lands do not avoid live-fire training areas due to the readily available vegetation providing favorable foraging conditions. Direct impacts to moose and other species are avoided whenever possible (USARAK 350-2).

Impacts from live-fire activities would include the disturbance of soils and vegetation on ranges. CSS units, engineers and EOD units in particular, would use explosives which may create craters and remove vegetation. These actions would also be anticipated to alter soil permeability and future vegetative succession if new EOD or demolition qualification ranges were established under scenarios to station 3,000 or more CS Soldiers. The explosives residue associated with their use is not expected to migrate easily off-range due to low precipitation and near year-round frozen conditions.

The increased frequency of live-fire training may also result in further restrictions to hunting and fishing activities (recreational and subsistence). FWA's training lands are vast and provide ample area for these activities. The Garrison would continue to offer access to the public for recreational and subsistence use.

Live-fire training could potentially increase the frequency of wildfires. Several fire mitigation measures are being implemented throughout the Garrison on existing ranges and would be in place under all stationing scenarios. USAG Alaska is only subject to wildfire risk as certain times of year and this risk is greatly reduced during the winter, spring melt, and fall thaw seasons. In general, the wet conditions reduce the overall fire risk.

Maneuver Training. Additional Soldiers associated with these scenarios would increase the frequency of maneuver training. For 1,000 Soldier stationing scenarios, FWA may experience an increase by 10 to 20 percent; for the Fires Brigade the expected increase could be 20 to 40 percent; and for 3,000 Soldiers the there would be an increase of maneuver training by 30 to 60 percent for different stationing scenarios.

CSS units would stay mostly on roads and hardened surfaces and there would be limited impacts from maneuver training.

CS units would have a greater degree of impact on vegetation and wildlife communities due to the increased frequency from off-road maneuver and ground clearance activities. The clearing and some subsurface excavation activities of CS units would disturb soils (making them available for transport to waterbodies) and remove vegetation (destroying vegetation and potentially increasing the risk for invasive species). The Range and Training Land Assessment program monitors vegetation and documents invasive plant species. These species are managed using integrated pest management techniques, whereby chemical control is minimized. CS units and a Fires Brigade (conducting higher percentages of off-road maneuver) would be more likely to transport invasive seed propagates from location to location.

CS units that conduct off-road maneuvers may also have impacts to permafrost. Permafrost in maneuver areas is particularly vulnerable if the vegetative layer is disrupted. Removal of the vegetation layer may result in perched water tables or saturated conditions. When the vegetative layer is removed the permafrost can melt creating saturated conditions or subsidence. The potential for this occurs on most of our frozen soils particularly when the permafrost is shallow. Any impacts to permafrost would be lasting and could alter the landscape and habitat in range areas. Areas of known or suspected permafrost are usually avoided.

The higher rate of maneuver may have short-term immediate impacts to wildlife from the additional noise; however these impacts may be temporary as training with these scenarios would not introduce new types of weapons to the range areas, and would not increase the level of noise above what is heard currently on ranges. As cited above, wildlife would likely quickly adjust to the new training schedules.

The risk of wildfire ignition is from vehicle use and human activity. Mitigation measures currently utilized by the Garrison are designed to prepare the landscape for impending wildfires. Patches of thinned trees and controlled burns in high-risk areas may slow wildfire intensity and speed.

The increased frequency of maneuver training may also result in restrictions to recreational and subsistence uses of FWA lands. Overall impacts on subsistence may occur because of the expected increase in access closures and the potential disruption or partial migration of wildlife. The Garrison would continue to identify areas available to the public and offer access for recreational and subsistence use.

Local subsistence resources could be affected by increased frequency and intensity of training. Increased training area access closures may affect subsistence users' taking of furbearers, small game and upland birds. This impact is expected to be less than significant because alternate areas would still be available for access to subsistence resources including wildlife, fish, and plants.

Wildlife populations would be able to tolerate some disturbance from vehicular traffic; however, information available currently is insufficient to determine the extent of population-wide effects. Wildlife would be closely monitored by USAG Alaska's ecosystem management program to understand better the impacts and the extent of disturbance resulting from increased road use.

Increases in maneuver training frequency could temporarily affect the distribution of moose. Moose appear well adapted to multiple use management (forestry, hunting, and military activities), and military training seems no more detrimental to moose populations than other land uses (Andersen et al. 1996). Impacts to moose populations are potentially significant if winter habitats were degraded. However, moose are readily adaptable to the creation of new early succession habitat.

Maneuver training would also result in less than significant impacts to fisheries. Expected increases in training levels could lead to higher rates of erosion and sedimentation, as well as an increased potential for petroleum spills during refueling. However, such impacts would be localized within waterways.

Additional personnel stationed at FWA might participate in recreational hunting and fishing activities and could impact current availability of subsistence resources on interior Alaska lands. An increase in hunting interest would compete with existing recreational hunters.

Donnelly Training Area

CSS (1,000), CS (1,000), CS (3,000), CSS (3,000): (Minor).

Training Range Infrastructure Construction. No additional construction would be required to accommodate Combat Support or Combat Service Support units.

Live-fire Training. The live-fire training associated with these stationing scenarios could increase by 15 to 60 percent (depending on the unit stationing scenario. Live-fire operations on ranges have the potential to displace various wildlife species. Individual species mortality attributable to weapons qualification activity is highly unlikely. Firing lanes are cleared of vegetation and Soldiers fire weapons from designated firing points to designated targets.

Direct impacts to wildlife from noise associated with live-fire activities would be long-term. Many of the ungulate species found throughout Alaska training lands do not avoid live-fire training areas due to the readily available vegetation providing favorable foraging conditions. Direct impacts to moose and other species are avoided whenever possible (USARAK 350-2).

Direct impacts to wildlife from noise associated with live-fire activities would be long-term but are not anticipated to be significant. If food is abundant on or near the ranges where Soldiers fire weapons and maneuver, wildlife species tend to adjust to training activities. Bowles (1990) found that predator species will often move toward the sound of gunfire because the disturbance of prey species (seeking shelter) may provide successful hunting opportunities. This was supported in a raptor study conducted by Andersen et al. (1986, 1990), and a study conducted by the Fish and Wildlife Service in 1988 regarding training noise impacts to Northern harriers. Bowles suggests that although other studies indicated large mammals may move away from military training sites, they will often return during times when the ranges are not in use.

There would be a corresponding increase in wildfire risk stemming from the increase in live-fire activities and wildfire risk associated with Soldier activities. Wildfire risk is increased by use of ordnance, vehicle maneuvers, and flammable materials and cigarettes. Reclassification of fire management options may occur to ensure fire management meets anticipated changes in wildfire risk. Prescribed burns of deadfall timber would continue to ensure reduced levels of fuel loading in range areas. In drought years fire management practices would be adjusted. The impacts of wildfire at DTA resulting from the training of additional units are anticipated to be mitigable to less than significant.

The increased frequency of live-fire training may also result in further restrictions to public hunting and fishing activities (recreational and subsistence). FWA's training lands are vast and provide ample area for these activities. USAG Alaska would continue to offer access to the public for recreational and subsistence use when training is not occurring.

CS units would support CALFEX training events at the DTA BAX CACTF and other collective training sites. This training would increase the potential for wildfire at these sites under CS stationing scenarios and increase the risk of invasive species establishment and changes

attributable to unnatural vegetative succession at DTA. As discussed previously, these risks are reduced by existing wildland fire mitigation measures and restrictions on particular munitions use when fire danger ratings are elevated (FEIS for the Construction and Operation of a Battle Area Complex and Combined Arms Collective Training Facility within U.S. Army Training Lands in Alaska (USAG Alaska June 2006)).

Fires Brigade (1,600): (Less than Significant).

Training Range Infrastructure Construction. Construction of new firing points would have short-term impacts from vehicle and equipment noise; however, these activities have not been shown to have significant long-term impacts to wildlife behaviors or reproductive success. Movement of equipment into areas that do not currently support military activities could increase the establishment of nonnative plants. Construction equipment and materials also introduce invasive species and other weeds to the area which may affect (in extreme cases) the long-term habitat of some wildlife.

Construction impacts to surface waters and wetlands would continue to be mitigated through the installations institutional programs (ITAM, stormwater management, etc.).

Live-fire Training. The increased artillery fire from a Fires Brigade may have a cratering effect in the impact area, greatly disturbing soils and removing vegetation. These impacts would be long-term and significant to the vegetation within the impact area.

Direct effects to wildlife include disturbance from artillery, rocket, or mortar fire that may result in an increase in animal mortality, or noise disruption. Some animals may be disturbed by noise and many other may adjust. USAG Alaska Range Regulation 350-2 discusses live-fire training on ranges and how use is managed when wildlife are present on the range.

Wildlife species that remain within the impact area and associated surface danger zones could be directly affected by munitions. Higher training levels at existing ranges would increase incidental mortality to wildlife, especially for areas that may support moose habitat. Live fire training into the impact area may also cause some issues with migratory birds. This area is a major migration flyway for migratory birds. While DoD does have an exemption from the MBTA for military training, USAG Alaska identifies these conflicts and avoids impacts to migratory birds to the extent possible. USAG Alaska Range Regulation 350-2 discusses live-fire training on ranges and how use is managed when wildlife are present on the range.

Many wildlife species could be impacted by the additional ordnance and artillery training, and conversely training may be impacted by the presence of wildlife. For example, Bison tend to congregate in the training areas at DTA. During heavy artillery fire a greater amount of disturbance is anticipated which could influence foraging and calving. Further, herds of Caribou and Moose often travel through DTA lands during migration seasons which inhibit training and require the Garrison to monitor and avoid these species, often resulting in modifications to the training schedule.

There would be a corresponding increase in wildfire risk, stemming from the increase in live-fire activities and wildfire risk associated with training activities. Wildfire risk is increased by use of ordnance, vehicle maneuvers, and flammable materials and cigarettes. Reclassification of fire management options may occur to ensure fire management meets anticipated changes in wildfire risk. Prescribed burns of deadfall timber would continue to ensure reduced levels of fuel

loading in range areas. In drought years fire management practices would be adjusted. The impacts of wildfire at DTA resulting from the training of additional units are anticipated to be mitigable to less than significant.

The increased frequency of live-fire training may also result in further restrictions to public hunting and fishing activities (recreational and subsistence). FWA's training lands are vast and provide ample area for these activities. USAG Alaska would continue to offer access to the public for recreational and subsistence use when training is not occurring.

Yukon Training Area, Tanana Flats Training Area, Donnelly Training Area

CSS (1,000), CS (1,000), Fires Brigade (1,600), CS (3,000), CSS (3,000): (Less than Significant).

Maneuver Training. Additional Soldiers associated with these scenarios would increase the amount of maneuver on training lands under various stationing scenarios between 10 to 60 percent. Although these units would stay mostly on roads and hardened surfaces, possible disturbances to soils in off-road training areas may erode away vegetation and further compact soils making it more difficult for vegetation to re-establish itself. Removal of the vegetation layer may result in disturbance to frozen soils and create saturated conditions. The vegetative layer and organic layer of the soils often insulate permafrost soils. When this is removed the permafrost can melt creating saturated conditions or subsidence. The potential for this occurrence is high when the permafrost is shallow. USAG Alaska has BMPs in place to avoid impacts to permafrost, these include avoiding areas where permafrost is known or thought to occur during warmer weather conditions, and the limitation of maneuver over permafrost to wintertime when snow depth is sufficient enough to ensure an insulating layer can support maneuver while maintaining the integrity of the permafrost below.

Military activities can lead to alteration of habitats or disruption to animal behavior. For example, erosion from maneuver activities may occur at stream crossings. Stream bank erosion can cause sedimentation to waterways, directly affecting their water quality and inhabitants, and indirectly affecting the wildlife that use those waterbodies for foraging.

CS units would have a greater degree of impact on vegetation and wildlife communities due to the increased frequency from off-road maneuver and ground clearance activities. Any effects to permafrost (as discussed above) would be significant and irreversible.

The maneuver of field artillery would generally occur on existing roads and trails; however these vehicles and their towed artillery may be slightly heavier and have a slightly larger footprint than typical traffic in range areas (with the exception of Stryker units training there). Possible effects could include rutting and digging which may have additional impacts to permafrost, and vegetation. Any effects to permafrost would be significant and irreversible.

The increased frequency of maneuver training may also result in restrictions to recreational and subsistence uses of FWA lands. USAG Alaska would continue to identify areas available to the public and offer access for recreational and subsistence use when training is not occurring.

4.8.9 Wetlands

4.8.9.1 Affected Environment

From the years 2000 to 2005 USAG Alaska obtained a permit to conduct training in wetlands at FWA including its training areas: Tanana Flats Training Area, Yukon Training Area, and Donnelly Training Area. The permit specified that the Army could damage no more than 40 acres of wetlands per year and carried penalties for exceeding that amount. While this permit is no longer in effect, USAG Alaska is currently working towards a renewal. In the interim, USAG Alaska remains diligent in protecting and preserving these resources.

Fort Wainwright Main Post has approximately 6,500 acres of palustrine, riverine, and lacustrine-type wetlands. Wetlands comprise approximately 483,500 acres (74%) of the Tanana Flats Training Area, and Yukon Training Area has 42,600 acres (17%) classified as wetland. DTA has an estimated 431,940 acres of wetlands with palustrine, riverine, and lacustrine types identified. The 431,940 acres equates to about 68% of the entire DTA.

An environmental limitations overlay has been developed as a tool for planning military training activities and managing wetlands. Each overlay is available for winter and summer training for activities which can or cannot occur. This simplified system assists the Range Control in determining what training areas can be used during a particular season and assists in planning for future training activities. Table 4.8-6 demonstrates the wetland types found at FWA and interior Alaska training areas. More discussion of wetlands on USAG Alaska lands may be found in the USAG Alaska INRMP 2007-2011, the FEIS for the Permanent Stationing of the 2/25th SBCT (USAEC 2008), and the Transformation of U.S. Army Alaska FEIS (USAG Alaska 2004).

Table 4.8-6. Wetland types found at FWA and Interior Alaska training areas

Wetland Type	% of total Wetlands	Wetland Characterization and/or Location	Vegetation
Fort Wainwright Main Post			
Palustrine, riverine, lacustrine	42	Bogs, fens, marshes with wide distribution around the post.	Bogs generally are sphagnum, sedge, or sheathed cottonsedge. Understory vegetation is primarily dwarf birch, bog rosemary, Labrador tea, low bush cranberry, and willows
Tanana Flats Training Area			
Lowland Tussock Bog	3	Poorly drained due to permafrost.	Sites are canopy of shrubs and tussocks of cottonsedge
Fens	7	Poorly drained	Vegetation is dominated by floating mats of sedges, grasses, horsetails, herbaceous broadleaf forbs. Willows and birches may also be present
Lowland Wet Needleleaf Forest	25	Wet or loamy organic soils	Black spruce, white spruce, and occasional tamarack
Lowland Forest and Scrub Thermokarst Complexes	27	Abandoned floodplains and collapsed bog scars	Forest, scrub, bog, and fen plant communities
Riverine and Lacustrine Complexes	9	Moist loamy soils	Needleleaf, broadleaf, or mixed forests; shrubs; or meadows
Other Wetlands	3	Various upland ecotypes	Variety of vegetation

Table 4.8-6. Wetland types found at FWA and Interior Alaska training areas

Wetland Type	% of total Wetlands	Wetland Characterization and/or Location	Vegetation
Yukon Training Area			
Shrub Wetlands	2	Poorly drained soils that may be underlain by permafrost; generally found along South Fork Chena River lowlands, the Stuart Creek Impact Area, and the French Moose Creek area	Alder and willow
Lowland Wet Needleleaf Forest	11	Wet loamy soils to organic soils that are slightly acidic and poorly drained; found in low-lying areas and creek floodplains	Black spruce and ericaceous shrubs
Wetland Upland Complex	27	Determined that most middle and lower portions of north-facing slopes in the wetland/upland complex of YTA are likely wetlands	
Donnelly Training Area			
Alpine Tussock Meadow and Alpine Wet Low Scrub	6	Underlain with permafrost; moderately to strongly acidic Found above the treeline, primarily in the southern portion of DTA west along the foothills of the Alaska Range	Sedges, Dwarf birch, Willow, Ericaceous shrubs, and Sphagnum moss
Lowland Wet Low Scrub and Lowland Tussock Scrub Bog	35	Poorly drained due to permafrost. Found above the treeline, primarily in the southern portion of DTA west along the foothills of the Alaska Range	Willows, Dwarf birches, Ericaceous shrubs, Black spruce, and Sphagnum moss
Lowland Wet Needleleaf Forests	12	Poorly drained due to permafrost; moderately acidic. Common along the northern portion of the Lakes Impact Area and the Little Delta Training Area.	Ericaceous shrubs, Black spruce, and Sphagnum moss
Riverine and Lacustrine Wetland Complexes	7	Common along the Delta and Little Delta rivers and Jarvis Creek, ponds, lakes, and their margins	Forest broadleaf, needleleaf, or mixed shrubs, Willows and Alders, grasses, and sedges

4.8.9.2 Environmental Consequences

No Action Alternative: (No Impact) (FWA)
(Less than Significant) (DTA)

Under the No Action Alternative, the current uses of the affected environment would not change from the conditions described in 4.8.9.1. FWA's current operations would continue at current

levels. Ongoing military activities would continue and new mission essential projects would be developed as needed.

Cantonment Construction. Under the No Action Alternative, no additional Soldiers would be stationed at FWA so no cantonment construction is required. The garrison has adequate facilities to support the existing units' requirements for living, administration, and vehicle maintenance. Consequently, no impacts to wetlands from construction in the cantonment at FWA are expected.

Range Infrastructure Construction. No new range construction would occur under the No Action Alternative. The current number of Soldiers training at FWA would remain the same and no additional ranges would be constructed. In addition, none of the current ranges would be expanded as described for the action alternatives. Therefore, no effects to wetlands are expected.

Construction of the Donnelly Drop Zone Expansion, DTA East trail network upgrade, and hardened bivouac sites at DTA as authorized in the 2008 EA and FNSI (*Donnelly Training Area East Mobility and Maneuver Enhancement, May 2008*) would result in minor effects to wetlands. Direct effects would involve some wetland conversion for the Donnelly Drop Zone Expansion and loss of wetlands for the trail upgrade activities. Overall, these effects were determined in the previous analysis to be minor. Therefore, effects at DTA are expected to remain at less than significant.

Live-Fire Training. Under the No Action Alternative, the number of Soldiers stationed and training at FWA would remain the same. The number of required live-fire user days per year at FWA and DTA would continue at present levels. Because the live-fire ranges were located to avoid significant wetland impacts, continued live-fire training is not expected to affect the function or presence of wetlands at FWA or DTA.

Maneuver Training. The intensity and frequency of maneuver training at FWA and DTA would remain at current levels because the number of Soldiers stationed at FWA would remain the same. In addition, no new maneuver areas would be required and maneuver training would be conducted in the footprint of existing or previously approved ranges and trails at FWA and existing and previously approved facilities at DTA. Consequently, no change in impacts to wetlands from maneuver training is expected.

CSS (1,000), CS (1,000), Fires Brigade (1,600), CS (3,000), CSS (3,000): (Significant but Mitigable).

Cantonment Construction. No impacts are anticipated under scenarios which solely involve construction in-filling (demolition of existing facilities and subsequent construction) which would take place as part of the 1,000 Soldier stationing scenarios.

Long-term significant impacts are possible from each of the other stationing scenarios. As indicated above, the main post of FWA is made up of approximately 42 percent wetlands. Impacts to these areas would depend on siting of new facilities to accommodate growth. Impacts are most likely under 3,000 Soldier stationing scenarios as more land (up to 150 acres) is required to accommodate the cantonment facilities north of the Chena river or southeast of the installation.

Heavy equipment and vehicles in the range area could remove vegetation and disturb soils, making them prone to erosion and creating runoff to nearby surface water and wetlands. Disturbed and compacted soils may also affect seedling establishment and near surface hydrology which may inhibit the reestablishment of plant communities. During springtime, it may be more difficult to differentiate between wetlands and temporary standing water from snowmelt; both can appear hydrologically similar without further investigation.

Direct and indirect effects could also include decreased volume of water flowing to wetlands during low flow seasons; loss of streambank stability, loss of organic matter and habitat that would result in lower productivity; and loss of permafrost that would create thermokarst conditions. USAG Alaska has best management practices in place to avoid impacts to permafrost to the extent possible.

Construction that occurs north of the river could directly impact wetland areas or surface waters as a result of required fill activities to support facility construction. Also, the removal of upland vegetation as a result of clearing activities could result in adjacent wetland degradation due to increased sediment loading during rain events while construction is taking place. The effects from construction would be less harmful in winter due to the frozen nature of the wetlands, and the snowpack that protects vegetation.

Training Range Infrastructure Construction. Impacts may be temporary or long-term. Heavy equipment and vehicles in the range area could remove vegetation and disturb soils, making them prone to erosion and creating runoff to nearby surface water and wetlands. Disturbed and compacted soils may also affect seedling establishment and near surface hydrology which may inhibit the reestablishment of plant communities. During springtime, it may be more difficult to differentiate between wetlands and temporary standing water from snowmelt; both can appear hydrologically similar without further investigation. The installation takes precaution if siting a range to avoid impacts to wetlands where possible. However, to support operational range concepts, some wetlands would need to be impacted in upgrading qualification ranges and siting a new rifle range. These wetlands would likely be filled, or the vegetative cover would be altered, changing the function of the wetland, in order to allow for live-fire activities.

Live-fire Training. The installation would try to site ranges and their firing points away from documented wetland areas to avoid potential impacts where possible. Impacts could occur to wetlands on the range area in the form of munitions constituent loading and sedimentation in wetlands located on Army firing ranges.

Maneuver Training. CSS maneuver scenarios would lead to minimal additional impacts to wetlands at FWA. Increased use of un-improved trails would result in more sediment loading into adjacent wetlands and surface waters, though the overall increase in use would be expected to be minimal. No additional roads or trails would be constructed, therefore only minor impacts to nearby wetlands from runoff are anticipated.

CS units, particularly engineers, and the Fires Brigade could adversely affect wetlands through off-road maneuver of armored or tracked vehicles, or increase sediment loading through surface excavation in the case of engineer units. If, during the course of training, permafrost is disrupted, the possibility exists that land subsidence may occur and water may pool in those areas with steeper slopes. Any permafrost in maneuver areas is particularly vulnerable. The vegetative and organic layer of the soils often insulates permafrost soils. When this is removed or severely disrupted the permafrost can melt creating saturated conditions or subsidence. The potential for this occurs on frozen soils particularly when the permafrost is shallow. Areas

known or thought to contain permafrost are avoided to the extent possible. The availability of training land increases during the wintertime. In addition, under CS and Fires Brigade stationing scenarios, DTA wetlands could experience increased sediment loading of surface waters around the BAX training site when wet conditions and off-road maneuver occur.

Donnelly Training Area

CSS (1,000), CS (1,000), Fires Brigade (1,600), CS (3,000), CSS (3,000): (Less than Significant).

Training Range Infrastructure Construction. No additional construction would be required to accommodate CS or CSS units therefore no impacts are anticipated.

Construction of new firing points to accommodate a Fires Brigade may cause only short-term impacts to surface water and wetlands from runoff. USAG Alaska has BMPs in place to minimize any potential impacts. Wetland areas would be avoided to the extent possible.

Live-fire Training. Long-term effects to wetlands in the impact area could occur. Any increases in damage to wetlands from high explosive munitions would be restricted to impact areas.

Yukon Training Area, Tanana Flats Training Area, Donnelly Training Area

CSS (1,000), CS (1,000), Fires Brigade (1,600), CS (3,000), CSS (3,000): (Less than Significant).

Maneuver Training. Long-term effects are anticipated. Currently the Garrison has an adequate road and trail network to accommodate any of these stationing scenarios. Much of these areas have limited access during summer months. Spring and summertime access pose significant issues due to presence of standing (unfrozen) water, wetlands, and lack of access across large rivers. For the most part, DTA West and TFTA are inaccessible to mounted maneuver during summer, except for airlifts of vehicles. The amount of maneuverable area substantially increases during the winter months when the ground is frozen. Winter damage would be minimized by the presence of a minimum of six inches of snow pack, which acts as an insulting layer against significant damage to the frozen soil below. Overall, FWA has an adequate amount of training area to select from and will continue to avoid impacts to wetlands to the extent possible as the Garrison would continue to utilize mitigations and BMPs. The effect from increased training exercises is anticipated to be less than significant.

Maneuvers can directly or indirectly alter the composition of plant communities and vegetative structure. If wetlands are disturbed, small annual plants or invasive species often replace large perennial plants. Maneuver impacts could decrease plant cover and densities of woody vegetation, resulting in reduced wetland function and habitat quality. In severe cases, damaged plant communities could be replaced by lower quality plant communities.

Soils at disturbed sites also tend to become more compacted, which can affect seedling establishment, water and nutrient uptake, and root penetration. Reestablishment of plant communities may be impeded by changes in soil properties. Soil erosion and transport may increase due to a loss in stability from the removal of vegetative cover and the underlying supportive root system. Damage to wetlands in northern climates, such as Alaska, can affect

the insulating layer that protects permafrost. This could create thermokarst conditions, possibly leading to subsidence, and could increase sediment delivery to nearby waterways. As a result, the water quality and aquatic habitats could be degraded.

4.8.10 Water Resources
4.8.10.1 Affected Environment

Watershed

The Chena River originates in the non-glaciated Yukon-Tanana Uplands and passes through FWA Main Post. The U.S. Geological Survey maintains a gauging station on the Chena River. Surface water quality on FWA is good. The Chena River has been classified as Class A, Class B, and Class C. The pH varies seasonally from neutral to slightly below neutral. Groundwater flow varies greatly based on location. Groundwater quality is predominantly good on FWA, although past military activities have degraded groundwater in some locations which are currently undergoing remediation (these areas have contributed to FWA main post having been classified as Comprehensive Environmental Response, Compensation, and Liability (CERCLA) site). Groundwater on FWA Main Post is classified as an alluvial aquifer, fed primarily from the Tanana River. Groundwater there does contain high levels of metals, especially iron and arsenic. Elevated arsenic levels are prevalent in upland areas. These metals are naturally occurring and are not related to human-caused pollution.

TFTA is within the Tanana River watershed, and the river comprises the eastern and northern boundary of the training area; and the Wood River forms the training area's western boundary. TFTA contains a number of small lakes and ponds including the Blair Lakes covering approximately 2,718 acres. Much of this is considered wetlands. USAG Alaska also employs the use of ice bridges over the Tanana River to provide access to TFTA from FWA Main Post during the winter months.

The Little Chena River flows northwest of YTA. All streams at the training area originate in the Yukon-Tanana Uplands which are non-glaciated. Streams located in the northern portion of YTA drain into the Chena River; whereas streams originating in the southeastern portions of YTA drain into the Salcha River, a tributary of the Tanana River. YTA has many small lakes and wetlands that cover about 498 acres.

DTA is located within the Tanana Basin watershed, an interior glacial waterway. There are four main rivers crossing DTA: from east to west they are: Jarvis Creek, Delta River, Delta Creek, and Little Delta River. The Delta River flows northward 80 miles from its headwaters to its confluence with the Tanana River and runs through the DTA for an estimated 30 miles. It drains an area approximately 1,650 square miles. Due to the combination of glacial and non-glacial inputs the Delta River is difficult to classify as specifically glacial or non-glacial in nature. Jarvis Creek originates at the terminus of Jarvis Creek on the North side of the Alaska Range and flows northward for 40 miles through a narrow valley before passing through DTA east. The creek drains an estimates an area of 248 square miles and receives glacial meltwater from Riley and Little Gold Creeks. McCumber Creek and Morningstar Creek are non-glacial streams that enter Jarvis Creek from Granite Mountain as it passes through DTA. Jarvis Creek flows across the same alluvial fan as the Delta River before converging with the river. Surface water quality for drinking water purposes on DTA meet the primary drinking water standards set by the Alaska Drinking Water Standards (18 AAC 80). However, aluminum, iron, and manganese

concentrations were higher than the states secondary standards. DTA water is of calcium carbonate type and is slightly basic. The pH measurements collected on DTA range from 7.9 to 8.4 S.U. which are within the states established limits of 6.5 to 8.5 S.U.

Water Supply

Water for FWA is supplied to the installation through a series of subsurface wells and passed through the on-site water treatment plant (WTP). The WTP consists of a small pressurized green sand filter plant connected to the water distribution system. During the summer the average flow is 2.7 MGD whereas in winter the average water flow is approximately 1.9 to 2.0 MGD. The flow of water through the treatment plant can be limited by quality or number of filters used by the plant to treat the water. Currently, utilities throughout USAG Alaska are undergoing privatization. Doyon Utilities will be the owner and operator of the utility system at FWA.

Water for DTA is provided by wells that yield as much as 1,500 gallons per minute (GPM). Well testing indicates that permafrost generally dos not extend into the saturated zone and does not act as a confining layer. The water table is located closer to the ground surface and has a seasonal fluctuation of 20 to 60 feet resulting from recharge and from precipitation.

Wastewater

FWA has an on-site wastewater collection system that is discharged into the Golden Heart Utilities wastewater system through a central lift station (Doyon Utilities Web Site, n.d.). Fairbanks Sewer & Water is the parent company for Golden Heart Utilities Wastewater Treatment Plant, which provides service to more than 55,000 people and operates at a capacity of approximately 8.0 MGD (Fairbanks Sewer & Water Web Site, n.d.). The wastewater collection system at DTA is connected to a small lagoon treatment facility.

Stormwater

FWA's (and interior Alaska training sites) stormwater program is comparable to that of Fort Richardson. There is a strict enforcement of BMPs to ensure against stormwater runoff from the installation. There have been no NOVs issued to the installation for stormwater compliance violations in the last five years.

4.8.10.2 Environmental Consequences

No Action Alternative: (Less than Significant)

Under the No Action Alternative, the current uses of the affected environment would not change from the conditions described in 4.8.10.1. FWA's current operations would continue at current levels. Ongoing military activities would continue and new mission essential projects would be developed as needed.

Cantonment Construction. Under the No Action Alternative, no additional Soldiers would be stationed at FWA so no cantonment construction is required. The garrison has adequate facilities to support the existing units' requirements for living, administration, and vehicle

maintenance. Consequently, no changes or impacts to water resources at FWA are expected, including water supply and distribution, wastewater collection, and stormwater runoff.

Range Infrastructure Construction. No new range construction would occur under the No Action Alternative. The current number of Soldiers training at FWA would remain the same and no additional ranges would be constructed. In addition, none of the current ranges would be expanded as described for the action alternatives. Therefore, no changes or impacts to water resources at FWA or DTA ranges are expected.

Construction of the Donnelly Drop Zone Expansion, DTA East trail network upgrade, and hardened bivouac sites at DTA as authorized in the 2008 EA and FNSI (*Donnelly Training Area East Mobility and Maneuver Enhancement, May 2008*) would result in less than significant effects to water resources. The primary effects would result from trail hardening activities and the establishment of an all-season crossing of Jarvis Creek. Implementation of BMPs and design aspects are expected to reduce effects on water resources to less than significant. Implementation of the SPEIS No Action Alternative would likewise result in less than significant impacts to water resources at DTA East.

Live-Fire Training. Under the No Action Alternative, the number of Soldiers stationed and training at FWA and DTA would remain the same. The number of required live-fire user days per year at FWA and DTA would continue at present levels. USAG Alaska would continue to implement its current BMPs, SPCC, and SWPPP to address the ongoing effects of live-fire training on water resources. Therefore, effects to water resources are expected to continue to be less than significant.

Maneuver Training. The intensity and frequency of maneuver training at FWA and DTA would remain at current levels because the number of Soldiers stationed at FWA would remain the same. In addition, no new maneuver areas would be required and maneuver training would be conducted in the footprint of existing ranges and trails at FWA and existing and previously approved facilities at DTA. USAG Alaska would continue to implement its current BMPs, SPCC, and SWPPP to address the ongoing and potential effects of maneuver training. Therefore, effects to water resources from maneuver training are expected to continue to be less than significant.

CSS (1,000), CS (1,000), Fires Brigade (1,600), CS (3,000), CSS (3,000): (Less than Significant).

Cantonment Construction. Construction supporting the 1,000 Soldier stationing scenarios within the main cantonment area would require the tie-in of utilities to the existing infrastructure. There is more than adequate water supply and infrastructure to accommodate each of these stationing scenarios. There is sufficient capacity at the installation's central lift station to accommodate the additional wastewater flow. Any upgrades to the collection facilities or distribution to Golden Heart Utilities may be assumed by Doyon Utilities.

Stationing more than 1,000 Soldiers at FWA would require the installation to construct new facilities in new areas of FWA (north of the river and to the southeast of the cantonment area). The action would require the installment of new power lines and potentially a new substation to handle the additional capacity; water distribution and wastewater collection systems; and telecommunication capability. Due to the increased demand much of the wastewater collection and water distribution system would need to be upgraded.

Construction activities could affect surface water by localized increases in erosion and runoff. Potential impacts would include increased overland flow and runoff and decreased percolation to groundwater due to surface compaction. Impacts from construction runoff are expected to be temporary. FWA has a robust stormwater monitoring and compliance program, and is prepared to handle additional capacity. Any construction that disturbs more than one acre of land would require a stormwater pollution prevention plan including use of BMPs to minimize pollution.

Operation of construction vehicles could cause spills of POLs, as well as other hazardous and toxic substances, which could result in indirect impacts to surface and/or groundwater if accidentally released into the environment. The Army has implemented BMPs, an SPCC, and an SWPPP to address leaks or spills of hazardous materials. With these established measures, impacts are expected to be less than significant.

Training Range Infrastructure Construction. Short-term effects to water quality would occur. During ground preparation for range expansion or new construction, grading, excavating, and trenching may expose erodible soils to stormwater runoff and increase the potential for sediments to migrate to surface waters. These potential impacts would be reduced to acceptable levels by implementing standard construction BMPs. Impacts from construction runoff are expected to be temporary. The installation's stormwater monitoring and compliance program is prepared to handle additional capacity.

Operation of construction vehicles could cause spills of POLs and other hazardous and toxic substances, which could result in indirect impacts to surface and/or groundwater if accidentally released into the environment. The Army has implemented BMPs, an SPCC, and an SWPPP to address leaks or spills of hazardous materials. With these established measures, impacts are expected to be less than significant.

Live-fire Training. The increase in weapons qualification training would increase lead and other materials on ranges. Runoff from impacted berms and disrupted soils is possible as the added live-fire activity may increase sediment transported to waterways draining the ranges, and ultimately to surface waters beyond the installation boundary. In the absence of mitigation, an increase in sediment erosion could result in greater impacts, possibly in exceedances of health-based standards or antidegradation policy goals. Installation DPW staff monitors impacts from live-fire activities and would continue to institute the required mitigations and BMPs (such as berm revegetation and regrading) to minimize effects off the firing ranges. Other chemical pollutants, such as petroleum hydrocarbon fuels or lubricants, may be indirect effects resulting from vehicles parked at the training sites.

The risk of wildland fires is expected to remain at about the same level as under existing conditions or slightly higher due to the increase in Soldiers using these ranges. Wildland fires can generate chemical contaminants, and loss of vegetation can increase the potential for soil erosion and sediment loading to streams resulting in impacts to water quality.

Maneuver Training. Additional traffic on the range road network and stream crossings during maneuver may contribute to increased sedimentation and turbidity in waterbodies. Efforts may be considered to reinforce stream crossings and ice bridge approaches and monitor those areas for decreased water quality. Further, bivouac sites in the training area may also need to be monitored and maintained more closely to ensure against stormwater runoff that may stem from the effects of increased Soldier throughput in those areas.

Increased maneuver training would increase the use of fuels, solvents, and other hazardous and toxic substances, which might result in indirect impacts to surface and/or groundwater if accidentally released into the environment. However, implementing BMPs including SPCC would minimize potential impacts resulting from leaks or spills of hazardous materials. Impacts are expected to be less than significant.

Donnelly Training Area

CSS (1,000), CS (1,000), Fires Brigade (1,600), CS (3,000), CSS (3,000): (Less than Significant).

Training Range Infrastructure Construction. No additional range construction would be required for CS or CSS units.

Direct effects to the environment may include disturbance of soil and vegetation, and stormwater runoff may transport loose sediment to surface waters increasing turbidity and degrading water quality. Indirect effects could occur as impacts to surface soils could result in damage to permafrost below.

Operation of construction vehicles could cause spills of POLs and other hazardous and toxic substances, which could result in indirect impacts to surface and/or groundwater if accidentally released into the environment. The Army has implemented BMPs, an SPCC, and an SWPPP to address leaks or spills of hazardous materials. With these established measures, impacts are expected to be less than significant.

Live-fire Training. The increase in weapons qualification training for all of these Soldier stationing scenarios would increase lead and other materials on ranges. Runoff from impacted berms and disrupted soils is possible as the added live-fire activity may increase sediment transported to streams draining the ranges, and ultimately to surface waters beyond the installation boundary. Installation DPW staff monitors impacts from live-fire activities and would continue to institute the required mitigations and BMPs (such as berm revegetation and regrading) to minimize effects off the firing ranges. Other chemical pollutants, such as petroleum hydrocarbon fuels or lubricants, may be indirect effects resulting from vehicles parked at the training sites.

Artillery and rockets (associated with the HIMARS) use may have long-term effects to the impact areas. The explosive residue contained in munitions items may be dispersed around the impact area if the munition item fails to properly function (low-order detonation).

The risk of wildfires is expected to remain at about the same level as under existing conditions or slightly higher due to the increase in Soldiers using these ranges. Wildfires can generate chemical contaminants, and loss of vegetation can increase the potential for soil erosion and sediment loading to streams resulting in impacts to water quality.

Yukon Training Area, Tanana Flats Training Area, Donnelly Training Area

CSS (1,000), CS (1,000), Fires Brigade (1,600), CS (3,000), CSS (3,000): (Less than Significant).

Maneuver Training. Additional traffic on the range road network and stream crossings during maneuver may contribute to increased sedimentation and turbidity in waterbodies. Efforts may be considered to reinforce stream crossings and ice bridge approaches and monitor those areas for decreased water quality. The added vehicles could further compact or damage soils making it difficult for vegetation to reestablish itself. These areas could be more prone to runoff and sedimentation.

The availability of maneuver lands at these training areas increases during winter months. Due to the presence of surface water and wetlands in FWA's training areas during spring and summertime, access to maneuver land is limited (to avoid adverse impacts to the environment while ensuring the sustainability of training lands), which directly impacts unit readiness.

Increased maneuver training at all sites would increase the use of fuels, solvents, and other hazardous and toxic substances, which might result in indirect impacts to surface and/or groundwater if accidentally released into the environment. However, implementing BMPs including SPCC would minimize potential impacts resulting from leaks or spills of hazardous materials. Impacts are expected to be less than significant.

4.8.11 Facilities

4.8.11.1 Affected Environment

Facilities and infrastructure at FWA include Family housing[12]; a road network; community support facilities such as a Child Development Center, police station, credit union, post office, one elementary school, and shops; Bassett Army Community Hospital; outdoor recreational facilities such as downhill skiing, a golf course, fishing, and a variety of water sports; and installation support facilities such as airspace and airfields, and training and range facilities. There are also eleven supply/storage locations found throughout the cantonment area including two ammunition storage facilities. The additional areas are used to store inert supplies, equipment and/or material. The power distribution system at FWA is being systematically upgraded, and substantial portions of the power system will be completely replaced by 2010. A new electrical substation is scheduled for completion June of 2009. Technology upgrades will handle 50 percent more load than currently existing power infrastructure[13] (Letter from Doyon Utilities, June 2008).

As part of its facilities and infrastructure, FWA has its own airfield (Wainwright Army Airfield) and also uses nearby Eielson Air Force Base for large-scale deployments. Both military airfields can support any type of military aircraft. Wainwright Army Airfield has one active runway; several ancillary taxiways, and hangars.

There are over 1,500 housing units on more than 400 acres of land and spread throughout six neighborhoods on the cantonment area. These housing units are isolated from noise and pollution generating activities such as vehicle maintenance. Due to age of housing the installation has begun to revitalize Family housing through new construction to upgrade and/or replace substandard facilities.

[12] Housing requirements for accompanied Soldiers in USAG Alaska will be privatized, and will be met by the Residential Communities Initiative (RCI) beginning 1 January 2009.
[13] All utility services provided to USAG Alaska will be privatized in August of 2008.

In 2005, the Army commissioned a Housing Market Analysis of assets on Fort Wainwright to assess the installation's ability to accommodate Soldiers (both with Families or unaccompanied) while meeting DoD's standards for affordability, location, quality, and bedroom requirements. The study also reviewed the ability of housing supply in the private sector to absorb growth outside the installation. At the time, the study concluded that based on housing inventories there was an overall shortfall of housing units. The growth covered by this market analysis does not include potential growth associated with the proposed action.

The quality and condition of Army ranges and training lands are managed and monitored as a part of the Army's SRP, which includes the RTLP and the ITAM program. Table 4.8-7 below categorizes the types of training range infrastructure provided by Fort Wainwright and Donnelly Training Area. DTA has no Family housing facilities or community support or recreation facilities.

Table 4.8-7. Acres of USAG Alaska Range And Training Land Facilities

Installation	Small Arms Ranges	Major Weapons Systems Ranges	Non Live-fire Ranges	Maneuver Training Areas	Total
Fort Wainwright					
Main Post	143	5,793	22	5,151	**11,109**
Tanana Flats Training Area	0	58,828	0	595,370	**654,198**
Yukon Training Area	2,386	25,854	5	229,035	**257,280**
Donnelly Training Area					
Donnelly Training Area	8,539	146,721	4	481,335	**636,599**
Gerstle River Training Area	0	0	0	20,589	**20,589**
Black Rapids Training Area	0	0	0	4,213	**4,213**

Only one range maintenance building is located at Donnelly. The Trans-Alaska Pipeline passes from Prudhoe Bay, through DTA West, where it ends in Valdez, AK. The pipeline carries crude oil and has a 50 feet wide right-of-way.

4.8.11.2 Environmental Consequences

No Action Alternative: (Less than Significant)

Under the No Action Alternative, the current uses of the facilities would not change from the conditions described in 4.8.11.1. FWA's current operations would continue at current levels. Ongoing military activities would continue and new mission essential projects would be developed as needed.

Cantonment Construction. Under the No Action Alternative, no additional Soldiers would be stationed at FWA so no cantonment construction is required. The garrison has adequate facilities to support the existing units' requirements for living, administration, and vehicle maintenance. Future as needed construction of additional facilities on the cantonment would be likewise analyzed for any potential impacts on the facilities and their contribution to FWA's unique distinction as a National Historic Landmark. Therefore, no impacts to facilities in the cantonment at FWA are expected.

Range Infrastructure Construction. No new range construction would occur under the No Action Alternative. The current number of Soldiers training at FWA would remain the same and no additional ranges would be constructed. In addition, none of the current ranges would be expanded as described for the action alternatives. Therefore, no effects to range facilities are expected.

Construction of the Donnelly Drop Zone Expansion, DTA East trail network upgrade, and hardened bivouac sites at DTA as authorized in the 2008 EA and FNSI (*Donnelly Training Area East Mobility and Maneuver Enhancement, May 2008*) would result in less than significant effects to facilities at DTA and likewise under this No Action Alternative.

Live-Fire Training. Under the No Action Alternative, the number of Soldiers stationed and training at FWA would remain the same. The number of required live-fire user days per year at FWA and DTA would continue at present levels. Therefore, no changes are expected in the amounts of ammunition that would be used or in the generation of UXO and lead contamination on training ranges, which could impact the availability of rangelands for future facilities construction. With the continued implementation of Army SOPs, impacts are expected to continue to be less than significant.

Maneuver Training. The intensity and frequency of maneuver training at FWA and DTA would remain at current levels because the number of Soldiers stationed at FWA would remain the same. In addition, no new maneuver areas would be required and maneuver training would be conducted in the footprint of existing ranges and trails at FWA and existing and previously approved facilities at DTA. Ongoing use of maneuver training areas would continue to affect these facilities. With continued implementation of regulatory and administrative mitigation, such as ITAM, INRMPs, ecosystem management, and the sustainable range management program, impacts to maneuver training facilities are expected to remain less than significant.

CSS (1,000), CS (1,000): (Significant but Mitigable).

Cantonment Construction. Long-term effects are anticipated as a result of required construction to support Army growth. Construction at the main cantonment area would occur as infill to accommodate these Soldier stationing scenarios; and would include COFs, Motor Pools, Brigade and Battalion Headquarters buildings, additional storage, military and vehicle parking, among other facilities. These facilities would be tied in to existing utilities and infrastructure, but some upgrades to the water distribution and wastewater collection system may be required. The entire heat and power distribution system may need to be expanded and new substations would need to be installed. The following facilities may require improvements to support additional troops and their dependents: Bassett Army Community Hospital, the commissary, Post Exchange, gymnasiums and fitness centers, and increased staff space for the Garrison Commander's staff.

Family housing is currently being privatized. There may be a shortfall in housing units available to accommodate unaccompanied Soldiers and Soldiers with Families. Additional Soldiers and Families may be absorbed by both the City of Fairbanks and the Army. New housing units may be constructed at the southeast or northern portion of the installation.

Currently, parcels of land on the installation are dedicated to large scale environmental remediation projects. While it is not likely that infill construction would conflict with these areas, coordination with the EPA and state of Alaska may still be necessary.

Training Range Infrastructure Construction. Range expansion would occur at several ranges in order to meet the increase in training needs. Under current conditions, the ranges do not meet Standards in Training Commission (STRAC) requirements or range requirements sited in Training Circular 25-8 (US Army 2006).

Any ranges constructed would provide limited sanitation in the form of self-contained waste collection points that would be emptied on a regular basis.

Live-fire Training. Long-term impacts would include the increase in range use, resulting in the increase of ammunition and the generation of lead and other materials on ranges and within impact areas.

Maneuver Training. There is adequate maneuver area to train combat support or combat service support units. Training at FWA is likely to occur at the squad or platoon level of training, where company and above level training may occur at one of the other designated training areas (YTA, TFTA, DTA).

Fires Brigade (1,600), CS (3,000), CSS (3,000): (Significant but Mitigable).

Cantonment Construction. Implementation of any of these stationing scenarios would require construction of new facilities. Approximately 75 to 150 acres of land would be needed north of the river to accommodate scenarios involving more than 1,000 Soldiers. There are currently no facilities in this area. Construction would involve all new facilities including headquarters buildings, motorpools and maintenance, new utility water and wastewater distribution and collection lines, and new power and telecommunication utilities. The entire heat and power distribution system may need to be expanded and new substations would need to be installed. Due to the scale and complexity of required construction additional coordination with commercial contractors, planners, and state and federal agencies may also be needed for permitting and consultation. Additional Family housing may be constructed in other portions of the installation.

Training Range Infrastructure Construction. Range construction and expansion activities would occur in order to meet the increase in training needs. Under current conditions, the ranges would not meet range requirements sited in Training Circular 25-8 (US Army 2006). New SDZs would be required for new ranges.

Live-fire Training. Long-term impacts would include the increase in range use, resulting in the increase of ammunition and the generation of lead and other materials on ranges and within impact areas.

Maneuver Training. There is adequate maneuver area to train combat support or combat service support units. Training at FWA is likely to occur at the squad or platoon level of training, where company and above level training may occur at one of the other designated training areas (YTA, TFTA, DTA).

Donnelly Training Area

CSS (1,000), CS (1,000), Fires Brigade (1,600), CSS (3,000), CS (3,000): (Minor).

Training Range Infrastructure Construction. No new range construction would be required to support CS or CSS units. Any construction to support new firing points for the Fires Brigade would also need to provide limited sanitation in the form of self-contained waste collection points that would be emptied on a regular basis. There may be an expected increase in demand for utilities at new firing points.

Live-fire Training. Long-term impacts would be the increase in range use, resulting in the increase of ammunition and the generation of lead, explosive materials, or UXO and other materials on DTA ranges.

Yukon Training Area, Tanana Flats Training Area, Donnelly Training Area

CSS (1,000), CS (1,000), Fires Brigade (1,600), CS (3,000), CSS (3,000): (Minor).

Maneuver Training. There are no plans to extend utilities to these areas therefore the impact would continue to be minimal. Other support infrastructure at training sites is adequate to accommodate these stationing scenarios.

4.8.12 Energy Demand/Generation

4.8.12.1 Affected Environment

As a result of utilities privatization in Alaska, twelve (12) separate utility systems will be privatized and transferred to private ownership. Doyon Utilities will maintain, operate, and own all utilities on these three installations (FWA, FRA, DTA) and be fully capable of and responsible for expansion to serve new facilities and needs as required. During the first five years of operation, all electric facilities at all three posts will be completely rebuilt. Three new substations (one at each post as listed above) will be constructed within the first 18 months, with completion at FWA scheduled for 1 June 2009. These stations will have 50 percent excess capacity (or more) and can be expanded by simply adding an additional transformer. All electrical circuits and supply systems are being constructed with 50 percent extra capacity and loop feed capabilities to accommodate future growth (Letter from Doyon Utilities, June 2008).

FWA has a central coal-filled power plant that produces electricity and steam heat for the installation and is responsible for approximately 95 percent or more of the energy capability throughout FWA. The power plant also provides heat in the form of steam to a majority of structures throughout the cantonment area (many of the buildings there are also heated by individual boilers). Doyon Utilities will install approximately 13 to 18 MW of additional turbine capacity to utilize extra steam. This technology upgrade will make FWA completely energy self-

sufficient within the next two to three years and allow energy wheeling to For Greely or to other installations. In addition, Doyon Utilities will cease the installation of utilidors in favor of more efficient direct bury heat systems (Letter from Doyon Utilities, June 2008).

Power needs at DTA are currently supplied via a combination of the Golden Valley electric Association (GVEA), the power plant at Fort Greely, the power plant at FWA, and on-post generators that are managed by National Missile Defense personnel (Transformation of U.S. Army Alaska FEIS (USAG Alaska 2004)).

4.8.12.2 Environmental Consequences

No Action Alternative: (Minor)

Under the No Action Alternative, the current uses of the affected environment would not change from the conditions described in 4.8.12.1. FWA's current operations would continue at current levels, and agreed upon upgrades by the utility provider would ultimately reduce overall emissions as a result of energy demand/generation. Ongoing military activities would continue and new mission essential projects would be developed as needed.

Cantonment Construction. Under the No Action Alternative, no additional Soldiers would be stationed at FWA so no cantonment construction is required. The garrison has adequate facilities to support the existing units' requirements for living, administration, and vehicle maintenance, though upgrades to current energy demand/generation infrastructure by the utility provider are expected. Future energy demand/generation construction projects on the cantonment will likewise be analyzed on an as needed basis. Therefore, only minor impacts to facilities in the cantonment at FWA are expected.

Range Infrastructure Construction. No new range construction would occur under the No Action Alternative. The current number of Soldiers training at FWA would remain the same and no additional ranges would be constructed. In addition, none of the current ranges would be expanded as described for the action alternatives. Therefore, no effects to range energy use are expected.

Construction of the Donnelly Drop Zone Expansion, DTA East trail network upgrade, and hardened bivouac sites at DTA as authorized in the 2008 EA and FNSI *Donnelly Training Area East Mobility and Maneuver Enhancement, May 2008*) would result in minor effects to energy demand/generation. None of the three enhancements would affect the use or distribution of energy at DTA.

Live-Fire Training. Under the No Action Alternative, the number of Soldiers stationed and training at FWA would remain the same. The number of required live-fire user days per year at FWA and DTA would continue at present levels. Energy required by live-fire facilities is minimal compared to other facilities at FWA and would remain so under the No Action Alternative.

Maneuver Training. The intensity and frequency of maneuver training at FWA and DTA would remain at current levels because the number of Soldiers stationed at FWA would remain the same. In addition, no new maneuver areas would be required and maneuver training would be conducted in the footprint of existing ranges and trails at FWA and existing and previously approved facilities at DTA. During maneuver training, power generation is typically self-

contained (generators) and does not tap into the existing power infrastructure. Therefore, continued maneuver training would not affect energy demand/generation beyond current levels.

CSS (1,000), CS (1,000), Fires Brigade (1,600), CS (3,000), CSS (3,000): (Less than Significant).

Cantonment Construction. For any level of growth, long-term impacts to the power generation system are expected. The installation's current energy infrastructure may not be able to accommodate the addition of 1,000 to 3,000 Soldiers. An increase in population associated with any of these stationing scenarios would increase demand on the power plant, energy distribution lines, and infrastructure. Given that privatization will result in technology upgrades and increased efficiency in power and heat distribution; the overall influence that Army growth is anticipated to have to regional power demand and generation capability is expected to be minimized to a less than significant impact.

Training Range Infrastructure Construction. There may be additional long-term demand in training areas; however demand is anticipated to be slight and inconsequential compared to system capacity. Any identified construction of new ranges would also need to account for energy distribution capacity.

Live-fire Training. Live-fire training would increase under these stationing actions; and the addition of a firing range would add demand to the power supply; however, impacts from energy use are expected to be less than significant as the power required by live-fire facilities is minimal compared to other facility types (such as housing or headquarters buildings). Range facilities at FWA are not connected to the central coal-fired power plant and have individual furnaces or boilers.

Maneuver Training. Maneuver training would increase under this alternative; however, impacts to energy use and costs are expected to be less than significant. During maneuver training, units' power generation is typically self-contained (generators) and does not tap into existing power infrastructure.

Donnelly Training Area

CSS (1,000), CS (1,000), Fires Brigade (1,600), CS (3,000), CSS (3,000): (Minor).

Training Range Infrastructure Construction. The construction or upgrade of new firing points for the Fires Brigade (field artillery) is not anticipated to have impacts to the electrical distribution system to DTA as there is no power requirements associated with these live-fire areas.

Live-fire Training. Live-fire training would increase under these stationing actions; and the addition of a firing range would add demand to the power supply; however, impacts from energy use are expected to be less than significant as the power required by live-fire facilities is minimal compared to other facility types (such as housing or headquarters buildings).

Yukon Training Area, Tanana Flats Training Area, Donnelly Training Area

CSS (1,000), CS (1,000), Fires Brigade (1,600), CS (3,000), CSS (3,000): (Minor).

Maneuver Training. Maneuver training would increase under these stationing scenarios; however, impacts to energy use would be considered minor. During maneuver training units power generation is typically self-contained (generators) and does not tap into existing power infrastructure.

4.8.13 Land Use Conflict/Compatibility

4.8.13.1 Affected Environment

Existing land use boundaries are defined for major land use categories identified in the U.S. Army Corps of Engineers Master Planning Instruction. These have been established as the framework for future land use decisions. Each land use category is evaluated against established criteria to determine compatibilities, constraints, and opportunities. Land use categories are assumed to be compatible with adjacent land uses.

FWA and Interior Alaska training sites consist of over one million acres of land divided into eight land use planning categories; these include transportation, housing, community, installation support, range and training lands, maintenance, outdoor recreation, and miscellaneous. The specific acreages associated with these land use categories are listed in Table 4.8-8 below.

DTA has 636,599 acres of land which is dedicated to range and training use. The types of military activities covered by this land use include the research, test, and evaluation of- and training of military munitions items, explosives, other types of ordnance, and weapons systems.

The public is always allowed access on DTA except for permanently closed areas such as the impact areas and the small arms complex. In addition, access is closed in specific training areas during military training exercises (only areas being used for training are closed). Sometimes access is restricted during range construction as it currently is for the BAX and CACTF construction. This is as required by the Sikes Act.

Table 4.8-8. Acres of USAG Alaska Land Use Planning Categories

Location	Facilities								
	Transportation	Housing	Community	Installation Support	Range & Training Land	Maintenance	Outdoor Recreation	Miscellaneous	Total
FWA	883	538	288	40	922,587	1,652	1,428	465	927,881
DTA	0	0	0	0	661,944	0	0	0	661,944
Total	883	538	288	40	1,584,531	1,652	1,428	465	1,589,825

Transformation Environmental Impact Statement, U.S. Army Alaska (USAG Alaska, 2004).

Other Projects and Right-of ways

The Northern Intertie Project involves the installation of a 230 kV transmission line near the northeast boundary of Tanana Flats Training Area. The transmission line has a right-of-way of 150 to 300 feet wide and 90 to 170 miles long. The Trans-Alaska Pipeline System right-of-way extends through Yukon Training Area. Its width is 50 feet plus the ground area occupied by the pipeline. The 50 –foot wide Alaska Natural Gas Transportation right-of-way lies adjacent to the

pipeline. The Army and BLM approved an additional right-of-way for the Trans-Alaska Gas System which will run parallel to the existing pipelines.

Large parts of land on Fort Wainwright are devoted to large-scale environmental remediation projects under CERCLA, especially in the Cantonment area. These areas will limit the amount of construction that can occur in support of facilities, recreation and roads.

4.8.13.2 Environmental Consequences

No Action Alternative: (Less than Significant)

Under the No Action Alternative, the current uses of the affected environment would not change from the conditions described in 4.8.13.1. FWA's current operations would continue at current levels. Ongoing military activities would continue and new mission essential projects would be developed as needed.

Cantonment Construction. Under the No Action Alternative, no additional Soldiers would be stationed at FWA so no cantonment construction is required. The garrison has adequate facilities to support the existing units' requirements for living, administration, and vehicle maintenance. Some construction; however, may occur on an as needed basis in the future. Therefore, no impacts to land uses are expected.

Range Infrastructure Construction. No new range construction would occur under the No Action Alternative. The current number of Soldiers training at FWA would remain the same and no additional ranges would be constructed. In addition, none of the current ranges would be expanded as described for the action alternatives. Therefore, no significant effects to land uses are expected.

Construction of the Donnelly Drop Zone Expansion, DTA East trail network upgrade, and hardened bivouac sites at DTA as authorized in the 2008 EA and FNSI (*Donnelly Training Area East Mobility and Maneuver Enhancement, May 2008*) would result in minor effects to land use conflict/compatibility in terms of public recreational access, as analyzed in the DTA East EA (May 2008). None of the three enhancements would affect the existing military training land use.

Live-Fire Training. Under the No Action Alternative, the number of Soldiers stationed and training at FWA would remain the same. The number of required live-fire user days per year at FWA and DTA would continue at present levels. Implementation of the USAG Alaska institutional programs, associated land management practices and coordination among Army, federal, state, and local land managers would continue. Consequently, impacts to land use, including recreational activities such as hunting, caused by live-fire training would continue to be less than significant.

Maneuver Training. The intensity and frequency of maneuver training at FWA and DTA would remain at current levels because the number of Soldiers stationed at FWA would remain the same. In addition, no new maneuver areas would be required and maneuver training would be conducted in the footprint of existing ranges and trails at FWA and existing and previously approved facilities at DTA. Implementation of the USAG Alaska institutional programs, associated land management practices and coordination among Army, federal, state, and local land managers would continue. Consequently, impacts to land use, including recreational

activities such as hunting, caused by maneuver training would continue to be less than significant.

CS (1,000), CSS (1,000), Fires Brigade (1,600), CS (3,000), CSS (3,000): (Significant but Mitigable).

Cantonment Construction. Construction that would occur as infill (1,000 Soldier stationing scenarios) may impact structures that contribute to the National Historic Landmark (NHL) or Historic District. Any construction occurring at the borders of the designated NHL or Historic District may have direct or indirect effects and would require additional consultation with the SHPO.

Construction to accommodate more than 1,000 Soldiers at FWA would occur in an area roughly 75 to 150 acres in size to the north of the existing cantonment area or to the southeast of the main cantonment area. There may be short-term effects to land use compatibility from construction noise and from activities that create dust.

Training Range Infrastructure Construction. Range expansion and construction projects would occur either in the footprint of existing ranges, or in pre-disturbed areas nearby current ranges. Siting of new ranges would involve minimizing conflicts with existing land uses. Range surface danger zones may preclude some existing land use during range operations, but no impacts are anticipated during construction.

Live-fire Training. Live-fire activities would increase in frequency at FWA. The additional live-fire training at FWA ranges would not conflict with recreational areas as the restricted live-fire areas are adjacent to limited use areas and modified use areas.

Maneuver Training. The increase in maneuver training frequency may result in some restrictions on public access; however, when not used for training, military lands will be made available for public recreation.

Donnelly Training Area

CSS (1,000), CS (1,000), Fires Brigade (1,600), CS (3,000), CSS (3,000): (Minor).

Training Range Infrastructure Construction. Construction would be required in support of the Fires Brigade (addition of new firing points). This level of expansion may occur on top of pre-disturbed areas minimizing conflicts with existing land uses. Range surface danger zones may preclude some existing land use during range operations, but no impacts are anticipated during construction.

Live-fire Training. No new weapon systems would be introduced as a result of any of these stationing scenarios; however, the frequency in live-fire events, including the use of large caliber munitions, would increase. No changes to land use designations within existing ranges or impact areas are expected. Increased noise, dust, or other indirect effects associated with these stationing scenarios are not expected to affect off-post land uses. Conflicts with some recreational activities such as hunting could occur due to an increase in restrictions during training activities. The surrounding areas are uninhabited federal lands and few residential areas, schools, hospitals, or businesses are expected to be affected.

Yukon Training Area, Tanana Flats Training Area, Donnelly Training Area

CSS (1,000), CS (1,000), Fires Brigade (1,600), CS (3,000), CSS (3,000): (Minor).

Maneuver Training. Due to the increase and intensity of training, more limitations may be imposed on public access to open use areas and recreational areas. Due to the current seasonal training limitations, and because maneuver requirements for these stationing scenarios would increase the level of training at interior Alaska training sites by 10 to 60 percent, the addition of any of these stationing scenarios would also drive increases of summertime maneuver training requirements, as less areas would be available for training due to unfrozen soil conditions. During winter, access to maneuver areas would improve (ability to construct ice bridges and frozen soil conditions) and the additional acreage would be more than sufficient to accommodate training requirements. Impacts associated with public access closures are expected to be minor because alternate areas at these training areas would still be available for recreational and subsistence activities.

4.8.14 Hazardous Materials/Hazardous Waste

4.8.14.1 Affected Environment

Fort Wainwright is registered with EPA as a Large Quantity Generator of hazardous waste in accordance with the Resources Conservation and Recovery Act (RCRA). There is no treatment facility on-site and all hazardous waste generated at the installation is stored and removed from the installation within 90 days. Hazardous waste at FWA is primarily generated from vehicle maintenance and facilities operations. Hazardous materials include petroleum-contaminated absorbent pads, batteries, light ballasts, mercury containing bulbs, oils and fuels, compressed gas, lead-based paints, paint thinners and solvents, pesticides, solvents and degreasers, and non-recyclable transmission fluid. Proper management and disposal of hazardous material/waste is completed in accordance with USAG Alaska PAM 200-1 Hazardous Materials and Regulated Waste Management (May 2000).

FWA was listed on the EPA National Priorities List on 30 August 1990, under CERCLA of 1980 (Superfund). In 1992 the Army, EPA, and ADEC signed a Federal Facility Agreement requiring a thorough investigation of suspected historical hazardous waste source areas and appropriate remediation actions required to protect public health. The installation is in the process of cleanup activities under their IRP, and the discovery of any further contamination as outlined in the Federal Facilities Agreement would require appropriate regulatory coordination and compliance. As part of the investigations, the Army and EPA identified five separate areas requiring remediation; these are discussed in greater detail in Section 3.8 of the Final EA for Construction and Operation of a Railhead Facility and Truck Loading Complex (USAG Alaska, 2007).

Most activities that use or generate hazardous material are conducted in the cantonment area; however hazardous material is also generated from vehicle maneuvers (spills) and live-fire activities that produce lead, UXO, and explosive residues.

Ammunition, Live-fire, and UXO: TFTA, YTA, and DTA impact areas include a two-mile buffer zone. Impact areas and buffer zones are off limits to unauthorized personnel. In addition, all sites are clearly marked with warning signs for the potential risk of unexploded ordnance.

Petroleum, Oil, and Lubricants: FWA has 13 ASTs with capacities ranging from 300 to 13,000 gallons containing fuel and heating oil. Most of these tanks are double-walled and are inspected annually. Three tanks are single walled but are contained within secondary earthen dikes. These tanks are inspected daily. Because the installation's storage tanks do not exceed 420,000 gallons, an Oil Discharge Prevention and Contingency Plan is not required. The installation has 59 USTs, and these tanks are equipped with electronic monitoring devices that are designed to detect leaks and overfill. USTs are double-walled and are monitored monthly. Hazardous wastes are also generated during field training exercises (from vehicle maintenance, accidental spills, etc).

Installation Restoration Program (IRP): Fort Wainwright has a large amount of land that is devoted to large scale remediation projects. Due to past contamination on Main Post, Fort Wainwright has been classified as a Comprehensive Environmental Response, Compensation, and Liability (CERCLA) site.

Army-related and industrial activity on Main Post has caused groundwater pollution associated with underground tanks, chemical storage facilities and chemical dump sites. These areas are monitored intensively. Army restoration projects have mitigated damage to groundwater quality, and practices leading to contamination have been discontinued. Of the 127 sites investigated at FWA for cleanup, 38 were identified as Superfund operable units (28 have been closed and no further remediation is planned, 10 sites are still active). Of the remaining 89 sites, 70 have been remediated. Long-term monitoring is being conducted at 18 sites, and one site is currently being investigated (USAG Alaska, 2004).

Lead: Many of the Family housing units on the installation were surveyed for lead-based paint. The results of the surveys concluded that most Housing facilities do contain lead, most commonly found in deteriorating paint and on exterior surfaces.

Asbestos: Asbestos containing materials may include floor tile, linoleum, wallboard, pipe insulation, and tarpaper; all materials that may be found in Family housing units and facilities alike. Most of the buildings on Fort Wainwright contain some asbestos. While few surveys have been conducted on the installation, they are conducted prior to any renovation or demolition work. Asbestos, during these surveys, is removed and disposed of in asbestos cells at local landfills. The installation's neighborhood revitalization programs have resulted in the removal of asbestos from most of the housing units.

Pesticides and Herbicides: These materials are handled in accordance with all applicable regulations including the Integrated Pest Management Plan for FWA. These materials may be used to control rodents and insects at facilities around the main cantonment area, and may be applied at ranges and training areas to control pests and invasive weed species.

Radon: Radon surveys were conducted on the installation from 1989 to 1990. Survey results indicated that radon was found to be at acceptable levels (below 4 pcl).

Hazardous Wastes/Biomedical Waste: Bassett Army Community Hospital ensures proper disposal of biomedical and other types of hazardous human wastes. Two other facilities located at the north and south ends of the installation also store medical and dental wastes.

4.8.14.2 Environmental Consequences

No Action Alternative: (Less than Significant)

Under the No Action Alternative, the current uses of the affected environment would not change from the conditions described in 4.8.14.1. FWA's current operations would continue at current levels. Ongoing military activities would continue and new mission essential projects would be developed as needed.

Cantonment Construction. Under the No Action Alternative, no additional Soldiers would be stationed at FWA so no cantonment construction is required. The garrison has adequate facilities to support the existing units' requirements for living, administration, and vehicle maintenance. Some construction; however, may occur on an as needed basis in the future. Therefore, no impacts to hazardous materials/hazardous wastes are expected.

Range Infrastructure Construction. No new range construction would occur under the No Action Alternative. The current number of Soldiers training at FWA would remain the same and no additional ranges would be constructed. In addition, none of the current ranges would be expanded as described for the action alternatives. Therefore, no effects to hazardous materials/hazardous wastes are expected.

Construction of the Donnelly Drop Zone Expansion, DTA East trail network upgrade, and hardened bivouac sites at DTA as authorized in the 2008 EA and FNSI (*Donnelly Training Area East Mobility and Maneuver Enhancement, May 2008*) would result in minor potential effects to Hazardous Materials/Hazardous Wastes and their management. POLs would be associated with equipment required for cleaning and grading for all three enhancement projects. However, BMPs currently employed would continue to be used to prevent spills or leaks during construction and training operations and implementation of SOPS in case of a spill or contaminant release would also continue.

Live-Fire Training. Under the No Action Alternative, the number of Soldiers stationed and training at FWA would remain the same. The number of required live-fire user days per year at FWA and DTA would continue at present levels and no new types of weapons are expected to be introduced to training areas. Therefore, no changes are expected in the amounts of ammunition that would be used or in the generation of UXO and lead contamination on training ranges. With the continued implementation of Army SOPs, impacts are expected to continue to be less than significant.

Maneuver Training. The intensity and frequency of maneuver training at FWA and DTA would remain at current levels because the number of Soldiers stationed at FWA would remain the same. In addition, no new maneuver areas would be required and maneuver training would be conducted in the footprint of existing ranges and trails at FWA and existing and previously approved facilities at DTA. Implementation of the USAG Alaska institutional programs, including its current BMPs, SPCC, and SWPPP, would address the ongoing effects of maneuver training. Therefore, effects to hazardous materials/hazardous wastes from maneuver training would continue to be less than significant.

CS (1,000), CSS (1,000), Fires Brigade (1,600), CS (3,000), CSS (3,000): (Significant but Mitigable).

Cantonment Construction. Long-term effects are anticipated. Construction and demolition of structures within the cantonment area (supporting the 1,000 Soldier stationing scenarios) would generate hazardous waste due to the presence of asbestos and lead in some of the older existing structures. The installation would ensure that any removal and disposal of these materials would be in accordance with established federal, Army, and USAG Alaska policy for handling hazardous materials and hazardous wastes. New construction would involve the testing, recordation, and mitigation (if necessary) for radon.

A scenario of 3,000 Soldiers would require the construction of additional motorpools that may potentially double the amount of hazardous material storage needs. The additional tactical and fleet vehicles may require additional ASTs/USTs, wash racks, and oil-water separators. Additionally, more vehicles would increase the potential for spills or releases of hazardous materials to the environment.

The increase in Soldiers from all of these stationing scenarios would result in the generation of biomedical wastes from dental and medical facilities on-post. These wastes would be processed in accordance with current standard operating procedures and regulations. Because the installation is already considered a Large Quantity Generator no additional permitting or significant actions are likely to be required.

Training Range Infrastructure Construction. Short-term effects are anticipated from the upgrade of existing ranges and the construction of new ranges to accommodate growth. These ranges have been previously used and could contain lead and other materials from spent ammunition. Potentially contaminated soils that would need to be removed from ranges would be treated at an off-post facility. Additionally, construction equipment and worker vehicles operating in the range areas could cause spills of hazardous materials (POL) during the construction phase. However, in accordance with USAG Alaska policy, all spills are to be cleaned up immediately and proper reporting requirements followed.

Live-fire Training. Long-term effects are expected. These scenarios would increase the frequency of Soldier live-fire training ranges; thus increasing the amount of lead bullets and other munitions expended in the range area. Live-fire small arms ranges would retain their berms to stop projectiles fired at the ranges. Although a great deal more lead would be fired into impact berms, the installation has mitigation measures in place to ensure berms are well maintained and re-graded as needed to prevent erosion.

DUD and UXO items may also be produced from the use of the MK-19 grenade machine gun. These items produce a hazard on ranges if not immediately disposed of. Additionally, activities supported by combat engineers or EOD units may train with explosive material. The use of explosive material would be consistent with current uses, and would not pose a significant impact to human health or the environment as these materials would be expended, stored, or disposed of in accordance with all appropriate safety regulations.

No new weapon types would introduced to FWA training areas. Handling and storage methods, disposal protocols, and safety procedures would continue to be conducted in accordance with existing regulations.

Beneficial effects would occur from the recycling of brass shell casings expended at firing ranges.

Maneuver Training. Transportation of personnel and use of flammable or combustible materials, such as fuel or ordnance (i.e., weaponry or equipment), could increase the potential for spills or releases of hazardous materials to the environment. Best management practices would continue to be exercised throughout the Garrison. Fort Wainwright's existing programs, management plans, and regulations that govern handling, use, storage, and disposal of hazardous and non-hazardous materials would remain in place. All spills should be cleaned immediately in accordance with USAG Alaska PAM 200-1.

Donnelly Training Area

CSS (1,000), CS (1,000), Fires Brigade (1,600), CS (3,000), CSS (3,000): (Minor).

Training Range Infrastructure Construction. Short-term effects may be expected from the construction of new firing points to accommodate the Fires Brigade training. Construction equipment operating in the potential construction area would increase the chance of spills of POL to the environment. In accordance with USAG Alaska Hazardous Waste Policy, spills would be identified and cleaned immediately to minimize the effects to the environment.

No additional construction is anticipated to accommodate CSS or CS units.

Live-fire Training. Long-term effects are expected. These scenarios would increase the frequency of Soldier live-fire training on ranges DTA, thus increasing the amount of lead bullets and other munitions expended in the range area. Live-fire small arms ranges would retain their berms to stop projectiles fired at the ranges. Although a great deal more lead would be fired into impact berms, the installation has mitigation measures in place to ensure berms are well maintained and re-graded as needed to prevent erosion.

Use of artillery and rockets (associated with the HIMARS) is anticipated to contribute to an increase in UXO and explosives materials within the impact area. While these impacts would be long-term, they are minor because these materials would be localized to the impact area.

Additionally, although some ordnance casings would be recycled by the Garrison, some casings may not be recyclable depending on the types of munitions constituents that may be left as residual on the casings.

The training area is currently operating as a small quantity generator and is conditionally exempt (for the generation of hazardous material under 120 pounds per month). The additional shell casings generated from a Fires Brigade may cause the training area to exceed this status.

Yukon Training Area, Tanana Flats Training Area, Donnelly Training Area

CSS (1,000), CS (1,000), Fires Brigade (1,600), CS (3,000), CSS (3,000): (Minor).

Maneuver Training. Transportation of personnel and use of flammable or combustible materials, such as fuel or ordnance (i.e., weaponry or equipment), could increase the potential for spills or releases of hazardous materials to the environment. Best management practices

would continue to be exercised throughout the Garrison. Fort Wainwright's existing programs, management plans, and regulations that govern handling, use, storage, and disposal of hazardous and non-hazardous materials would remain in place. All spills should be cleaned up immediately in accordance with USAG Alaska PAM 200-1.

4.8.15 Traffic and Transportation

4.8.15.1 Affected Environment

Fort Wainwright has two primary roads that lead onto the installation, with four main roads and numerous secondary roads used for transportation on the installation.

The transportation services available to DTA (and Delta Junction) include the Richardson and Alaska Highways and Allen Army Airfield. The highways both have two lanes and undergo year-round maintenance. The State has recently (in 2007) constructed several passing lanes on the Richardson Highway between Fairbanks and Delta Junction specifically to help alleviate traffic issues with convoys running between Fort Wainwright and DTA.

Military convoy traffic can be a nuisance concern on state highways and may occasionally be perceived as sever enough to be a potential human health and safety risk. Military convoys are most common between FWA Main Post and YTA or DTA. Army convoys are subject to a permitting process in conjunction with the Alaska Department of Transportation. Large convoys are broken up into smaller components called serials, consisting of no more than 20 vehicles with 20 to 30 minute gaps between departures to reduce traffic impacts. Highway speeds cannot exceed 40 miles per hour.

The Alaska Railroad provides rail service to Fort Wainwright. The main line passes through the central cantonment area, with spur tracks serving the central heating and power plant and warehouse circle. DTA has no rail service.

Aviation is an essential component of transportation in the Fort Wainwright region. The civilian community utilizes Fairbanks International Airport. Fort Wainwright has its own airfield and also uses nearby Eielson Air Force Base for large-scale deployments. Both military air fields can support any type of military aircraft. Wainwright Army Airfield has one active runway; several ancillary taxiways, and hangars. The runway is classified as Class D Airspace.

4.8.15.2 Environmental Consequences

No Action Alternative: (Less than Significant)

Under the No Action Alternative, the current uses of the affected environment would not change from the conditions described in 4.8.15.1. FWA's current operations would continue at current levels. Ongoing military activities would continue and new mission essential projects would be developed as needed.

Cantonment Construction. Under the No Action Alternative, no additional Soldiers would be stationed at FWA so no cantonment construction is required. The garrison has adequate facilities to support the existing units' requirements for living, administration, and vehicle

maintenance. Some construction; however, may occur on an as needed basis in the future. Therefore, no impacts to traffic conditions are expected under this No Action Alternative.

Range Infrastructure Construction. No new range construction would occur under the No Action Alternative. The current number of Soldiers training at FWA would remain the same and no additional ranges would be constructed. In addition, none of the current ranges would be expanded as described for the action alternatives. Therefore, no effects to traffic conditions are expected.

Construction of the Donnelly Drop Zone Expansion, DTA East trail network upgrade, and hardened bivouac sites at DTA as authorized in the 2008 EA and FNSI (*Donnelly Training Area East Mobility and Maneuver Enhancement, May 2008*) would result in minor potential effects to traffic and transportation. Army operations resulting from the three enhancements would not change from the current and projected use of the DTA East. All Army operations would follow USAG Alaska Regulation 55-2, *Transportation Operations and Planning in Alaska*, which establishes policies and procedures for USAG Alaska units and agencies using transportation resources in support of Army operations.

Live-Fire Training. Under the No Action Alternative, the number of Soldiers stationed and training at FWA would remain the same. The number of required live-fire user days per year at FWA would continue at present levels. In addition, Soldiers would continue to access live-fire training areas using military roads and trails, which would not interfere with civilian traffic. As noted above, Army operations would follow USAG Alaska Regulation 55-2, which establishes policies and procedures for USAG Alaska units and agencies using transportation resources in support of Army operations. Therefore, impacts on traffic are expected to continue to be less than significant.

Maneuver Training. The intensity and frequency of maneuver training at FWA and DTA would remain at current levels because the number of Soldiers stationed at FWA would remain the same. In addition, no new maneuver areas would be required and maneuver training would be conducted in the footprint of existing ranges and trails at FWA and existing and previously approved facilities at DTA. Soldiers would continue to access FWA's maneuver training areas using military roads and trails, which would not interfere with civilian traffic and Army operations at DTA would follow USAG Alaska Regulation 55-2. Therefore, impacts on traffic are expected to continue to be less than significant.

CSS (1,000), CS (1,000), Fires Brigade (1,600), CSS (3,000), CS (3,000): (Less than Significant to Significant but Mitigable).

Cantonment Construction. Short-term effects are expected to be temporary. Construction equipment and worker vehicles would have short-term impacts at the main gate and at the roads around the designated construction site. Traffic patterns on post may need to be further evaluated in support of the 1,600 and 3,000 Soldier stationing scenarios.

Long-term effects would be expected from the increase in military fleet vehicles and POVs, potentially causing flow issues at the Main Gate entrance to the installation. With these scenarios the Soldier population would increase by 25 to 50 percent. The added traffic from these units would compete with seasonal (summertime and spring) traffic conditions associated with tourism. However, the addition of passing lanes on the Richardson highway will help to

alleviate congestion as a result of current seasonal traffic conditions. There may be need for a traffic study.

Training Range Infrastructure Construction. Short-term effects from construction equipment in the range areas are anticipated. The action would temporarily increase construction traffic to construction sites, effecting flow at the front gate, on the cantonment area, and potentially the communities surrounding the installation.

Live-fire Training. No new range roads or trails would be considered for construction outside existing training areas. A majority of military traffic would be designated on military roads and trails, therefore military traffic would not interfere with civilian traffic. Impacts would be expected on local highways from military convoys.

Maneuver Training. No new range roads or trails would be considered for construction outside existing training areas. A majority of military traffic would be designated on military roads and trails, therefore military traffic would not interfere with civilian traffic. Impacts would be expected on local highways from military convoys.

Donnelly Training Area

CSS (1,000), CS (1,000), Fires Brigade (1,600), CSS (3,000), CS (3,000): (Minor).

Training Range Infrastructure Construction. A majority of construction vehicle traffic would be designated on military roads and trails, therefore military traffic would not interfere with civilian traffic.

Live-fire Training. No new range roads or trails would be considered for construction outside existing training areas. A majority of military traffic would be designated on military roads and trails, therefore military traffic would not interfere with civilian traffic. Impacts would be expected on local highways from military convoys.

Yukon Training Area, Tanana Flats Training Area, Donnelly Training Area

CSS (1,000), CS (1,000), Fires Brigade (1,600), CSS (3,000), CS (3,000): (Minor).

Maneuver Training. There is adequate maneuver space and road network available at DTA to accommodate any of these Soldier stationing scenarios. Impacts would be expected on local highways from military convoys. Effects to traffic on the Glenn, Parks, and Richardson Highways are likely to be short-term because in order to meet training requirements these units would travel to DTA only a few times per year. The Garrison enforces a convoy procedure permitting groups of vehicles (or serials). Following this procedure reduces the impact to traffic on these major Highways.

4.8.16 Socioeconomic

4.8.16.1 Affected Environment

FWA is located within the Fairbanks North Star Borough (FNSB), which according to the U.S. Census Bureau 2006 population estimate has a total population of 94,803. The FNSB region includes the municipalities of Fairbanks and North Pole. Doyon, Ltd. serves as the regional Native Corporation for the area that is subject to the Alaska Native Claims Settlement Act. A list of the village corporations in that area can be found in the Transformation of the U.S. Army Alaska Final EIS (USAG Alaska, 2004). According to the U.S. Census Bureau, the average labor force is estimated at 46,125 with a projected median household income of $58,833 (U.S. Census Bureau Web Site, n.d.). The unemployment rate as of December 2004 for the FNSB was 6.0 percent, which is 1.3 percent lower than the state average and 0.5 percent higher than the national average.

In 2005, the Army commissioned a Housing Market Analysis (HMA) of assets on Fort Wainwright to assess the installation's ability to accommodate Soldiers (both with Families or unaccompanied) while meeting DoD's standards for affordability, location, quality, and bedroom requirements. The study also reviewed the ability of housing supply in the private sector to absorb growth outside the installation. At the time, the study concluded that based on housing inventories there was an overall shortfall of housing units (by approximately 658 units)[14]. Conversely, the City of Fairbanks acknowledged that the HMA did not accurately portray housing construction because it relied on building permits required in the City of Fairbanks and North Pole, and did not take into account that building permits are not required in the majority of the FNSB. The U.S. Census Bureau recently documented that the FNSB has 38,598 housing units, instead of 34,046 listed in the HMA and an average of 780 new units per year since 2000 were constructed instead of the 331 average reported in the HMA.

Fairbanks also serves as the major transportation hub for interior Alaska and for oil operations on the North Slope of Alaska. Primary passenger and cargo air travel service is offered by the Fairbanks International Airport Facility; and the Alaska Highway and Richardson Highway join to connect central Alaska with Anchorage and the Continental United States. There are no roads leading west from Fairbanks. Heath care services are provided by two hospitals and several clinics, and from Bassett Army Community Hospital on FWA.

The schools in and around Fairbanks have a lower student-to-teacher ration and a higher expenditure per pupil than the national average; and have a higher proportion of Native Alaskan students than both the state and national average. Funding for the school districts is largely provided by the State of Alaska and from local contributions (totaling ~30 percent of the operating budget in the municipal areas).

DTA is located within the Southeast Fairbanks Census Region and includes the community of Delta Junction and the villages of Dot Lake, Healy Lake, Tok, Northway, Tanacross, and Tetlin. These areas are minimally impacted by military activities conducted at installations in central Alaska. Doyon, Ltd. serves as the regional Native Corporation for the area that is subject to the Alaska Native Claims Settlement Act. A list of the village corporations in that area can be found in the Transformation of the U.S. Army Alaska Final EIS (USAG Alaska, 2004). Nearby Fort Greely was historically the largest single employer in the region, but was dramatically reduced by BRAC in the 1990s. The Census Bureau estimated in 2000 a population of approximately 840 with a 26 percent housing vacancy rate. The estimated per capita income is $19,171, compared to the median household income of $43,500; there is also more than 160 persons estimated to be in poverty.

[14] The growth covered by this market analysis does not include potential growth associated with the proposed action (Robert D. Niehaus, Inc, August 2005)

The Delta-Greely School District has a higher student-to-teacher ratio and lower expenditures per student than Fairbanks, and does not have the tax base that Anchorage or Fairbanks have to supplement state educational expenditures, therefore less money is spent per student. Because the population of Delta Junction and the surrounding communities is somewhat dispersed the area does not have the public facilities that are available in larger metropolitan areas. However, some medical services are provided by the Delta Junction Family Medical Center.

4.8.16.2 Environmental Consequences

No Action Alternative: (Less than Significant)

Under the No Action Alternative, the current uses of the affected environment would not change from the conditions described in 4.8.16.1. FWA's current operations would continue at current levels. Ongoing military activities would continue and new mission essential projects would be developed as needed.

Cantonment Construction. Under the No Action Alternative, no additional Soldiers would be stationed at FWA so no cantonment construction is required. The garrison has adequate facilities to support the existing units' requirements for living, administration, and vehicle maintenance. Some construction; however, may occur on an as needed basis in the future. Therefore, impacts to the local population, economy, employment, income, and schools are expected to be less than significant.

Range Infrastructure Construction. No new range construction would occur under the No Action Alternative. The current number of Soldiers training at FWA would remain the same and no additional ranges would be constructed. In addition, none of the current ranges would be expanded as described for the action alternatives. Therefore, impacts to the local population, economy, employment, income, and schools are expected to be less than significant.

Construction of the Donnelly Drop Zone Expansion, DTA East trail network upgrade, and hardened bivouac sites at DTA as authorized in the 2008 EA and FNSI (*Donnelly Training Area East Mobility and Maneuver Enhancement, May 2008*) would result in minor effects to socioeconomics. The three enhancements would not be large enough to significantly affect the local economy, to alter the local populations, or overburden the existing infrastructure. In addition, they would not noticeably affect housing values or unemployment rates. The enhancements would result in a temporary increase in local employment during construction; however, no additional permanent staff would be needed.

Live-Fire Training. Under the No Action Alternative, the number of Soldiers stationed and training at FWA would remain the same. The number of required live-fire user days per year at FWA and DTA would continue at present levels. Consequently, no impacts from live-fire training are expected on the local population, economy, employment, income, and schools.

Maneuver Training. The intensity and frequency of maneuver training at FWA and DTA would remain at current levels because the number of Soldiers training at FWA would remain the same. In addition, no new maneuver areas would be required and maneuver training would be conducted in the footprint of existing ranges and trails at FWA and existing and previously

approved facilities at DTA. Therefore, no impacts are expected on the local population, economy, employment, income, and schools from maneuver training.

CSS (1,000), CS (1,000), Fires Brigade (1,600), CSS (3,000), CS (3,000): (Significant but Mitigable to Significant Adverse).

A preliminary socioeconomic analysis of potential effects was conducted for each of the stationing scenarios identified to be suitable for USAG Alaska. This includes the potential stationing 1,000 or 3,000 Soldiers as a result of Army Growth activities. The results of this analysis can be found in Appendix A of this document.

The increase in unit strength would also have an increase in school enrollment. As indicated above the FNSB has a lower student-to-teacher ratio than the national average. The addition of a 1,000 Soldiers may add approximately 225 school-aged children to the school system, spread out from grades K-12. The addition of 3,000 Soldiers may add approximately 745 school-aged children to local schools. It is anticipated that the school system would be able to absorb this level of student growth without the need for new or expanded facilities.

According to the 2005 housing analysis conducted by FWA, there would be a shortfall in available vacant housing space on the installation to accommodate the additional Soldiers. There would be an abundance of buildable space available within the Fairbanks metropolitan area to be able to absorb growth.

Combined, the Army and Air Force presence exceeds 20 percent of the FNSB population and is a very influential economic driver in the region. Growth at FWA would to be coordinated with the local communities, villages, and the FNSB.

The addition of unit strength may also drive some limited economic stimulus in the local economy. There may be a need for civilian employment and the additional Soldiers and their Family members would slightly increase the business volume in Fairbanks.

New units would likely contend with a higher cost of living than what they may normally be accustomed to at other stationing locations. For example, much of the food available in the winter at Fairbanks must be imported from outside central Alaska. The cost of electricity is also much higher in the FNSB than many other locations around the United States.

Cantonment Construction. Construction of new facilities at FWA would have a beneficial short-term effect to the local commercial construction contractor market. The requirement for new facilities equates to MILCON funding being spent on commercial services which could in-turn improve employment outside the installation boundaries.

Training Range Infrastructure Construction. Short-term beneficial effects are expected. Construction of ranges would have a temporary beneficial effect from an increase in military spending on commercial goods and construction services; therefore resulting in a positive influence to employment and income.

Live-fire Training. No impact.

Maneuver Training. No impact.

Donnelly Training Area

CSS (1,000), CS (1,000), Fires Brigade (1,600), CSS (3,000), CS (3,000): (Minor).

Training Range Infrastructure Construction. Short-term beneficial effects are expected. Construction of ranges would have a temporary beneficial effect from an increase in military spending on commercial goods and construction services; therefore resulting in a positive influence to employment and income.

Live-fire Training. No impact.

Yukon Training Area, Tanana Flats Training Area, Donnelly Training Area: (Minor).

Maneuver Training. No impact.

4.9 Cumulative Effects for USAG Alaska

The cumulative impact analyses for the various alternatives focus on impacts on the environment resulting from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions.

Past and present actions are accounted for in the description of the affected environment for each resource. Past, present, and reasonably foreseeable future actions were identified as contributors to cumulative affects in the FRA, FWA and USAG Alaska region of influence. Past and present actions include the construction of projects identified in the 2004 EIS for Transformation of U.S. Army Alaska; the 2005 Final Programmatic EA for Modularization of Army National Guard Forces; the Final BAX/CACTF EIS and Airborne BCT EA; the 2007 Final EA for Construction and Operation of a Railhead Facility and Truck Loading Complex, Fort Wainwright, Alaska; and the 2008 Draft EA for Donnelly Training Area East Mobility and Maneuver Enhancement, Fort Wainwright, Alaska. Future actions include south central Alaska (FRA) and interior Alaska (FWA, TFTA, DTA, and YTA). This cumulative impact analysis also considers past and present, and reasonably foreseeable future actions that occur as part of other federal, state, and local projects outside of army actions. Appendix E of this document provides the reader a detailed list of each project along with a project description, project location, and the proponent for each action.

Table 4.9-1 compares the cumulative impacts of various stationing scenarios at FRA and FWA. The impact table captures the cumulative impact that would occur if the Army decided to implement different stationing scenarios at each of these installations or at both of these installations simultaneously. Cumulative effects ratings listed in Table 4.9-1 are composite ratings that include the impacts at DTA, YTA, and TFTA that would occur as a result of implementing stationing at FWA and FRA. In other words, the cumulative impact rating of each column takes into account the impact of stationing both at the home-station site (FRA and FWA) and the maneuver training sites.

The cumulative impact section assesses the impact of stationing up to 6,000 additional Soldiers in Alaska, which is the greatest possible increase in Soldiers that could result from Army stationing as a result of this analysis. This scenario would be possible if the Army decided to station 3,000 additional Soldiers at FWA and another 3,000 Soldiers at FRA.

Table 4.9-1. Cumulative Effects for Stationing Scenarios in Alaska

VEC	Location										
	FRA / FWA 1,000 CS/CSS*		FRA / FWA 3,000 CS/CSS*		FRA/FWA Fires Brigade*		FRA / FWA 4,000 CS/CSS*		FRA / FWA 6,000 CS/CSS		No Action
Air Quality	⃠	⊗	⃠	⊗	⃠	⊗	⃠	⊗	⃠	⊗	○
Airspace	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	○
Cultural Resources	⃠	⃠	⃠	⃠	⃠	⃠	⃠	⃠	⃠	⃠	○
Noise	⊙	⊙	⊙	⊙	⃠	⃠	⊙	⊙	⃠	⃠	○
Soil Erosion	⃠	⃠	⃠	⃠	⃠	⃠	⃠	⃠	⃠	⃠	○
Biological Resources	⃠	⊙	⃠	⃠	⃠	⃠	⃠	⃠	⃠	⃠	○
Wetlands	⊙	⃠	⃠	⃠	⃠	⊗	⃠	⃠	⃠	⃠	○
Water Resources	⊙	⊙	⊙	⃠	⃠	⃠	⃠	⃠	⃠	⃠	○
Facilities	⊙	⃠	⊗	⊗	⊗	⊗	⃠	⊗	⊗	⊗	○
Energy Demand / Energy Generation	⊙	⃠	⊙	⃠	⊙	⃠	⊙	⃠	⊙	⃠	○
Land Use Conflict / Compatibility	⊙	⃠	⃠	⃠	⃠	⃠	⃠	⃠	⃠	⃠	○
Hazardous Material / Hazardous Waste	⊙	⃠	⃠	⃠	⃠	⃠	⃠	⃠	⃠	⃠	○
Traffic and Transportation	⊙	⊙	⊗	⃠	⊗	⃠	⊗	⃠	⊗	⃠	○
Socioeconomics	+		+		+		+		+		+

⊗ = Significant Adverse
⃠ = Significant but Mitigable
⊙ = Less than Significant
○ = Minor or No Impact
\+ = Beneficial Impact
N/A = Not Applicable

* Cumulative Impacts Assessments include impacts to DTA, YTA and TFTA that would result from stationing at FWA or FRA.

The Army is currently preparing an environmental impact statement to assess the potential impacts associated with the resumption of year-round live-fire weapons training at Fort Richardson's Eagle River Flats impact area (ERF). The successful cleanup of white-phosphorus-contaminated sediment over the last ten years has resulted in a potential opportunity for the Army to resume year-round use of the impact area. This area is currently available only when ice cover is of sufficient thickness to prevent sediment disturbance resulting from use of high explosive mortar or artillery munitions.

In south-central Alaska, about 11 past, present, and reasonably foreseeable future actions were identified for the FRA area. They include management of Nike Site Summit, USAG Alaska Mission-Essential Projects, and other military and non-military projects:

- Cantonment Area Projects at Fort Richardson
- Rapid Deployment Facility (completed)
- Ammunition Supply Point Upgrade (completed)
- Whole Barracks Renewal (completed)
- Stationing of the Airborne Brigade Combat Team (ABCT) at FRA
- Mission Operations on Urbanized Terrain (MOUT) (Completed)
- Sniper Range (completed)
- Multi-purpose Training Range (completed)
- U.S. Air Force (Elmendorf AFB)
- Year-round training at Eagle River Flats (in progress)

A variety of past, present, and reasonably foreseeable future actions were also identified for interior Alaska (FWA, DTA, TFTA, and YTA). They include USAG Alaska mission-essential projects:

- Cantonment Construction at Fort Wainwright (Completed)
- Mission Support Training Facility
- Library/MOS/Education Center
- Barracks Complex
- Ammunition Supply Point Upgrade
- Alert Holding and Pallet Facilities
- Stationing of the Stryker Brigade Combat Team (SBCT) at FWA (Completed)
- Range Upgrade and Expansion at FWA (completed)
- Collective Training Range at DTA (completed)
- Cold Regions Test Center Automotive Test Complex at DTA (completed)
- Space and Missile Defense System (completed)
- U.S. Air Force (Eielson AFB) aircraft stationing actions (completed)
- ITAM Projects
- FWA Housing Projects
- Aviation Task Force Construction (proposed)
- Proposed Addition of OH-58D Kiowa Warrior Helicopters
- Range Operations Center
- C-17 Landing Strip
- Direct Fire Range

- USAF Training – Airspace
- Pacific Alaska Range Complex
- DTA East Mobility and Maneuver Enhancement Projects
- DTA West Winter Trail Improvement
- RCI
- Utilities Privatization
- Installation Boundary Fence Project

Other future non-military activities and projects were also identified for both regions of Alaska:

- Community Development at Fairbanks, North Pole, and Delta Junction
- Alaska Railroad Expansion
- ARRC Fort Wainwright Realignment Project
- Tanana River Bridge
- Bureau of Land Management (BLM) Alaska Fire Service Campus Upgrades
- Natural Gas Pipeline
- Richardson Highway Upgrade
- Richardson and Alaska Highways
- Delta Agricultural Project
- Multiple use land management under the Tanana Valley Management Plan
- Subsistence on public and private lands
- Recreation on public and private lands
- Knik Arm Bridge

Some of these actions are ongoing projects that would continue into the future, while others would be expected to be complete in the reasonably foreseeable future. The following sections describe the cumulative impacts to each environmental resource that would be expected to result if additional Soldiers were stationed at USAG Alaska.

Air Quality

The city of Anchorage is classified as a non-attainment area for CO, and the Eagle River area outside of Anchorage is in a non-attainment area for PM_{10}. FRA is not within either of these non-attainment areas; however, these pollutants are the main issues of concern in the larger south-central airshed within which FRA resides.

Historically, Anchorage has also been listed among the top ten air quality regions of concern in the western United States for CO. The largest source of CO emissions is motor vehicles (83.6 percent), followed by aircraft (8.6 percent). Most exceedances to the CO NAAQS occur on weekdays when vehicle traffic is the heaviest. Morning starts of vehicles, or “cold starts,” are believed to be the leading cause of high CO levels during winter months (Municipality of Anchorage 1999). Vehicle emissions have decreased significantly in recent decades due to the requirement for emission control equipment on all new vehicles manufactured since 1981. In 1995, Anchorage adopted an Air Quality Control Plan to reduce CO emissions by using oxygenated fuels, increasing vehicle inspection requirements, and implementing a ride-sharing program.

PM_{10} is high in Eagle River due to the number of unpaved roads. Over 90 percent of the particulate matter in the area is generated by travel on paved and unpaved roads. Only 10 percent of the fugitive emissions result from industrial sources, wood stoves, or automobile exhaust (Municipality of Anchorage 1999). In 1987, a plan was implemented to pave or surface gravel dirt roads in the area. The state of Alaska modified winter road maintenance practices in the Anchorage and Eagle River areas to reduce the amount of traction sand on the road. Traction sand is believed to contribute to higher PM_{10} levels. No exceedances of the PM_{10} standard have occurred since 1987 (Municipality of Anchorage 1999).

Major stationary emission sources in the area include power plants, standby power generating facilities, exhaust emissions from vehicle maintenance shops, small space heaters, and dry cleaning and petroleum storage facilities. Cumulative air quality impacts at FRA would occur from cantonment construction projects within the same geographic area and from motor vehicles. Cumulative impacts to air quality would also be expected from maneuver training. These impacts include the increase in vehicle emissions on ranges, and an increase in dust and opacity over current conditions. Regionally, however, the effects of military training are largely localized to the training area, are of short duration, and should produce no regional air quality issues.

Air quality in the DTA region meets current National Ambient Air Quality Standards (NAAQS) and is assumed to be at near baseline conditions due to the low density of human development and emission sources. In addition to the NAAQS, the DTA is in relatively close proximity to Denali National Park and any potential impacts under the Regional Haze Rule, which regulates impacts to visibility and prohibits impacts to Class I areas, must be considered. Ice fog forms under the same conditions at this location as in FWA, but the durations of the episodes at DTA are generally shorter. Temperature inversions do occur, but due to the limited number of emission sources, the inversions are not likely to cause CO levels to exceed the NAAQS.

Fugitive dust is typically generated from 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 the summer, and sometimes during the winter. Heavy machinery, construction, and vehicular traffic on unpaved roads can generate fugitive dust. These events are also usually of short duration and produce to significant affects to regional air quality.

Major emission sources at DTA include vehicles and the burning of fuels, including wood, gasoline, diesel oil, and fuel oil. Fugitive dust, forest fire smoke, and the occasional use of helicopters and aircraft were also cited as sources of emissions at DTA. Currently planned USAG Alaska mission-essential projects would contribute only short-term and relatively small cumulative effects to air quality and would produce no long term impacts on regional air quality.

Mission-essential construction projects planned for DTA include the construction of a Battle Area Complex And Combined Arms Collective Training Facility (BAX/CACTF) and would result in the generation of temporary emissions.

Air quality impacts from the BAX/CACTF are essentially negligible. The primary source of impaired visibility is local wildfires and naturally-generated fugitive dust during high winds (Army 2006). Emissions have been modeled to ensure they produce no significant regional air issues including visibility.

Cumulative air quality impacts at FWA would occur from cantonment construction projects within the same geographic area and from motor vehicles. Fairbanks is classified as a CO maintenance area. Cumulative impacts to air quality would also be expected from maneuver training at TFTA, YTA, and DTA. These impacts include the increase in vehicle emissions on ranges, and an increase in dust and opacity. Regionally, the affect of military training is largely localized to the training area and should produce no regional air quality issues.
Estimates of baseline air emissions from aircraft operations were calculated for Eielson AFB. Pollutant concentrations from aircraft operations would constitute a small percentage of the NAAQS, thus, no appreciable effects to air quality would result.

Construction of the Cold Regions Test Center Automotive Test Complex would result in temporary release of air pollutants from the combustion of fuel and from dust. Use of test facility buildings and testing of vehicles on the paved track would also result in increased emissions; however, the need for additional air quality permits is not expected.

The addition of new permanent, stationary air emission sources by the Space and Missile Defense System on the Fort Greely cantonment area would affect the overall ambient air quality within the airshed. This project has been issued a construction permit by the ADEC, and construction is underway. The air quality effects may increase if the test bed evolves into a full missile defense system.

The Trans-Alaska Pipeline (TAPS) Renewal Project could affect ambient air quality. The maximum estimated concentrations of criteria air pollutants associated with the TAPS activities have been found to be below applicable NAAQS. HAPs concentrations would contribute little to the background concentrations already found in residential areas. There are no predicted adverse effects to visibility expected to occur because of TAPS. Some of the projects identified as contributing to cumulative impacts would occur in or adjacent to areas where wildland fires could occur.

The cumulative military projects are expected to contain mitigation measures to minimize potential environmental impacts involving wildfires that can also contribute to air quality impacts. The FRA, FWA or Fort Greely Fire Department provides the initial response for wildfire suppression. Cumulative fire management impacts to the region would mainly result from the addition of new firing ranges, and expansion of existing or development of new maneuver areas, and population growth in the forested areas bordering installations.

Stationing additional CS, CSS, or Fires Brigade units in Alaska would produce greater emissions of carbon dioxide and other greenhouse gasses from both the use of explosives and the operation of vehicle engines and maintenance and repair facilities. Dust generated from travel on unpaved roads are temporary and spatially isolated. Additionally, fugitive dust may be mitigated through the use of best management practices during construction activities and training convoys. In addition to addressing fugitive dust, the Army is proactively working to reduce its overall consumption of energy and fossil fuels at all of its installations. As a result, the Army anticipates the cumulative effect of military and nonmilitary actions to be less than significant.

Airspace Resources

Increasing aircraft operations may create cumulative affects to airspace under these stationing scenarios, especially under the Fires Brigade stationing scenario. Reasonably foreseeable

future actions identified near FRA, FWA, and DTA may cause direct and indirect effects that could overlap in time and space with the affects of this alternative. Upgrades and expansion at Elmendorf AFB near FRA and at DTA and Eielson AFB may result in impacts that could also cumulatively contribute to airspace effects. Procedures established for existing restricted airspace would not require changes in connection with the training and support operations connected with DTA's BAX/CACTF ranges, including Unmanned Aerial Vehicle operations. No additional restricted airspace areas are required to support these range operations. The proposed aviation unit, an Aviation Task Force or Combat Aviation Brigade (CAB), would potentially see an increase in the execution of day-to-day support operations, and routine joint military training at nearby training lands and ranges though current assets and control mechanisms are sufficient.

If constructed at DTA as planned, the C-17 landing strip would increase the number of flights in DTA's airspace. In addition, upgrades and expansions are expected for Elmendorf and Eielson AFBs. Depending upon the specifics of these upgrades and expansions, they could cause cumulative impacts when their effects are combined with the airspace impacts of this alternative. Appropriate coordination and planning among the Air Force, Army, and Federal Aviation Administration is expected to keep any cumulative effects to a level that is less than significant.

Cultural Resources

Military and non-military activities can affect cultural resources in a number of ways. The nature of cultural resources makes any impact potentially irreversible or irretrievable. Because cultural interactions with the landscape are regional in scope, cumulative impacts to cultural resources are also regional. Impacts may be caused by driving motorized vehicles over archaeological sites, through construction activities (both military and private/public), and through unsympathetic project design (impacts to historic resources).

Past activities on USAG Alaska lands, such as range construction and modification, creation of roads and trails, and maneuver training, have impacted cultural resources at both FRA and FWA.

Given the low number of prehistoric sites found on FRA, this impact has probably been minor. Unsympathetic uses of the buildings and structures that make up either the unlisted eligible historic district that encompasses part of the FRA cantonment area, or the Nike Site Summit historic property, including modification or demolition of relevant structures, would also have impacted cultural resources.

Cumulative effects at FWA's main post are anticipated under all stationing scenarios to be significant but mitigable to less than significant. An historic district and National Historic Landmark are located on the main post of FWA. Individual construction projects have the potential to impact cultural resources on the installation. As the installation continues to coordinate with the SHPO, these potential effects could be mitigated to less than significant. Construction supporting activities at FWA may potentially occur within the viewshed of the Ladd Field National Historic Landmark. Any demolition of contributing buildings to the landmark, or construction of buildings within the landmark that may have an unsympathetic design could potentially lead to the loss of the landmark designation. USAG Alaska personnel go through great extents to minimize potential effects to resources throughout the garrison. Additionally,

training associated with the SBCT at FWA, TFTA, YTA, and DTA may impact undocumented resources.

Management of cultural resources at locations in Interior Alaska and FRA under their respective ICRMPs can mitigate the contribution to cumulative impacts by implementation of Army growth through the identification, evaluation, and management of cultural resources. The protection of sites that can be avoided, and data recovery on those that cannot be avoided, would mitigate potential cultural resource impacts; however, there is a possibility that the proposed action would impact known or unknown cultural resources, a cumulative impact that cannot be mitigated to less than significant.

Impacts from Eielson or Elmendorf AFB, if any, will probably have already occurred with construction of those installations. Eielson AFB is located between the Yukon-Tanana Uplands and Tanana River, and it is possible that the site may contain or may have contained prehistoric cultural sites; however, most of Eielson is considered wetlands and are less likely to contain such sites. Similarly, development of the Space and Missile Defense system also had the potential to impact undocumented cultural resources.

Past non-military activities such as the 60,000 acre Delta Agricultural Demonstration project that occurred from the late 1970's to the 1980's is likely to have damaged or destroyed cultural resources. Activities such as oil and natural gas exploration and extraction, development of transportation and communication corridors, timber harvesting and mining, and the growth and development of communities, would cumulatively impact the regional cultural resource base. For example, regular maintenance along the Trans-Alaska Pipeline System may impact cultural resources. Highway development of the Richardson and Alaska Highways, and construction of 80 miles of new railroad line may also lead to regional effects to cultural resources. Current recreational activities associated with off-road recreational vehicles are also likely to have direct effects to documented and undocumented resources.

Noise

Cumulative noise impacts would result from both non-military and military actions in the area. Noise contributed by the local community includes transportation, construction, and recreation in the Anchorage vicinity.

The noise of existing and planned military training includes firing and detonation of munitions, low-flying aircraft, construction activities and general troop maneuvers (both mechanized and pedestrian). Numerous studies have indicated that the introduction of noise into previously undisturbed areas can initially cause behavioral changes and stress in some species of wildlife. However, over an extended period of time, these effects wane as wildlife becomes accustomed to the recurring disturbance. Observations of wildlife support this general statement that noise is of little significance. Impact from noise on wildlife do not appear to cause population level impacts (USAG Alaska 2004 and 2007).

Construction of cantonment mission-essential projects at FRA and FWA would result in increased noise levels, but the effect would be short-term and highly localized. These projects include a variety of structures to support the expansion of the Airborne Task Force to an Airborne Brigade Combat Team and replacing and upgrading Family housing. There would be no long-term noise effects from these projects.

Construction of mission-essential projects to support changes in training at FRA and FWA would result in temporary increased noise levels and potentially add to increased cumulative effects. These projects include the MOUT complex, the sniper range, the multipurpose training range and the Battlefield Area Complex. The proposed expansion of winter-only weapons proficiency training at Eagle River Flats to year-round training could increase the amount annual noise effects. The growth and expansion of the Aviation Task Force will include temporary construction effects and increased helicopter training related noise. Three projects at DTA, drop-zone expansion, trail network upgrades and hardening bivouac sites, will generate only short-term and localized noise effects.

Under fire brigade stationing scenarios at both FRA and FWA, firing activities would be conducted at DTA and limited training would add to cumulative impacts of noise in the region of influence surrounding FRA and FWA.

Activities by the U.S. Air Force and the Alaska Air National Guard contribute to adverse noise effects in the Anchorage area, but the military has taken steps to ease the impact (e.g., flight scheduling) (U.S. Air Force 1995). Elmendorf Air Force Base does receive off-post noise complaints (U.S. Air Force 1995). Cumulative noise effects for stationing additional Soldiers at USAG Alaska would be less than significant to significant but mitigable.

Non-military noise generating activities will result from the Alaska Railroad expansion (extension of a passenger and freight line into Delta Junction), the Tanana River Bridge replacement and the Alaska-Richardson Highway expansion. Noise effects would be temporary during construction, with the potential for some infrequent increase in railroad and train noise.

Soil Erosion

Soldier growth is likely to contribute to cumulative impacts from soil erosion near Fairbanks and Delta Junction, which includes DTA, YTA, and TFTA. The major historic influences on soil erosion in the area include the disturbance of soils, modification of slopes and drainage features, and loss or disturbance of vegetation due to agricultural conversion, military activities, fires, roads, modification of slopes and drainage features, and other development. The recent trend for soil erosion and/or loss has been improved in recent years by Integrated Natural Resources Management Planning and better management of disturbed lands and application of BMPs. However, activities that disturb or remove vegetative cover are presently occurring or will occur in the reasonably foreseeable future, which will continue to result in greater soil erosion and loss than without these activities. Use of the training ranges is likely to result in continued enhanced wind soil erosion, as well as compaction, rutting, and damage to permafrost in some areas. These effects are expected to be locally significant. However, at the regional level, the effects are not expected to be significant compared to natural rates of erosion and the cumulative impacts caused by other activities in the region.

Soil resources in interior Alaska are likely to be impacted from other military activities associated with USAG Alaska, U.S. Air Force, Cold Regions Test Center, and the Space and Missile Defense System. These activities have the potential to contribute to increased soil erosion, compaction, and rutting, as well as damage to permafrost. USAG Alaska mission-essential range improvement and upgrade projects could cause negative impacts to soils at DTA (USAG Alaska 2004). Current USAG Alaska maneuver training has involved stream crossings on DTA (USAG Alaska 2004). DTA river crossing training has occurred in winter, which prevents direct sedimentation impacts due to streambed disturbance. However, erosion at the crossing points

may lead to soil erosion and subsequent sedimentation through runoff, as well as damage to permafrost. DTA East Mobility and Maneuver Enhancement projects would help minimize some of the erosion impacts through the installation of an all-season crossing of Jarvis Creek, the hardening of bivouac sites, and upgrading of networked trails and firebreaks to provide sustainable trail and area use. In addition, weapons training involving explosive munitions may also have had impacts to soils through ordnance impact and residual chemical contamination (USAG Alaska 2004). Most other planned military projects will occur on already disturbed areas, such as the cantonment area or impact areas. These projects are sufficiently separated (in time and location) from routine training activities to prevent additive or synergistic impacts to soil. Cumulative impacts contributed from completed projects to support the addition of new personnel at Fort Richardson include the construction of several new buildings and infrastructure, including barracks, brigade, battalion, and company headquarters; vehicle maintenance shop, dining facility, classroom, medical clinic, and heavy drop rigging facility. Cumulative impacts contributed from completed projects at Fort Wainwright include the construction of several new buildings and infrastructure, including barracks, a Soldier community building, classrooms, library, Alert Holding and Pallet Facility, and 2 battalion headquarters buildings. These impacts would mainly be short in duration during the construction of the facilities. Additionally, the construction of new ranges at Fort Richardson, including the Mission Operations on Urbanized Terrain (MOUT) facilities, and Multi-Purpose Training Range, and the construction of new ranges at Fort Wainwright, including MOUT facilities and a Sniper Range, and the construction of the Battle Area Complex (BAX) and Combined Arms Collective Training Facility (CACTF) at Donnelly Training Area (DTA), contributed mainly to short term soil loss on those sites. Although Eagle River Flats' environmental conditions have improved in the past decade, the shift to conduct training activities year-round will likely cause increased erosion and soil loss in that region. However, these impacts can be managed by diligent monitoring of the impacts and the modification of training activities as needed to prevent irreparable degradation of the soils.

Infrastructure projects, including the Alaska, Richardson, and Parks Highways, the Trans-Alaska Pipeline System and Northern Intertie project, and the Alaska Railroad Expansion, could contribute to surface runoff and subsequent soil erosion and sedimentation. Future permafrost melting from road construction and use is expected in the region. Impacts would be localized and not result in synergistic regional effects. Future natural gas pipeline construction would disturb area soil and permafrost. Other gas and oil exploration projects would also negatively impact soil resources. Additionally, some resource extraction, such as timber harvesting and mining, can also contribute to increased soil erosion and subsequent sedimentation. Fort Knox, True North, and Pogo gold mines all have an increased potential to disturb local surface soils.

Community development can also affect soil resources. Community growth in the Delta Junction and Big Delta areas could lead to increased overland water runoff soil erosion and subsequent sedimentation from areas downflow of the impervious surfaces. These impacts are considered long-term due to the ongoing nature of such impacts. Use of ORVs has impacted area soils and permafrost in the form of erosion and rutting.

Soil resources management on Fort Richardson is achieved through prevention activities and actual restoration of disturbed areas by implementing BMPs in agreement with industry standard installation storm water prevention techniques. Disturbed areas are restored by both erosion control and streambank stabilization activities, which control installation sources of dust, runoff, silt, and erosion debris to prevent damage to land, water, and air resources; equipment; and facilities (including those on adjacent properties). Relevant BMPs used at Fort Richardson

are detailed in the INRMP (USAG Alaska 2007) and in the ITAM Five Year Management Plan (USAG Alaska 2005).

No other cumulative geologic or soils impacts are expected. Overall, cumulative impacts to soils associated with Army growth would be expected to be significant but mitigable to less than significant.

Biological Resources

The projects identified as contributing to cumulative impacts would impact biological resources. The cumulative projects are expected to contain mitigation measures and SOPs to minimize potential biological impacts. In light of historic, ongoing, and reasonably foreseeable future actions, the cumulative impacts involving vegetation, threatened and endangered species, and wildlife and habitat are expected to be less than significant.

Prior activities on Army lands have impacted vegetation, primarily through maneuver training exercises, and construction of ranges and cantonment buildings. Total cantonment area acreage includes approximately 10,230 acres of USAG Alaska lands. Vegetative structure within the cantonment has been heavily altered to accommodate construction of buildings, roads, and other infrastructure. In addition, training ranges on interior Army lands occupy approximately 6,500 acres, which require ongoing vegetative modification. Drop zones and assault strips occupy approximately 4,900 acres on interior lands. These areas must remain free of high-standing vegetation, which prevents the areas from progressing through successionary stages.

Training requirements for proposed Army growth stationing, in conjunction with training identified in the 2004 Transformation document (SBCT), and Airborne Task Force (Airborne BCT) training would increase wear on vegetation; training noise exposure to wildlife,

USAG Alaska's integrated training area management (ITAM) program institutes standard operating procedures and best management practices for 23 Fort Richardson projects, 37 Fort Wainwright, and 35 Donnelly Training Area projects. The ITAM program is responsible for keeping training lands in a consistent and natural state. Impacts to vegetation from training, for example, are not considered serious due to guidance for on-road/off-road maneuver, travel, the implementation of BMPs for minimization of soil (and thus vegetation) erosion, and guidance that covers winter training such as 6 inches of snow-pack in maneuver areas what help insulate soils and vegetation against considerable and irreversible damage.

Wildlife on USAG Alaska lands, including FWA and DTA, has been exposed to military activity for decades. USAG Alaska mission-essential construction projects planned may affect certain individuals or groups of urban wildlife, but probably would not affect any priority species at the population level. Likewise, the activities planned would not impact priority species. There are no threatened or endangered species residing on Army lands in Alaska. Even so, increased exposure to live-fire training and maneuver noise may disturb the reproductive (breeding and calving), foraging, and nesting behaviors of several varieties of wildlife. Many animal species are likely to habituate to the increase in training disruption, as these impacts have been incremental and most activities do not occur on a daily basis. Many animals are habituated to the human-dominated environment; and recent NEPA documentation indicates that training levels are not detrimental to overall species success. Aircraft overflights may be more disruptive to sensitive noise receptors, however, these noise types are intermittent and temporary.

Of the priority species, range improvement projects at FWA and DTA would not impact grizzly bear habitat, but could compromise about one percent of the preferred habitats of wolverines, wolves, and olive-sided flycatchers. Although one to two percent of current moose habitat could be impacted, range construction could create additional habitat. Range development could compromise about three percent of trumpeter swan habitat in these areas.

The range improvement projects and subsequent artillery firing at DTA could negatively affect bison that migrate through the battle area complex area, but maintenance of the battle area complex in an early seral state may also benefit bison. The noise could impact waterfowl and other birds in nearby ponds, but the effect of such training is not known. Development and use of the collective training range could affect portions of grizzly bear and sandhill crane habitat in North Texas Range. This area is already used for weapons training. No additional impacts are expected from use of this range to grizzly bears, sandhill cranes, or other species of wildlife. Ongoing USAG Alaska activities could negatively impact fisheries primarily due to habitat degradation or loss of water quality. Overall, cumulative impacts to general wildlife and habitat would be less than significant.

The actions associated with this SPEIS are likely mitigable with continued implementation of the INRMP, use of BMPs, and institutional programs such as ITAM. Range improvement projects would occur within the footprint of existing ranges. No new range areas are anticipated. Training that would occur in these areas are considered incremental over existing training conditions. No new weapons systems would be introduced under any of these stationing scenarios.

Range and cantonment expansion/modernization under the proposed stationing scenarios, in conjunction with construction of facilities and ranges in support of Transformation of the Airborne Task Force and the SBCT would affect vegetation and wildlife resources, the impacts to the natural environment is anticipated to be less than significant

The increase in construction projects should have little impact on subsistence and recreational hunters as well as recreational outdoor activities for the public. Certain additional areas may be designated off limits due to safety issues and military regulations.

Some of the projects contributing to cumulative impacts would occur in or adjacent to areas where wildland fires could occur. Military projects are expected to contain mitigation measures to minimize potential environmental impacts involving wildfires. The importance of fire for the Alaskan interior ecosystems is recognized but military fires are usually quickly controlled. The FRA, FWA, or Fort Greely Fire Department provides the initial response for wildfire suppression, which has traditionally been confined to areas behind the small arms complex. Cumulative fire management impacts to the region would mainly result from the addition of new firing ranges, and expansion of existing or development of new maneuver areas, and population growth in the forested areas bordering installations. The proposed Eagle River Flats (ERF) action would allow units to train year round at Fort Richardson and receive necessary weapons proficiency training. The ERF Impact Area is the only impact area on Fort Richardson which can be used for live-fire artillery and mortar training. The Army has utilized ERF for weapons training since the 1940s and a wide range of direct and indirect fire weapons have been used at this site, including mortars, howitzers, missiles, rockets, and small arms. It is not expected to have an impact on the life cycles of wildlife.

There will be some negative additive wildfire impacts expected from the USAG Alaska mission-essential projects planned at FRA. The multi-purpose training range, infantry squad battle

course, infantry platoon battle course locations were all assessed as wildfire risks. USAG Alaska mission-essential construction, including the multi-purpose training range and infantry squad battle course, are planned for FWA. They would be located between Main Post and the Tanana River. These ranges are described as having risk due to the availability of fuels and past fire behavior. The ranges are expected to represent an additive cumulative impact to fire management in the area. In June 2006, the Final Environmental Impact Statement was released for the BAX/CACTF. The selected location for the BAX and CACTF facilities was the Eddy Drop Zone in DTA. The SBCT currently stationed at FWA will train at the DTA BAX and CACTF once they are operational.

Overall, stationing a Fires Brigade, or CS or CSS units at FRA or FWA (with Fires Brigade live-fire ordnance training at DTA) would contribute significantly to cumulative wildfire risk to the region. High-risk areas would be treated to reduce the spread of fire, and training would follow established training protocols. Live-fire training could potentially increase the frequency of wildfires. Several fire mitigation measures are being implemented throughout the Garrison on existing ranges and would be continued under all stationing scenarios.

The Alaska railroad expansion project which includes construction of approximately 80 miles of new rail line which will connect the Eielson Branch line and the Chena River Overflow Structure and extend to Delta Junction is anticipated to have little effect on migrating wildlife.

Non-military actions that would have cumulative effects on species and vegetation management would be continued development and expansion due to human population increases. As the boroughs surrounding FRA, FWA, and DTA continue to grow, wildlife species may be affected through a change in migration patterns, the reduction of quality habitat (which may impact species health and survival), and increased interaction and habituation to anthropogenic activity (for example, more human encounters with Black bears and Grizzly bears). These impacts are not expected to be significant. Due to the vast tracks of land in Alaska, there is likely adequate habitat available to maintain species success. Continued subsistence and hunting activities may have beneficial influences on species management.

Wetlands

Wetland permitting, which is regulated by the U.S. Army Corps of Engineers, would be required if construction were to impact wetlands. U.S. Army range improvement and upgrade projects could cause negative impacts to wetlands at DTA, FWA, and/or FRA. In light of historic, ongoing, and reasonably foreseeable future actions, cumulative impacts to wetlands could be less than significant to significant depending on the specific project and time of year. In accordance with Executive Order 11990, installations are required to avoid impacts of destruction or modifications of wetlands unless there is no practicable alternative and the proposed action includes measures to minimize harm. The Army continues to apply for and operate under permits for actions taken by the garrison that may impact wetlands on Army lands.

Long-term significant impacts are possible from several of the stationing scenarios unless proper planning/sitting occurs. For example, the main post of FWA is made up of approximately 42 percent wetlands. Impacts to these areas would depend on siting of new facilities to accommodate growth. Range expansion projects in the small arms training complex could impact wetland areas or surface waters. The removal of vegetation from clearing activities

could result in wetland degradation due to increased sediment loading during rain events while construction is taking place.

The effects from maneuver training would be less harmful in winter, due to the frozen nature of the wetlands, and the snowpack that protects vegetation.

The proposed Eagle River Flats (ERF) action would allow units to train year round at Fort Richardson and receive necessary weapons proficiency training while reducing possible impacts to wetlands during winter training. Direct and indirect effects could include decreased volume of water flowing to wetlands during low flow seasons; loss of streambank stability, loss of organic matter and habitat that would result in lower productivity.

With proper planning, the installations would site ranges and their firing points away from documented wetland areas to avoid potential impacts. Limited impacts to wetlands would be anticipated, however, impacts could occur on the range area in the form of munitions constituent loading and sedimentation in those located on Army firing ranges. DTA specifically, could experience increased sediment loading around the BAX training site when wet conditions and off-road maneuver would contribute to sediment loading of surface waters. Training may be averted to TFTA or other areas where more maneuver land would be available (due to a lower presence of wetlands). The availability of training land increases during the wintertime.

Water Resources

USAG Alaska maneuver training has involved stream crossings on Yukon Training Area (YTA), DTA, and TFTA. TFTA training occurs mainly in winter, which helps to prevent direct sedimentation impacts due to streambed disturbance, direct impacts to permafrost, and other protective measures. However, erosion at the crossing points may have led to sedimentation through runoff. In addition, weapons training involving explosive munitions may also have had impacts to surface water quality. However, water quality tests have shown no detectable quantities of munitions constituents in recent studies. This indicates that any impacts would be ephemeral at the point and time of impact. Localized contamination from inadvertent chemical releases, such as petroleum, organics, and lubricants, may also have occurred. At DTA, a proposed all-season crossing of Jarvis Creek would be installed. This structure would help minimize the sedimentation that may occur during vehicle crossings.

Past impacts to groundwater on Army lands have occurred due to weapons training. Explosive munitions training on the TFTA and YTA impact areas has led to the presence of unexploded ordnance on USAG Alaska impact areas. Chemical constituents from unexploded ordnance have the potential to leach through the soil into the aquifer, thereby affecting groundwater quality. However, studies (Houston 2002; Ferrick et al. 2001) indicate that ambient conditions sharply curtail the probability of groundwater contamination from munitions constituents.

Water resources in interior Alaska are likely to be impacted from military activities including those conducted by USAG Alaska, U.S. Air Force, Cold Regions Test Center, and the Space and Missile Defense System. These activities have the potential to alter surface water quality. The Cold Regions Test Center Automotive Test Complex would be designed to avoid impacts to Jarvis Creek and its floodplain. In addition, some resource extraction, such as timber harvesting and mining, can alter surface flow or increase sedimentation. These impacts are generally short-term.

Construction by any of these can alter groundwater recharge regimes, and such impacts are local and long-term. In addition, disturbance and loss of permafrost can also alter local groundwater flow by increasing connectivity to lower groundwater sources. Military activities also have the potential to affect groundwater quality through munitions practice. These impacts can be long-term. The development and use of the Cold Regions Test Center Automotive Test Complex would not impact groundwater quality, although two wells (approximately 400 feet deep each) would be drilled.

Infrastructure projects, including the Alaska, Richardson, and Parks Highways and the Northern Intertie project, can affect surface flow by channelizing flow patterns or altering surface runoff rates by installing impermeable surfaces such as roadways. They can affect groundwater flow long-term by altering permafrost or altering surface recharge rates. The Tanana River Bridge replacement effort will likely have a short term affect on water quality when the supporting structures are installed during the construction phase of the project.

Oil and gas exploration, extraction, transport, and mining and timber activities also have long and short-term impacts to groundwater resources. The TAPS and Pogo gold mines both have an increased potential to affect local surface and groundwater quality and can alter groundwater flow and recharge. Some management practices do improve surface waters, such as managing for fish and game, or for public recreation.

Overall, cumulative impacts to water resources associated with Army growth at USAG Alaska would be expected to be significant but mitigable to less than significant.

Facilities

Army growth at USAG Alaska would result in less than significant impacts to facilities, including public services, infrastructure, and utilities. Continued impacts to facilities are expected in the areas surrounding USAG Alaska posts as the result of projected population growth and development. Ongoing USAG Alaska activities, including training and range construction and expansion, are expected to continue. A variety of capital improvement projects are planned or currently underway on installation cantonment areas. In addition, future range construction and improvement projects are planned on USAG Alaska lands.

Population growth due to non-military activities is anticipated to influence the need for more infrastructure, land, and development. Highway upgrades outside of Anchorage and surrounding the FNSB will allow for greater access to previously undeveloped land. These needs are currently being met through future development projects and residential community initiatives.

Energy

Army growth at USAG Alaska is expected to result in less than significant impacts to energy consumption. Ongoing USAG Alaska activities, including training and range construction and expansion, are expected to continue to impact energy resources. A variety of capital improvement projects are planned or currently underway on installation cantonment areas. The cumulative effects will be less than significant because proposed capital improvement projects would mitigate additional energy requirements. Privatization of utilities for USAG Alaska is expected to occur in August 2008. At this time, Doyon Utilities will begin the upgrade of power

feeders, transmission lines, and will implement new technology in power generation facilities that will all for cleaner and more efficient use and distribution of power sources and energy.

More sustainable technology coupled with the efficiencies gained from technology upgrades is anticipated to allow Doyon to accommodate the energy needs of the garrison and other customers, and maintain extra capacity in times of peak surge in power requirements; therefore, the impacts of stationing additional units in USAG Alaska (among a growing civilian community population) may be mitigated to less than significant.

Land Use and Recreation

Continued population growth and development in the region are expected to create more pressure on existing land use and recreation over time.

Past, ongoing, and planned military activities would continue to impact public access and recreation or subsistence activities on USAG Alaska lands. Past military activities have impacted public access for recreation or subsistence activities because of permanent and temporary closures of some areas of USAG Alaska lands. Construction of roads and trails on Army properties has resulted in beneficial impacts to public access by increasing the amount of Army lands feasibly accessible for recreational purposes.

Within the military mission priority, USAG Alaska strives to allow public access to military lands, providing both civilians and military personnel with recreational and educational opportunities. Ongoing USAG Alaska activities, including training and range construction and expansion, are expected to increase the impact to public access and recreation activities. Planned Fort Richardson ranges: the MOUT site, sniper range and multi-purpose training range; will be constructed within or adjacent to existing range “footprints, and will share existing impact areas. The Urban Assault Complex of approximately xxx acres of Fort Wainwright will restrict access to that specific parcel of land. At Donnelly Training Area the Battlefield Area Complex (3500 acres) and Combined Arms Combat Training Facility (1000 acres) will share a surface danger zone of 25,000 acres and is expected to be in use between 106 – 238 days per year. This will have some impact on access to the affected lands. Two of the three Donnelly East Mobility and Maneuver Projects may restrict access (expansion of the drop zone from 434 to 2474 acres, and hardening the bivouac site) while improving the East Trail Network will potentially improve access.

Some areas may be permanently closed to public access due to specific military activities associated with that area. Impact areas must remain permanently off-limits to public access. For live-fire ranges, SDZs may be closed for up to 280 days per year, which would have a significant impact to public access. USAG Alaska has defined five primary categories of public use areas on its lands. These categories are Open Use, Modified Use, Limited Use, and Off-Limits areas. Because alternate areas on USAG Alaska lands would still be available for public access, cumulative impacts would be less than significant.

A variety of capital improvement projects is planned or currently underway within the FRA and FWA cantonment area. Range construction and improvement projects are planned on USAG Alaska lands. Other military activities may also impact land use, public access, and recreation activities in the area.

Ongoing and planned nonmilitary activities would also contribute to cumulative impacts on USAG Alaska lands. Ecosystem-level inventory and planning would promote long-term sustainability of public access and recreation or subsistence opportunities within Alaska. Cumulative impacts to land use and recreation resources are expected to be less than significant.

Additionally, Army growth at USAG Alaska is expected to have less than significant impacts to both access for subsistence activities and availability of subsistence resources. Much of the proposed activities would be located within previously disturbed areas. While there may be an increase in access closures and some less than significant effects on the availability of subsistence resources for some areas at either of the stationing locations, an adequate amount of land would still be accessible for subsistence activities. Subsistence resources may be cumulatively affected because of other regional activities including military activities, resource extraction, and community growth. Impacts to subsistence in the interior Alaska region of interest are expected to be less than significant. As a result of the ever increasing urbanization of south-central Alaska and the affects of federal and state regulations on subsistence in the interior region, Army growth is expected to result in less than significant impacts on subsistence.

The Alaska Railroad expansion, 80 miles of new railroad line running to Delta Junction may impact access and subsistence activity, and will be addressed in that project's own NEPA anlaysis.

Hazardous Materials and Hazardous Waste

Inadvertent releases of hazardous materials, primarily petroleum products and solvents, have resulted in contaminated sites on USAG Alaska lands. Stationing of additional Soldiers at USAG Alaska would result in increased risk of inadvertent releases of hazardous materials and wastes. Cumulative effects would occur as a result of training increases due to recent Transformation, Air Force training exercises, and training associated with the Airborne Task Force.

Transformation and training associated with the Airborne BCT, and stationing of Stryker vehicles, equipment, and weapon systems associated with the SBCT have increased hazardous waste generation at training areas. Hazardous materials and wastes used and generated on USAG Alaska lands would typically include explosive munitions, UXO, fuels, oils, and lubricants.

Air Force air-to-ground training also occurs at DTA and adds to the UXO generated on Army lands. However, all UXO would be contained within the impact areas, which are off-limits to public and most military access.

In addition, fuel spills may occur as a result of maneuver training or leaking from USTs/ASTs. The continued implementation of spill prevention, control, and countermeasure plans in conjunction with proper monitoring and replacement of aging equipment would mitigate those impacts. Continued implementation of USAG Alaska's Hazardous Waste Management policies (USARAK PAM 200-1) establish guidelines to protect against fire, explosion, spills, threats to health, and other serious consequences of improper hazardous materials/regulated waste management. Cumulative impacts to human health and safety are expected to be less than significant to significant but mitigable to less than significant.

Similarly, fuel and oil spills associated with private/public vehicles, fueling stations, or other public facilities are often localized and are limited to a small geographic area, and therefore is not anticipated to contribute to significant impacts.

Traffic and Transportation

A variety of capital improvement projects is planned or currently underway on installation cantonment areas. In addition, future range construction and improvement projects are planned on USAG Alaska lands. Other military activities may also impact traffic and transportation resources in the area. However, because of the wide distribution of the potential cumulative activities over time and space, cumulative impacts to traffic and transport resources are expected to be less than significant.

Beneficial effects may occur as a result of highway improvement projects that have recently been completed or are ongoing along the Alaska and Richardson Highways. Traffic pressure is anticipated to be relieved during convoy travel between FWA and DTA, and FRA and DTA.

Socioeconomics

Individually, stationing scenarios potentially affecting FRA or FWA would result in less than significant to significant mostly beneficial impacts to socioeconomic resources. Continued socioeconomic impacts are expected in the areas surrounding USAG Alaska posts as the result of projected population growth and development. Long-term direct and indirect beneficial cumulative effects are expected because of increased sales volume and employment in the area under all stationing scenarios. The beneficial economic effects (i.e., increased spending, employment, and income) of these actions are expected to last for the duration any construction projects. A lasting economic benefit will result from increased expenditure of discretionary income of Soldiers and their Families.

The Whole Barracks Renewal program and the Fort Wainwright Residential Communities Initiative and Family housing projects have had a positive impact on socioeconomic cumulative impacts. Improving unaccompanied Soldier and Family housing and encouraging Soldiers and Families to remain on-post will reduce competition of and stress on off-post housing.

If any stationing scenario were implemented at USAG Alaska, cumulative impacts to population, employment, income, housing, and schools are expected to be less than significant. Army and community growth is anticipated to add employment opportunities for low-income Families.

No construction projects or training exercises would take place near schools, daycares, or other areas with large populations of children. No cumulative adverse effects to the health and safety of children are expected under this alternative.

Access to public lands for recreation is important to the Alaskan community and the USAG Alaska will continue to provide access within the stationing scenarios consistent with military mission priorities.

4.10 Irreversible or Irretrievable Commitments of Resources

Unavoidable Adverse Effects

Adverse environmental effects associated with the proposed action are likely and unavoidable. The stationing of additional units (Combat Support and Combat Service Support, Fires Brigade, Combat Aviation Brigade) and their training requirements would increase vehicle and equipment use within the cantonment and training areas of the installations. Furthermore, construction of new facilities or renovation of existing facilities to support additional growth and structure realignment is expected to directly, indirectly, and cumulatively affect human and natural environments.

This Supplemental PEIS (SPEIS) has identified varying degrees of impacts that feasibly could result from the stationing scenarios discussed herein. These potential impacts are to be found throughout U.S. Army installations identified in this document (and their designated training areas) and are not limited to any specific site. Each installation considered for a stationing action and the surrounding environment would be affected by growth and realignment. The effects would be unique to each installation; overall, however, they would be lessened through mitigation measures. A site-specific analysis and determination of mitigation measures would be tiered off this SPEIS and performed at U.S. Army locations to accurately measure impacts and their significance. Appropriate mitigation measures could then be determined and enacted.

Irreversible or Irretrievable Commitments of Resources

This SPEIS addresses force structure and realignment associated with Army Transformation, Modular force adjustments, and Presidentially-directed Army Growth. The Final Programmatic EIS for Army Growth and Force Structure Realignment (U.S. Army, 2007) cites the *Programmatic Environmental Impact Statement for Army Transformation* in that "Maintaining national defense preparedness…is, by its very nature, an activity that is consumptive of the earth's resources and one that can damage human and natural environments to varying degrees. Although some activities associated with implementation of Army Transformation might locally result in significant adverse environmental effects, as described above, none would be undertaken without prior analysis as required by the NEPA or without reasonable efforts to appropriately mitigate such effects (USACE, 2002)."

Recycling and reuse of materials such as scrap metal, aluminum, paper, and wood may help alleviate the irretrievable commitment of resources. Energy commitments would be considered irreversible or irretrievable. However, the use of energy saving practices where appropriate would mitigate this loss. Continued responsible stewardship of natural resources by the Army would minimize damage to natural resources and contribute to long-term stewardship of these resources and mitigate irreversible commitment.

Short-term uses of Man's Environment and Maintenance and Enhancement of Long-term Productivity

The Army recognizes that Soldiers today and in the future must have the resources needed for training support. It has established a long-term Strategy for the Environment with a vision that will enable the Army to meet current ongoing and subsequent missions. The foundation of the Army Strategy is Sustainability, which connects today's activities and future endeavors with sound practices rooted in the principles of environmental stewardship.

By continuously evolving to meet global challenges, the Army remains true to its mission. Sustainability enables the Army to meet maintenance and long-term productivity goals. Sustainable practices such as water conservation, improved energy use practices (fuel storage, use, and spill cleanup) including expanded use of renewable resources allow the Army to reduce its impact to natural resources. Sustainability also promotes the elimination of waste, development of innovation, and collaboration across the Army.

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Alaska Department of Commerce, Community, and Economic Development	http://www.dced.state.ak.usl/bd/commdb/CF_BLOCK.htm
Alaska Department of Fish & Game Conservation	www.wildlife.alaska.gov
Doyon Utilities	http://www.doyonutilities.com
Fairbanks Sewer & Water	http://www.akwater.com/about.html
National Climate Data Center	http://climate.gi.alaska.edu/Stations/Interior/Fairbanks.html
U.S. Census Bureau	www.census.gov

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6.0 ACRONYM LIST

A

AAFES	Army & Air Force Exchange Service
ABN	Airborne
ACM	Asbestos Containing Material
ACP	Army Campaign Plan
AD	Anno Domini
ADEC	Alaska Department of Environmental Conservation
ADNL	A-Weighted Day-Night Level
AFB	Air Force Base
AFSB	Army Field Support Battalion
AHPA	Archeological and Historical Data Preservation Act
AIRFA	American Indian Religious Freedom Act
AK	Alaska
ALISH	Agricultural Lands of Importance to the State of Hawai'i
AMF	Army Modular Force
AOPA	Aircraft Owners and Pilots Association
AP	Air Pollution
APE	Area of Potential Effect
APZ	Accident Potential Zones
AR	Army Regulation
ARFORGEN	Army Force Generation
ARPA	Archaeological Resources Protection Act
ASCC	Army Service Component Commands
ASP	Ammunition Supply Point
AST	Aboveground Storage Tanks
ASV	Armored Security Vehicle
ATC	Air Traffic Control
ATI	Area of Traditional Interest
ATTACC	Army Training and Testing Area Carrying Capacity
AWSS	Aviation Weapons Scoring System
AWWU	Anchorage Water and Wastewater Utility

B

BA	Biological Assessment
BAAF	Bradshaw Army Airfield
BASH	Bird/Wildlife Aircraft Strike Hazard
BAX	Battle Area Complex
BCT	Brigade Combat Team
BFSB	Battlefield Surveillance Brigades
BLM	Bureau of Land Management
BMP	Best Management Practices
BP	Before Present
BRAC	Base Realignment and Closure

C

C2C	Command Control Center
CAA	Clean Air Act
CACTF	Combined Arms Collective Training Facility
CALFEX	Combined Arms Live Fire Exercise
CAB	Combat Aviation Brigade
CCDs	Census County Divisions
CDNL	C-Weighted Day-Night Level
CENTCOM	US Central Command
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Responsibility, Compliance, and Liability Act
CFA	Controlled Firing Area
CFR	Code of Federal Regulations
CHPPM	Center for Health Promotion and Preventative Medicine
CO	Carbon Monoxide
CO_2	Carbon Dioxide
COE	Corps of Engineers
COFs	Company Operations Facilities
CONUS	Continental United States
CPQC	Combat Pistol Qualification Course
CS	Combat Support
CSA	Chief of Staff of the Army
CSS	Combat Service Support
CSSB	Combat Sustainment Support Battalion
CTP	Combat Trail Maintenance
CU	Copper
CWA	Clean Water Act

D

DA	Department of the Army
dBA	Decibels
dBP	Decibels, Unweighted
DLNR	Department of Land and Natural Resources
DMR	Dillingham Military Reservation
DNL	Day-Night Level
DoD	Department of Defense
DOT	Department of Transportation
DPW	Department of Public Works
DRMO	Division Retuliziation Management Office
DTA	Donnelly Training Area
DU	Depleted Uranium
DuSMMoP	Dust and Soils Mitigation Monitoring Plan

E

EOD	Explosive Ordnance Disposal
EIFS	Economic Impact Forecasting System
EIS	Environmental Impact Statement

EPA	Environmental Protection Agency

F

FAA	Federal Aviation Administration
FCMR	Fort Carson Military Reservation
FCS	Future Combat System
FEA	Final Environmental Assessment
FIP	Federal Implementation Plan
FNSB	Fairbanks North Star Borough
FNSI	Finding of No Significant Impact
FPEIS	Final Programmatic Environmental Impact Statement
FR	Federal Register
FRA	Fort Richardson, Alaska
FWA	Fort Wainwright, Alaska
FY	Fiscal Year

G

GDPR	Global Defense Posture Realignment
GIS	Geographic Information Systems
GTA	Grow the Army
GVEA	Golden Valley Electric Association

H

HDBEDT	Hawai'i Department of Business, Economic Development and Tourism
HDLNR	Hawai'i Department of Land and Natural Resources
HDOT	Hawai'i Department of Transportation
HE	High Explosive
HECO	Hawaiian Electric Company, Inc.
HELCO	Hawaiian Electric and Light Company
HET	Heavy Equipment Transporter
HI	Hawai'i
HIMARS	High Mobility Artillery Rocket System
HINHP	Hawai'i National Heritage Program
HMMWV	High Mobility Multi-Wheeled Vehicle
HMX	Cyclotetramethylene-tetranitramine
HQDA	Headquarters Department of the Army
HRMA	Housing Requirements Market Assessment
HSDH	Hawai'i State Department of Health
HWSSP	Hazardous Waste Shop Storage (Accumulation) Point

I

IBCT	Infantry Brigade Combat Team
ICM	Improved Conventional Munitions
ICRMP	Integrated Cultural Resources Management Plan
ID	Infantry Division
IENMP	Installation Environmental Noise Management Plan

IFWMP	Integrated Wildfire Management Plan
INRMP	Integrated Natural Resource Management Plan
IRP	Installation Restoration Program
ITAM	Integrated Training Area Management
IWFMP	Integrated Wildland Fire Management Plan
IWMP	Integrated Wildfire Management Plan

K

KD	Known Distance Marksmanship Range
KLOA	Kawailoa Training Area
KMWP	Koolau Mountains Watershed Partnership
KTA	Kahuku Training Area
kV	Kilovolt
kVA	Kilovolt ampere
kW	Kilowatt

L

LBP	Lead-Based Paint
LPK	Peak Noise Level
LRAM	Land Rehabilitation and Maintenance

M

MCM	Multichip module
MEB	Maneuver Enhancement Brigades
MEDEVAC	Medical Evacuation
MFAB	Multi-Function Aviation Brigade
MGD	Military Geographic Documentation
MILCON	Military Construction
MIMs	Maneuver Impact Miles
MLRS	Multiple Launch Rocket System
MMR	Makua Military Reservation
MOA	Military Operations Area
MOU	Memorandum of Understanding
MP	Military Police
mph	Miles per hour
MPMG	Multi-purpose Machine Gun Range
MRF	Modified Record Fire Range
MSL	Mean Sea Level
MVA	Megavolt ampere

N

NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Repatriation Act
NDS	National Defense Strategy
NEPA	National Environmental Policy Act
NESHAP	National Emission Standards for Hazardous Air Pollutants

NHPA	National Historic Preservation Act
NO_2	Nitrogen Dioxide
NOx	Nitrogen Oxide
NOI	Notice of Intent
NOV	Notice of Violation
NPDES	National Pollutant Discharge Elimination System
NPL	National Priorities List
NRHP	National Register of Historic Places
NSS	National Security Strategy
NWI	National Wetlands Inventory
NZ	Noise Zone

O

O_3	Ozone
ONMP	Operational Noise Management Program
ORAP	Operational Range Assessment Program
ORRV	Off-Road Recreational Vehicles
OSHA	Occupational Safety and Health Administration
OWS	Oil/Water Separator

P

PACOM	Pacific Command
PAHs	Polycyclic Aromatic Hydrocarbons
PCBs	Polychlorinated Biphenyls
PCMS	Pinon Canyon Maneuver Site
PEIS	Programmatic Environmental Impact Statement
PM	Particulate Matter
POL	Petroleum, Oils, Lubricants
POV	Power Operated Vehicle
PRGs	Preliminary Remediation Goals
Ppm	Parts per Million
PSD	Prevention of Significant Deterioration
PTA	Pohakuloa Training Area
PTRCS	Property of Traditional, Religious, or Cultural Significance

Q

QDR	Quadrennial Defense Review
QTR	Qualification Training Range

R

RCRA	Resource Conservation and Recovery Act
RDX	1,3,5-trinitotriazine
RMSSP	Recyclable Material Shop Storage Point
ROD	Record of Decision
ROI	Region of Influence
RTLP	Ranges and Training Land Program

S

SBCT	Stryker Brigade Combat Team
SBMP	Schofield Barracks Main Post
SBER	Schofield Barracks East Area
SBMR	Schofield Barracks Military Reservation
SDWA	Safe Drinking Water Act
SDZ	Surface Danger Zones
SHPO	State Historic Preservation Office
SIP	State Implementation Plan
SMA	Special Management Areas
SO_2	Sulfur Dioxide
SOx	Sulfur Oxide
SOP	Standard Operating Procedure
SPEIS	Supplemental Programmatic Environmental Impact Statement
SPCC	Spill Prevention Control and Countermeasures
SRP	Sustainable Range Program
STRAC	Standards in Training Commission
SUA	Special Use Airspace
SVOCs	Semi-volatile Organic Compounds
SWPPP	Storm Water Pollution Prevention Plan

T

T&E	Threatened and Endangered
TAMC	Tripler Army Medical Center
TC	Training Circular
TCA	Terminal Control Area
TCE	Trichloroethylene
TCP	Traditional Cultural Properties
TFTA	Tanana Flats Training Area
TLV	Threshold Limit Value
TNCM	Theater Network Capability Module
TNT	2,4,6-trinitrotuluene
TOC	Tactical Operations Centers
TRI	Toxic Release Inventory
TSC	Theater Sustainment Command

U

UAS	Unmanned Aerial Surveillance
UAV	Unmanned Aerial Vehicle
U.S.	United States
USACE	U.S. Army Corps of Engineers
USAEC	U.S. Army Environmental Command
USAF	U.S. Air Force
USAG Alaska	U.S. Army Garrison Alaska
USAG-HI	U.S. Army Garrison Hawai'i
USARAK	U.S. Army Alaska

USARHAW	U.S. Army Hawai'i
USARPAC	U.S. Army Pacific
USC	United States Code
USEPA	US Environmental Protection Agency
USGS	United States Geological Survey
UST	Underground Storage Tank
UXO	Unexploded Ordnance

V

VEC	Valued Environmental Component
VFR	Visual Flight Rules

W

WAAF	Wheeler Army Airfield

Y

YMCA	Young Men's Christian Association
YTA	Yukon Training Area

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Silver Spring, MD 20910

U.S. Fish and Wildlife Service
Division of Habitat and Resource Conservation
4401 North Fairfax Drive
Arlington, VA 22203

Office of the Congressional Legislative Liaison
1600 Army Pentagon Room 1E385
Washington, DC 20310

USDA Forest Service
1400 Independence Ave., SW
Washington, D.C. 20250-0003

U.S. Department of Interior
Office of Environmental Policy and Compliance
1849 C Street NW
Room 2342 - MIB
Washington, DC 20240

Delta Community Library
2288 Deborah Street
P.O. Box 229
Delta Junction, Alaska 99737

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1215 Cowles Street
Fairbanks, Alaska 99701-4313

Park Planning, Facilities and Lands
National Park Service
1849 C Street NW
Washington, DC 20240

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Hawaii Documents Center
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Honolulu, Hawaii 96813

Earthjustice
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Honolulu, HI 96813-4501

Hilo Public Library
300 Waianuenue Avenue
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Kahuku, Hawaii 96731

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75-138 Hualalai Road
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Mililani Public Library
95-450 Makaimoimo Street
Kahuku, Hawaii 96789

Mountain View Branch Library
150 South Bragaw Street
Anchorage, Alaska 99504

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1315 East-West Hwy, room 15603
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800 East Dimond Boulevard #233
Anchorage, Alaska 99515

Schofield Barracks, HI
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Stop 518, Aloha Center
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Schofield Barracks, Hawaii 96857

Center For Environmental Management of Military Lands
1019 Campus Delivery
Colorado State University Library
Ft. Collins, CO 80523-1019

Thelma Parker Memorial Public & School Library
67-1209 Mamalohoa Highway
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Waialua Public Library
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85-625 Farrington Highway
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APPENDIX A: ECONOMIC IMPACT FORECASTING SYSTEM (EIFS) ANALYSIS

Analysis of Socioeconomic Effects for Selected Stationing Alternatives in Hawai'i and Alaska

This analysis is focused on the assessment of socioeconomic effects for three sizes of "notional" combat units (1000 and 3000 troops) in Hawai'i (Schofield Barracks and Fort Shafter) and Alaska (Forts Richardson and Wainwright). The following paragraphs document the use of the Economic Impact Forecast System (EIFS) (Huppertz, Claire E.; Bloomquist, Kim M.; Barbehenn, Jacinda M.; EIFS 5.0 Economic Impact Forecast System, User's Reference Manual; USACERL Technical Report TA-94/03; July 1994), and the Rational Threshold Value (RTV) technique (Webster, R.D.; and Shannon, E.; The Rational Threshold Value (RTV) Technique for the Evaluation of Regional Economic Impacts; USACERL Technical Report TR N-49/ADA055561; 1978).

The EIFS and RTV analyses present a comparative ranking of three alternative "notional units" at the two Garrison locations (Hawai'i and Alaska). Some data was not yet available, such as the increase in local expenditures and increased construction in support of these stationing decisions. If preliminary decisions indicate a specific course of action, additional analyses can be performed using the Economic Analysis Forecasting System (EIFS) (or some other regional economic model), once the additional case-specific data has been developed (using a "tiered" process consistent with NEPA).

Complete documentation of the EIFS model, its development, and applicable theoretical underpinnings is available in numerous publications; and these are identified and synopsized in the section labeled EIFS and the Hierarchical Approach; which offers a brief presentation of the overall theoretical basis of the model and supporting tools. EIFS is a location quotient/ export base model, while the RTV technique was developed to measure the regional significance of projected economic change, using the yearly Bureau of Economic Analysis (BEA) time series data on employment, income, and population to evaluate historical trends in the ROI to measure the "resilience" of the local community. The combined use of EIFS and the RTV technique meets the two pronged approach for significance determinations, intensity and context (CEQ, 1992).

To affect these analyses, the inputs to the EIFS model must be estimated. The normal EIFS inputs include:

Number of affected (moving) civilians and their salaries
Number of affected (moving) military employees and their salaries
Percentage of affected military employees living on-post
Changes in local procurement, contracting, and purchases
Definition of the multi-county region of influence (ROI)

These data have often proven difficult to obtain (particularly if the decision making is at an early stage), as the actual numbers depend upon numerous unknown factors. To simplify, this programmatic analysis will focus only on military strength, as associated civilian strengths would not be large, and these stationing analyses focus entirely on tactical military units.

The following tables illustrate the calculation of average salary for Infantry Brigade Combat Team (IBCT) units, using mid-point (within grade) salary and housing allowance averages. It should be noted that although none of the stationing scenarios include an IBCT (or any BCT),

the ratio of Officer to Enlisted Soldiers is generally represented in an IBCT, and that ratio can be used to estimate the salaries of Soldiers within the "types" of units identified for consideration in this document:

IBCT Average Salary Calculation

Grade	No.	Mo. Salary	Total Salary	% On-post	Average BAH	Housing Expend	Salary + Housing
O6	1	6414	6414	0.5	2600	1300	7714
O5	9	6110	54990	0.5	2039	9175.5	64165.5
O4	32	5882	188224	0.5	1856	29696	217920
O3	102	5228	533256	0.5	1628	83028	616284
O2	131	3936	515616	0.5	1387	90848.5	606464.5
E9	12	4203	50436	0.5	1628	9768	60204
E8	46	3606	165876	0.5	1519	34937	200813
E7	158	3250	513500	0.5	1429	112891	626391
E6	341	2928	998448	0.5	1388	236654	1235102
E5	618	2582	1595676	0.5	1239	382851	1978527
E4	1114	2062	2297068	0.5	1151	641107	2938175
E3	854	1729	1476566	0.5	1148	490196	1966762
W4	2	4574	9148	0.5	1636	1636	10784
W3	4	4123	16492	0.5	1587	3174	19666
W2	24	3755	90120	0.5	1497	17964	108084
Totals	3448						10657056
				Average Monthly Salary + BAH			3090.793503
				Average Yearly Salary +BAH for IBCT			**37089**

BAH is the Basic Housing Allowance afforded to personnel living off post. The higher "accompanied" value was used.
Source: http://www.usmilitary.about.com/housingallowance

Monthly salary was obtained from attachments in an Email from Michael Ackerman (AEC), 3 January 07. Mid-point values (within each grade) were used.

As indicated in the tables, 50 percent of the personnel were estimated as on-post, and housing allowances are taken from those afforded to "accompanied" personnel. The mid-range salary estimates reflect approximately 14 years of military service. If additional information is obtained to refine such estimates, additional analyses can be done.

For all practical purposes, the value of $37,100 per year can be effectively used for those notional units. This same value will be used for the scenarios in this analysis. If these assumptions are proven wrong in the future, a supplemental NEPA analysis could be performed consistent with 32 CFR Part 651.

Once input data, describing the nature of the proposed "notional actions", has been determined, the EIFS multi-county (or multi-borough in Alaska) region of influence (ROI) must be defined. For the scenario in Hawai'i, Hawai'i and Honolulu counties were used; and for Alaska, Anchorage and Fairbanks North Star boroughs were used.

The estimated inputs were used to produce EIFS reports (model results) for changes in total business volume, employment, income, and population. These are best shown as percentages (of the activity in the total ROI), and can be compared to the RTVs for that variable.

Results and Summary Conclusions

The following results summarize the EIFS analyses for the scenarios, oriented according to three levels of Soldier strength (1000 and 3000 Soldier units):

The results present the anticipated total percentage change in business volume, income, employment, and population for the alternative "notional" units; as well as the respective RTVs for those local economic variables. The indicated appendices document the results of the EIFS analyses for 1000 Soldiers, while the values for 3000 are estimated using simple proportions (since, in this case, the comparative results will be linear and proportional).

Alaska (detailed in the section for the 1000 Soldier Unit in Alaska)

Soldier Strength	1000	3000	RTV
Business volume	0.18	0.54	24.42
Income	0.41	1.23	24.42
Employment	0.53	1.59	13.63
Population	0.74	2.22	5.86

Hawai'i (detailed in the section for the 1000 Soldier Unit in Hawai`i)

Soldier Strength	1000	3000	RTV
Business volume	0.08	0.24	5.43
Income	0.15	0.45	5.47
Employment	0.19	0.57	3.72
Population	0.24	0.72	2.34

The EIFS analyses indicate that the proposed actions (all scenarios will not produce major socioeconomic effects in the affected ROIs (communities). This significance determination is "conservative"--well within any errors produced through assumed EIFS input values. While these inputs could be refined, the results of the analysis (final determination) will certainly remain unchanged.

Unit moves can have potentially significant impacts on the local communities. Given the historical identification of schools as a major local concern, and the long timeframes required to develop school infrastructures, the following table can be used to facilitate further coordination and mitigation at the local level. The values in this table were derived from Army statistics, by grade, on the marital status of Army Soldiers, the number of children that Soldiers have, and other Army wide statistics (Email from Jeff Springer (AEC), 23 April 2007). The grade distribution for an Infantry Brigade was used to develop a distribution of children for the affected Soldiers (approximately 3000 Soldiers). Assuming the same distribution for smaller or similar-sized units (1000 and 3000 Soldiers), the original distribution was proportionately altered to produce the distributions shown.

	1000 Soldiers	3000 Soldiers
Total Children	401	1203
1 yr old	72	216
2 yr old	33	99
3 yr old	32	96
4 yr old	30	90
5 yr old	28	84
6 yr old	26	78
7 yr old	24	72
8 yr old	22	66
9 yr old	19	57
10 yr old	17	51
11 yr old	16	48
12 yr old	15	145
13 yr old	13	39
14 yr old	12	36
15 yr old	10	30
16 yr old	9	27
17 yr old	8	24
18 yr old	6	18
19+ yr old	9	27

Depending on the actual decisions associated with this proposed action, such as the actual location of the units, and once such decisions are made, these estimates can be used for coordination with local communities and school representatives. While these tables represent the general, nation-wide distribution of school-age dependents associated with a given military grade distribution within the units (Email from Jeff Springer (AEC), 23 April 2007), and will not provide perfect estimates, they can be used for planning purposes in coordination with potentially affected school systems. .

Housing impacts must similarly await more detailed information on unit location. Two recent housing studies are available for the Alaskan scenarios (*2005 Housing Market Analysis—Fort Wainwright, Alaska*, HQDA, ACSIM, prepared by Robert Niehaus, Inc., and *Housing Requirements and Marketing Analysis for Fort Richardson and Elmendorf AFB, Alaska, 2007-2012*, USAF, Dec, 2007). Before these can be incorporated, comparisons of the covered unit moves (those use to project availability and shortfalls) must be compared to these anticipated scenarios. After these relationships have been established, and the new net increased strengths at the two Alaskan sites (Fort Wainwright and Fort Richardson) are determined, housing impacts can be estimated.

The Economic Impact Forecast System (EIFS) and the Hierarchical Approach.

The Model:

The Economic Impact Forecast System (EIFS) (Huppertz, Claire E.; Bloomquist, Kim M.; Barbehenn, Jacinda M.; EIFS 5.0 Economic Impact Forecast System, User's Reference Manual; USACERL Technical Report TA-94/03; July 1994.) has been a mainstay of Army NEPA practice since its initial development and implementation in the mid-70s. EIFS provides a mechanism to estimate impacts, and ascertain the "significance" of projected impacts, using the Rational Threshold Value (RTV) technique. This analysis and determination can be readily documented, and if significance thresholds are not exceeded, the analysis can be completed. EIFS was designed to address NEPA applications, providing a "two-tier" approach to the process; (1) a simple and quick aggregate model (sufficient to ascertain the overall magnitude of impacts) and (2) a more detailed, sophisticated input-output (I-O) model to further analyze impacts that appear significant, in NEPA terms, and worthy of additional expenditures and analyses. This "two-tier" approach is consistent with the two common levels of NEPA analysis, the Environmental Assessment (EA) and the Environmental Impact Statement (EIS). EIFS has facilitated efficient and effective completion of such analyses for approximately 3 decades.

Complete documentation of the model, its development, and applicable theoretical underpinnings is available in numerous publications:

Huppertz, Claire E.; Bloomquist, Kim M.; Barbehenn, Jacinda M.; EIFS 5.0 Economic Impact Forecast System, User's Reference Manual; USACERL Technical Report TA-94/03; July 1994.

Isard, W., Methods of Regional Analysis, MIT Press, 1960.

Isard, W. and Langford,T., Regional Input-Output Study: Recollections, Reflections, and Diverse Notes on the Philadelphia Experience, MIT Press, 1971.

Isserman, A., "The Location Quotient Approach to Estimating Regional Economic Impacts", AIP Journal, January, 1977, pp. 33-41.

Isserman, A., "Estimating Export Activity in a Regional Economy: A Theoretical and Empirical Analysis of Alternative Methods", International Regional science Review, Vol. 5, 1980, pp. 155-184.

Leigh, R., "The Use of Location Quotients in Urban Economic Base Studies", Land Economics, Vol 46, May, 1970, pp 202-205.

Mathur, V.K. and Rosen, H.S., "Regional Employment Multiplier: A new Approach", Land Economics, Vol 50, 1974, pp 93-96.

Mayer, W. and Pleeter, S., "A Theoretical Justification for the Use of Location Quotients", Regional Science and Urban Economics, Vol 5, 1975, pp 343-355.

Robinson, D.P., Hamilton, J.W., Webster, R.D., and Olson, M.J., Economic Impact Forecast System (EIFS) II: User's Manual, Updated Edition, Technical Report N-69/ADA144950, U.S. Army Construction Engineering Research Lab (USACERL), 1984.

Robinson, D.P. and Webster, R.D., Enhancements to the Economic Impact Forecast System (EIFS), Technical Report N-175/ADA142652, USACERL, April, 1984.

Rogers, Claudia and Webster, Ron, "Qualitative Answers to Quantitative Questions", Impact Assessment, IAIA, Vol.12, No.1, 1999.

Thompson, W., A Preface to Urban Economics, Johns Hopkins Press, 1965.

Tiebout, C., The Community Economic Base, New York Committee for Economic Development, 1962.

USACERL, " Methods for Evaluating the Significance of Impacts: The RTV and FSI Profiles"; USACERL EIFS Tutorial; July 1987.

U.S. Army, Department of the Army, DA Pamphlet 200-2, "Economic Impact Forecast System-User Instructions", 1980.

U.S. Army, "Base Realignment and Closure "How-To" Manual for Compliance with the National Environmental Policy Act", revised and published as official Department of Army Guidance, 1995.

U.S. Army, Army Regulation 5-20, "Commercial Activities"

U.S. Army, Department of the Army, DA Pamphlet 200-2, "Economic Impact Forecast System-User Instructions", 1980

Webster, R.D.and Shannon, E.; The Rational Threshold Value (RTV) Technique for the Evaluation of Regional Economic Impacts; USACERL Technical Report TR N-49/ADA055561; 1978.

Webster, R.D., Hamilton, J.W., and Robinson, D.P., "The Two-Tier Concept for Economic Analysis: Introduction and User Instructions", USACERL Technical Report N-127/ADA118855.

These efforts reflect development of a tool for specific NEPA application, following the successful NEPA litigation referenced in the Introduction. As EIFS has been used for Army NEPA analyses, the results of EIFS analyses have been reviewed by stakeholder (affected community) representatives, and, as a result of BRAC application, twice reviewed by the Government Accounting Office (GAO). During such reviews, the analyses and resultant decisions were upheld, and EIFS was lauded as a uniform (non-arbitrary and non-capricious) approach to such requirements. Drawing from a national, uniform database, and using a common, systematic approach, EIFS allowing the improved comparison of project alternatives (the heart of NEPA analysis), and provides comparable analyses across the U.S.

NEPA Process Improvement:

Since NEPA was implemented, it has been commonly criticized as expensive and time-consuming. While these criticisms have been often justified, the President's Council on Environmental Quality (CEQ) has actively promoted NEPA process improvements; first in the publication of the CEQ NEPA regulations (CEQ, Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act, Reprint, 40 CFR Parts 1500-1508,

Executive Office of the President, Council on Environmental Quality, 1992.), and, more recently, through a NEPA anniversary introspective (CEQ, The National Environmental Policy Act: A Study of its Effectiveness After Twenty-five Years, Executive Office of the President, Council on Environmental Quality, January, 1997.) and the formal CEQ NEPA Task Force (CEQ, The NEPA Task Force Report to the Council on Environmental Quality: Modernizing NEPA Implementation; September, 2003.). All three CEQ initiatives call for more "focus" on NEPA documents, eliminating the analyses of minor or unimportant issues, and focusing, instead, on those issues that should be part of an informed agency decision. The use of EIFS, and the "two-tier" approach is consistent with these CEQ recommendations.

Determining Significance:

While EIFS was being developed, communities began to question the rationale for determining the significance of socioeconomic impacts. USACERL was directed to develop a defensible procedure for such a determination, resulting in the Rational Threshold Value (RTV) technique (Webster, R.D.; and Shannon, E.; The Rational Threshold Value (RTV) Technique for the Evaluation of Regional Economic Impacts; USACERL Technical Report TR N-49/ADA055561; 1978). This technique relies on the yearly Bureau of Economic Analysis (BEA) time series data on employment, income, and population to evaluate historical trends with in a subject community (region); and uses those trends to measure the "resilience" of the local community to change, or its ability to accommodate such change. This approach has worked well when communicating with affected communities. The combined use of RTV with the EIFS model meet the two pronged approach for significance determinations, intensity and context (CEQ, 1992)

The initial EIFS implementation (USACERL, 1975) included the analysis of numerous variables: business volume, personal income, employment, government revenues and expenditures, income and employment distribution, local housing impacts, regional economic stability, school system impacts, government bond obligations, population, welfare and dependency, social control, and aesthetic considerations. The selection of these variables was based on the predictive capability of forecasting techniques and data availability. Over some 30 years of practice, pragmatism and sufficiency led to the use of sales volume, employment, personal income, and population as indicators of impacts (as a "first tier" approximation of effects). These effects can also be readily evaluated (and significance determined) using the BEA time series data. Population, important in its own right, is also a valuable indicator of other factors (e.g., impact on local government revenues and expenditures, housing, local school systems, and the change in welfare and dependency), as impacts on such variables are driven, to a large extent, by a population change.

Using BEA time series data is used to analyze the four variables for the ROI, the RTV model produces thresholds for assessing the magnitude of impacts. The RTV technique is simple, starting with a straight line between the first year of record and the last year of record for that variable, establishing the average rate of change over time. Then, each yearly deviation from that growth rate is calculated and converted to a percentage. The largest historical changes (both increase and decrease) are used to define significance thresholds. The following figure illustrates the RTV concept:

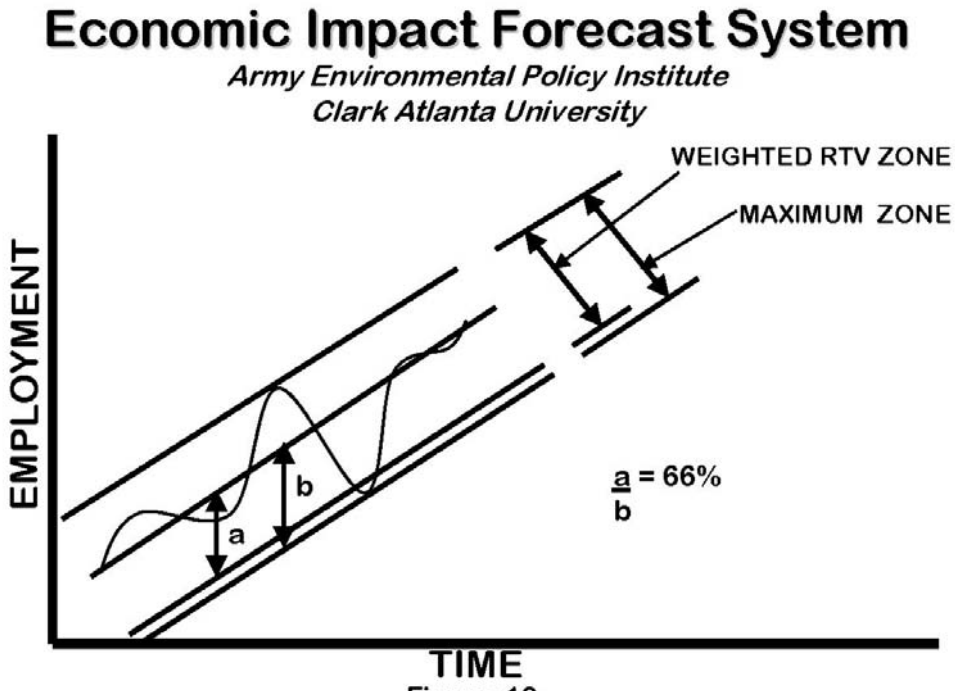


Figure 10
Visual Depiction of the RTV Technique

A "factor of safety" is applied to negative thresholds, as shown in the figure, to produce a conservative analysis; while 100% of the maximum positive thresholds is used; as indicated below:

	Increase	Decrease
Total sales volume	100 percent	75 percent
Total employment	100 percent	66 percent
Personal Income	100 percent	66 percent
Total population	100 percent	50 percent

The maximum positive historical fluctuation is used because of the positive connotations generally associated with economic growth. While economic growth can produce unacceptable impacts and the "smart growth" concept is increasingly favored, the effects of reductions and closures are usually much more controversial. These adjustments, while arbitrary, are sensible. The negative sales volume threshold is adjusted by 75%, as sales volume impacts can be absorbed by such factors as the manipulation of inventory, new equipment, etc; and the impacts on individual workers or proprietors is indirect, if at all. Changes in employment and income, however, are impacts that immediately affect individuals; thus they are adjusted by 66%.

Population is extremely important, as an indicator of other social issues, and is thus adjusted by 50%.

To adjust dollar amounts for inflation (to create "constant dollars" prior to calculations), the Consumer Price Index (CPI) is used for appropriate years, and all dollar values are adjusted to 1987 equivalents.

The main strength of the RTV approach stems from its reliance on data for each individual ROI. This approach addressed previous criticism of more simple approaches that applied arbitrary criteria to all communities. This approach establishes unique criteria, representative of local community patterns, and, while a community may not completely agree, a common frame of reference is established. Critics of the RTV technique have questioned the arbitrary selection of the maximum allowable deviations to indicate impact significance, but the process has proven workable over the years.

EIFS Analysis for 1000 Soldier Unit in Alaska

EIFS REPORT

PROJECT NAME

1000-troops in Alaska

STUDY AREA

02020	Anchorage, AK
02090	Fairbanks North Star, AK

FORECAST INPUT

Change In Local Expenditures	$0
Change In Civilian Employment	0
Average Income of Affected Civilian	$0
Percent Expected to Relocate	0
Change In Military Employment	1000
Average Income of Affected Military	$37,100
Percent of Military Living On-post	50

FORECAST OUTPUT

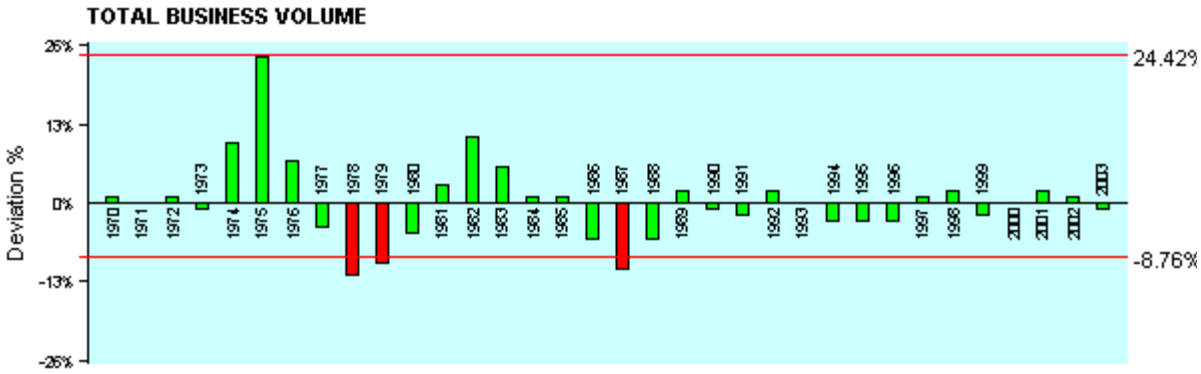
Multiplier	2.24	
Sales Volume - Direct	$11,825,630	
Sales Volume - Induced	$14,663,780	
Sales Volume - Total	$26,489,400	0.18%
Income - Direct	$37,100,000	
Income - Induced	$3,032,571	
Income - Total	$40,132,570	0.41%
Employment - Direct	1075	
Employment - Induced	93	
Employment - Total	1168	0.53%
Local Population	2490	
Local Off-base Population	1245	0.74%

RTV SUMMARY

	Sales Volume	Income	Employment	Population
Positive RTV	24.42 %	24.42 %	13.63 %	5.86 %
Negative RTV	-8.76 %	-7.82 %	-3.72 %	-1.9 %

RTV DETAILED

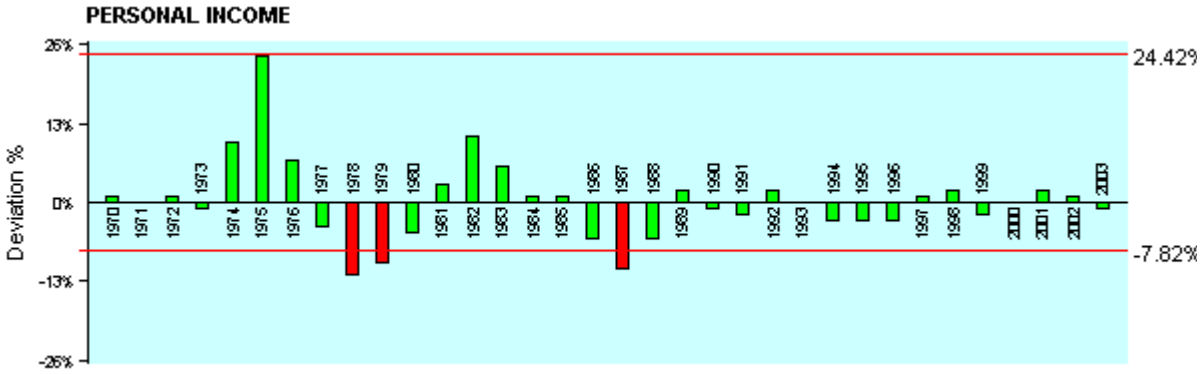
SALES VOLUME



Year	Value	Adj_Value	Change	Deviation	%Deviation
1969	1823240	9590242	0	-495832	0
1970	2038476	10151610	561368	65536	0.65
1971	2221672	10597375	445765	-50067	-0.47
1972	2436646	11257305	659929	164097	1.46
1973	2672372	11624818	367514	-128318	-1.1
1974	3460862	13531970	1907152	1411320	10.43
1975	5170108	18560688	5028717	4532885	24.42
1976	6046512	20558141	1997453	1501621	7.3
1977	6356086	20275914	-282226	-778058	-3.84
1978	6283440	18598982	-1676932	-2172764	-11.68
1979	6518854	17340152	-1258831	-1754663	-10.12
1980	7285688	17048510	-291642	-787474	-4.62
1981	8483594	18070055	1021545	525713	2.91
1982	10405130	20810260	2740205	2244373	10.78
1983	11711494	22720298	1910038	1414206	6.22
1984	12642836	23515675	795377	299545	1.27
1985	13500436	24300785	785110	289278	1.19
1986	13340902	23479988	-820797	-1316629	-5.61
1987	12747822	21671297	-1808690	-2304522	-10.63
1988	12843088	20934233	-737064	-1232896	-5.89
1989	14050686	21919070	984837	489005	2.23
1990	14840722	22112676	193606	-302226	-1.37
1991	15560038	22095254	-17422	-513254	-2.32
1992	16642244	22966297	871043	375211	1.63
1993	17424904	23349371	383075	-112757	-0.48
1994	17869610	23230493	-118878	-614710	-2.65
1995	18068306	22946749	-283744	-779576	-3.4
1996	18425446	22663299	-283450	-779282	-3.44
1997	19418932	23302718	639420	143588	0.62
1998	20367094	24236842	934123	438291	1.81

1999	20972752	24328392	91550	-404282	-1.66
2000	22162306	24821783	493390	-2442	-0.01
2001	23810312	25953240	1131457	635625	2.45
2002	24881468	26623171	669931	174099	0.65
2003	25661306	26944371	321201	-174631	-0.65

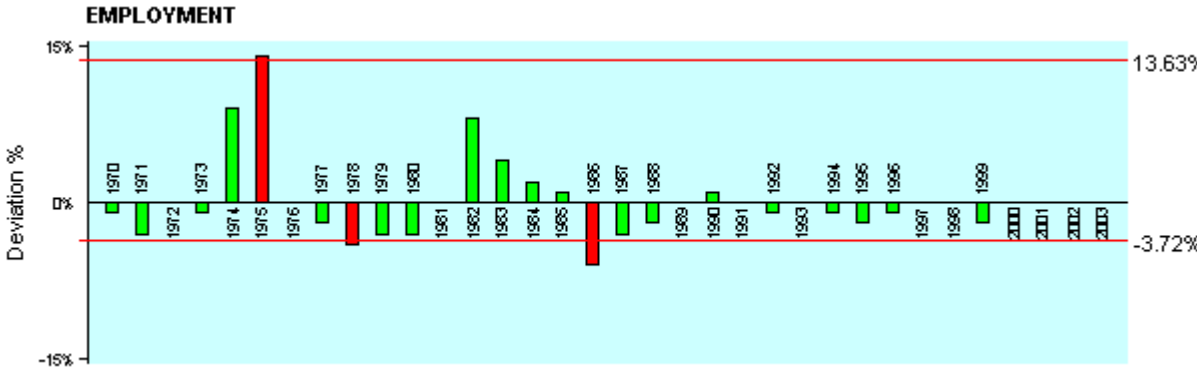
INCOME



Year	Value	Adj_Value	Change	Deviation	%Deviation
1969	911662	4795342	0	-247932	0
1970	1019438	5076801	281459	33527	0.66
1971	1111034	5299632	222831	-25101	-0.47
1972	1218650	5630163	330531	82599	1.47
1973	1336506	5813801	183638	-64294	-1.11
1974	1730980	6768132	954331	706399	10.44
1975	2585942	9283532	2515400	2267468	24.42
1976	3024174	10282192	998660	750728	7.3
1977	3178725	10140133	-142059	-389991	-3.85
1978	3142585	9302052	-838081	-1086013	-11.67
1979	3259829	8671145	-630906	-878838	-10.14
1980	3643081	8524810	-146336	-394268	-4.62
1981	4241805	9035045	510235	262303	2.9
1982	5202555	10405110	1370065	1122133	10.78
1983	5855515	11359699	954589	706657	6.22
1984	6320513	11756154	396455	148523	1.26
1985	6748298	12146936	390782	142850	1.18
1986	6669462	11738253	-408683	-656615	-5.59
1987	6374405	10836488	-901765	-1149697	-10.61
1988	6422354	10468437	-368051	-615983	-5.88
1989	7024927	10958886	490449	242517	2.21
1990	7420887	11057122	98236	-149696	-1.35
1991	7781361	11049533	-7589	-255521	-2.31

1992	8323478	11486400	436867	188935	1.64
1993	8713588	11676208	189808	-58124	-0.5
1994	8934306	11614598	-61610	-309542	-2.67
1995	9035133	11474619	-139979	-387911	-3.38
1996	9211892	11330627	-143992	-391924	-3.46
1997	9709039	11650847	320220	72288	0.62
1998	10183784	12118703	467856	219924	1.81
1999	10486246	12164045	45342	-202590	-1.67
2000	11081270	12411022	246977	-955	-0.01
2001	11906803	12978415	567393	319461	2.46
2002	12442177	13313129	334714	86782	0.65
2003	12831385	13472954	159825	-88107	-0.65

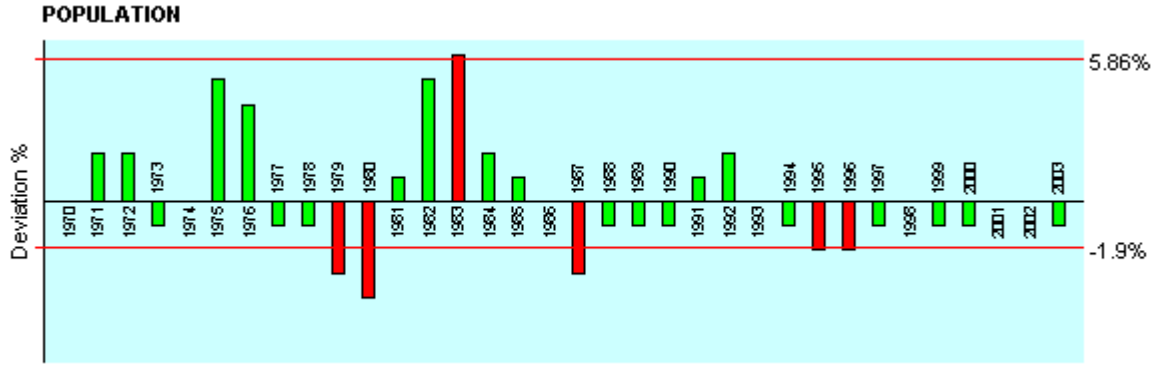
EMPLOYMENT



Year	Value	Change	Deviation	%Deviation
1969	88228	0	-4454	0
1970	91593	3365	-1089	-1.19
1971	93611	2018	-2436	-2.6
1972	98289	4678	224	0.23
1973	102048	3759	-695	-0.68
1974	117557	15509	11055	9.4
1975	141260	23703	19249	13.63
1976	145610	4350	-104	-0.07
1977	146768	1158	-3296	-2.25
1978	145362	-1406	-5860	-4.03
1979	145944	582	-3872	-2.65
1980	146210	266	-4188	-2.86
1981	151288	5078	624	0.41
1982	169410	18122	13668	8.07
1983	181462	12052	7598	4.19
1984	190523	9061	4607	2.42

1985	196412	5889	1435	0.73
1986	190299	-6113	-10567	-5.55
1987	188870	-1429	-5883	-3.11
1988	188679	-191	-4645	-2.46
1989	192711	4032	-422	-0.22
1990	199536	6825	2371	1.19
1991	204882	5346	892	0.44
1992	206771	1889	-2565	-1.24
1993	211104	4333	-121	-0.06
1994	212767	1663	-2791	-1.31
1995	213239	472	-3982	-1.87
1996	214915	1676	-2778	-1.29
1997	219101	4186	-268	-0.12
1998	224485	5384	930	0.41
1999	225083	598	-3856	-1.71
2000	230696	5613	1159	0.5
2001	234846	4150	-304	-0.13
2002	239762	4916	462	0.19
2003	244135	4373	-81	-0.03

POPULATION



Year	Value	Change	Deviation	%Deviation
1969	168003	0	-5374	0
1970	173509	5506	132	0.08
1971	181879	8370	2996	1.65
1972	190893	9014	3640	1.91
1973	194968	4075	-1299	-0.67
1974	200866	5898	524	0.26
1975	216800	15934	10560	4.87
1976	230479	13679	8305	3.6
1977	232436	1957	-3417	-1.47

1978	234967	2531	-2843	-1.21
1979	233735	-1232	-6606	-2.83
1980	230328	-3407	-8781	-3.81
1981	237545	7217	1843	0.78
1982	255121	17576	12202	4.78
1983	276723	21602	16228	5.86
1984	288554	11831	6457	2.24
1985	298281	9727	4353	1.46
1986	303485	5204	-170	-0.06
1987	298698	-4787	-10161	-3.4
1988	299735	1037	-4337	-1.45
1989	302495	2760	-2614	-0.86
1990	305681	3186	-2188	-0.72
1991	315616	9935	4561	1.45
1992	328129	12513	7139	2.18
1993	333142	5013	-361	-0.11
1994	335790	2648	-2726	-0.81
1995	333922	-1868	-7242	-2.17
1996	333590	-332	-5706	-1.71
1997	335183	1593	-3781	-1.13
1998	340531	5348	-26	-0.01
1999	342738	2207	-3167	-0.92
2000	343228	490	-4884	-1.42
2001	347515	4287	-1087	-0.31
2002	352537	5022	-352	-0.1
2003	356088	3551	-1823	-0.51

EIFS Analysis for 1000 Soldier Unit in Hawai'i

EIFS REPORT

PROJECT NAME

1000 troops in Hawai'i

STUDY AREA

15001 Hawai'i, HI
15003 Honolulu, HI

FORECAST INPUT

Change In Local Expenditures	$0
Change In Civilian Employment	0
Average Income of Affected Civilian	$0
Percent Expected to Relocate	0
Change In Military Employment	1000
Average Income of Affected Military	$37,100
Percent of Military Living On-post	50

FORECAST OUTPUT

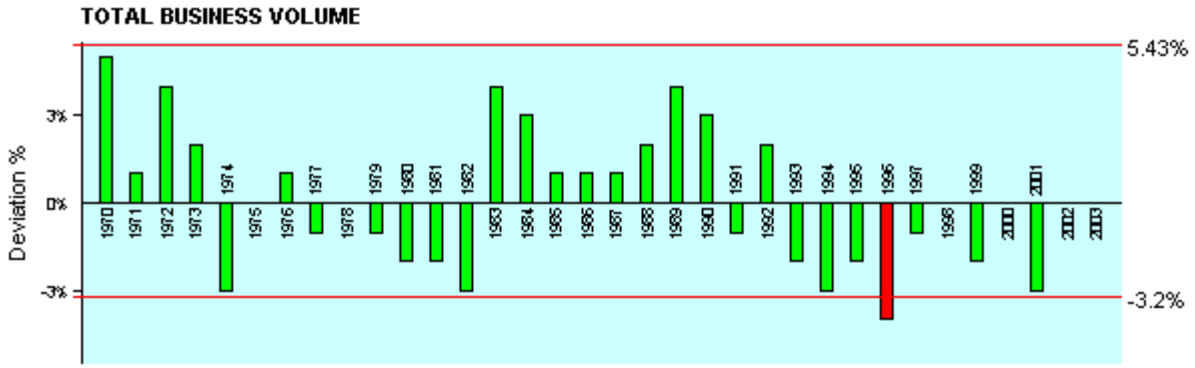
Multiplier	2.41	
Sales Volume - Direct	$11,825,630	
Sales Volume - Induced	$16,674,130	
Sales Volume - Total	$28,499,760	0.08%
Income - Direct	$37,100,000	
Income - Induced	$3,274,586	
Income - Total	$40,374,580	0.15%
Employment - Direct	1081	
Employment - Induced	115	
Employment - Total	1196	0.19%
Local Population	2490	
Local Off-base Population	1245	0.24%

RTV SUMMARY

	Sales Volume	Income	Employment	Population
Positive RTV	5.43 %	5.47 %	3.72 %	2.34 %
Negative RTV	-3.2 %	-2.84 %	-1.76 %	-0.87 %

RTV DETAILED

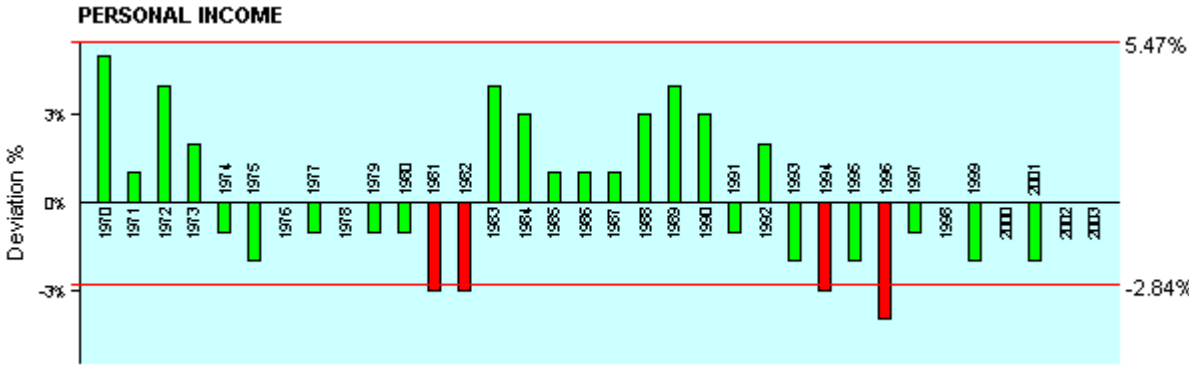
SALES VOLUME



Year	Value	Adj_Value	Change	Deviation	%Deviation
1969	6052658	31836981	0	-1046221	0
1970	6982442	34772561	2935580	1889359	5.43
1971	7598966	36247068	1474507	428286	1.18
1972	8392926	38775318	2528250	1482029	3.82
1973	9334100	40603335	1828017	781796	1.93
1974	10361978	40515334	-88001	-1134222	-2.8
1975	11552996	41475256	959922	-86299	-0.21
1976	12596180	42827012	1351756	305535	0.71
1977	13650468	43544993	717981	-328240	-0.75
1978	15128872	44781461	1236468	190247	0.42
1979	17123680	45548989	767528	-278693	-0.61
1980	19454140	45522688	-26301	-1072522	-2.36
1981	21441246	45669854	147166	-899055	-1.97
1982	22605440	45210880	-458974	-1505195	-3.33
1983	24817000	48144980	2934100	1887879	3.92
1984	27294720	50768179	2623199	1576978	3.11
1985	28971258	52148264	1380085	333864	0.64
1986	30454008	53599054	1450790	404569	0.75
1987	32513304	55272617	1673563	627342	1.13
1988	35427774	57747272	2474655	1428434	2.47
1989	39324440	61346126	3598855	2552634	4.16
1990	43191788	64355764	3009638	1963417	3.05
1991	45545038	64673954	318190	-728031	-1.13
1992	48839632	67398692	2724738	1678517	2.49
1993	50246558	67330388	-68304	-1114525	-1.66
1994	51208576	66571149	-759239	-1805460	-2.71
1995	52023664	66070053	-501096	-1547317	-2.34
1996	52332932	64369506	-1700547	-2746768	-4.27
1997	53870760	64644912	275406	-770815	-1.19
1998	55016856	65470059	825147	-221074	-0.34

1999	56287652	65293676	-176382	-1222603	-1.87
2000	59365150	66488968	1195292	149071	0.22
2001	60432984	65871953	-617015	-1663236	-2.52
2002	62703456	67092698	1220745	174524	0.26
2003	65194958	68454706	1362008	315787	0.46

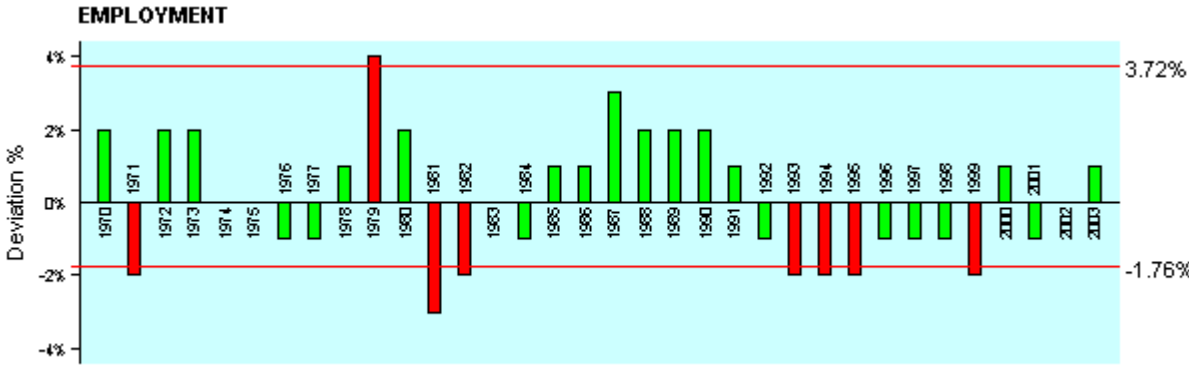
INCOME



Year	Value	Adj_Value	Change	Deviation	%Deviation
1969	3093999	16274435	0	-516971	0
1970	3566967	17763496	1489061	972090	5.47
1971	3872618	18472388	708892	191921	1.04
1972	4269233	19723856	1251469	734498	3.72
1973	4744091	20636796	912939	395968	1.92
1974	5367473	20986819	350024	-166947	-0.8
1975	5895036	21163179	176360	-340611	-1.61
1976	6393338	21737349	574170	57199	0.26
1977	6928368	22101494	364145	-152826	-0.69
1978	7664845	22687941	586447	69476	0.31
1979	8676165	23078599	390658	-126313	-0.55
1980	9947942	23278184	199585	-317386	-1.36
1981	10840990	23091309	-186876	-703847	-3.05
1982	11441915	22883830	-207479	-724450	-3.17
1983	12601286	24446495	1562665	1045694	4.28
1984	13781380	25633367	1186872	669901	2.61
1985	14610766	26299379	666012	149041	0.57
1986	15377180	27063837	764458	247487	0.91
1987	16393703	27869295	805458	288487	1.04
1988	17877960	29141075	1271780	754809	2.59
1989	19819215	30917975	1776901	1259930	4.08
1990	21757187	32418209	1500233	983262	3.03
1991	22905669	32526050	107841	-409130	-1.26

1992	24518721	33835835	1309785	792814	2.34
1993	25244924	33828198	-7637	-524608	-1.55
1994	25718539	33434101	-394097	-911068	-2.72
1995	26117490	33169212	-264888	-781859	-2.36
1996	26272491	32315164	-854048	-1371019	-4.24
1997	27057398	32468878	153714	-363257	-1.12
1998	27636023	32886867	417990	-98981	-0.3
1999	28289826	32816198	-70669	-587640	-1.79
2000	29800111	33376124	559926	42955	0.13
2001	30347228	33078479	-297646	-814617	-2.46
2002	31482557	33686336	607857	90886	0.27
2003	32731835	34368427	682091	165120	0.48

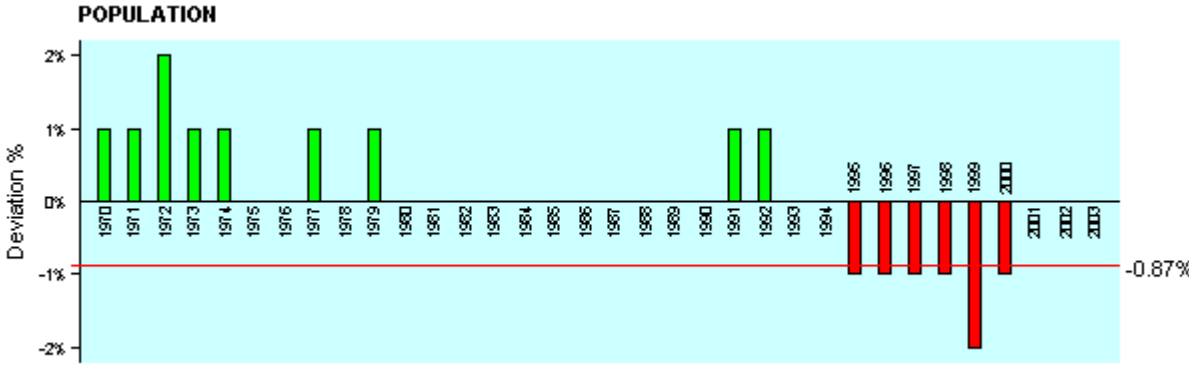
EMPLOYMENT



Year	Value	Change	Deviation	%Deviation
1969	380761	0	-8013	0
1970	397730	16969	8956	2.25
1971	399720	1990	-6023	-1.51
1972	414793	15073	7060	1.7
1973	433296	18503	10490	2.42
1974	443251	9955	1942	0.44
1975	453274	10023	2010	0.44
1976	455652	2378	-5635	-1.24
1977	457509	1857	-6156	-1.35
1978	471052	13543	5530	1.17
1979	497574	26522	18509	3.72
1980	514017	16443	8430	1.64
1981	508703	-5314	-13327	-2.62
1982	505694	-3009	-11022	-2.18
1983	512725	7031	-982	-0.19
1984	517608	4883	-3130	-0.6

1985	529417	11809	3796	0.72
1986	540318	10901	2888	0.53
1987	566087	25769	17756	3.14
1988	585777	19690	11677	1.99
1989	607282	21505	13492	2.22
1990	630372	23090	15077	2.39
1991	645973	15601	7588	1.17
1992	645578	-395	-8408	-1.3
1993	642975	-2603	-10616	-1.65
1994	636715	-6260	-14273	-2.24
1995	631780	-4935	-12948	-2.05
1996	630497	-1283	-9296	-1.47
1997	629728	-769	-8782	-1.39
1998	628961	-767	-8780	-1.4
1999	625634	-3327	-11340	-1.81
2000	642289	16655	8642	1.35
2001	643139	850	-7163	-1.11
2002	648542	5403	-2610	-0.4
2003	661217	12675	4662	0.71

POPULATION



Year	Value	Change	Deviation	%Deviation
1969	666542	0	-11016	0
1970	687305	20763	9747	1.42
1971	706551	19246	8230	1.16
1972	734752	28201	17185	2.34
1973	756628	21876	10860	1.44
1974	771924	15296	4280	0.55
1975	785078	13154	2138	0.27
1976	797392	12314	1298	0.16
1977	817572	20180	9164	1.12

1978	826166	8594	-2422	-0.29
1979	842497	16331	5315	0.63
1980	856717	14220	3204	0.37
1981	863695	6978	-4038	-0.47
1982	874873	11178	162	0.02
1983	889861	14988	3972	0.45
1984	901319	11458	442	0.05
1985	910194	8875	-2141	-0.24
1986	918806	8612	-2404	-0.26
1987	930182	11376	360	0.04
1988	937511	7329	-3687	-0.39
1989	947922	10411	-605	-0.06
1990	960106	12184	1168	0.12
1991	977776	17670	6654	0.68
1992	995589	17813	6797	0.68
1993	1005433	9844	-1172	-0.12
1994	1016304	10871	-145	-0.01
1995	1021891	5587	-5429	-0.53
1996	1025378	3487	-7529	-0.73
1997	1031156	5778	-5238	-0.51
1998	1032742	1586	-9430	-0.91
1999	1025876	-6866	-17882	-1.74
2000	1024643	-1233	-12249	-1.2
2001	1031203	6560	-4456	-0.43
2002	1041088	9885	-1131	-0.11
2003	1052093	11005	-11	0

APPENDIX B: THREATENED AND ENDANGERED SPECIES RELEVANT TO THE AFFECTED ENVIRONMENT

Installation	State	Scientific Name (Genus species)	Common Name	Onsite/ Contiguous	Federal Listing Status	Category	Critical Habitat Onsite
U.S. Army Garrison, Hawai`i							
Dillingham Military Reservation	HI	*Cyperus trachysanthos*	No common name	Onsite	E	Plant	N
		Hibiscus brackenridgei spp. mokuleianus	Mao hau hele	Onsite	E	Plant	N
		Schieda kealiae	Maolioli	Onsite	E	Plant	N
Kahuku Training Area	HI	*Cyanea koolauensis*	Haha	Onsite	E	Plant	N
		Eugenia koolauensis	Nioi	Onsite	E	Plant	N
		Gardenia mannii	Nanu	Onsite	E	Plant	N
		Tetraplasandra gymnocarpa	Ohe`ohe	Onsite	E	Plant	N
		Achatinella curta	Pupu kuahiwi	Onsite	E	Snail	N
		Achatinella sowerbyana	Pupu kuahiwi	Onsite	E	Snail	N
Kawailoa Training Area	HI	*Achatinella apexfulva*	Pupu kuahiwi	Onsite	E	Snail	N
		Achatinella bulimoides	Pupu kuahiwi	Onsite	E	Snail	N
		Achatinella byronii	Pupu kuahiwi	Onsite	E	Snail	N
		Achatinella curta	Pupu kuahiwi	Onsite	E	Snail	N
		Achatinella lila	Pupu kuahiwi	Onsite	E	Snail	N
		Achatinella livida	Pupu kuahiwi	Onsite	E	Snail	N
		Achatinella pulcherima	Pupu kuahiwi	Onsite	E	Snail	N
		Achatinella sowerbyana	Pupu kuahiwi	Onsite	E	Snail	N
		Chamaesyce rockii	`Akoko	Onsite	E	Plant	N
		Cyanea acuminata	Haha	Onsite	E	Plant	N
		Cyanea crispa	Haha	Onsite	E	Plant	N
		Cyanea humboldtiana	Haha	Onsite	E	Plant	N
		Cyanea koolauensis	Haha	Onsite	E	Plant	N
		Cyanea st-johnii	Haha	Onsite	E	Plant	N
		Cyrtandra dentata	Ha`iwale	Onsite	E	Plant	N
		Cyrtandra viridiflora	Ha`iwale	Onsite	E	Plant	N
		Gardenia mannii	Nanu	Onsite	E	Plant	N
		Hesperomannia arborescens	No common name	Onsite	E	Plant	N
		Lobelia oahuensis	Haha	Onsite	E	Plant	N
		Lycopodium nutans	No common name	Onsite	E	Plant	N
		Melicope lydgatei	Alani	Onsite	E	Plant	N
		Myrsine juddii	Kolea	Onsite	E	Plant	N
		Phlegmariarus nutans	No common name	Onsite	E	Plant	N
		Phyllostegia hirsuta	No common name	Onsite	E	Plant	N

Installation	State	Scientific Name (Genus species)	Common Name	Onsite/ Contiguous	Federal Listing Status	Category	Critical Habitat Onsite
		Phyllostegia parviflora	No common name	Onsite	E	Plant	N
		Pteris lidgatei	No common name	Onsite	E	Plant	N
		Sanicula purpurea	No common name	Onsite	E	Plant	N
		Tetraplasandra gymnocarpa	Ohe`ohe	Onsite	E	Plant	N
		Viola oahuensis	No common name	Onsite	E	Plant	N
Pohakuloa Training Area	HI	*Asplenium fragile var.insulare*	Fragile fern	Onsite	E	Plant	N
		Haplostachys haplostachya	Honohono	Onsite	E	Plant	N
		Hedyotis coriacea	Kio`ele	Onsite	E	Plant	N
		Isodendrion hosakae	Aupaka	Onsite	E	Plant	N
		Lipochaeta venosa	Nehe	Onsite	E	Plant	N
		Lasiurus cinereus semotus	Opeapea, Hawaiian hoary bat	Onsite	E	Mammal	N
		Loxioides bailleui	Palila	Contiguous	E	Bird	Y
		Neraudia ovata	Maaloa	Onsite	E	Plant	N
		Portulaca sclerocarpa	Ihi	Onsite	E	Plant	N
		Silene hawaiiensis	Hawaiian catchfly	Onsite	T	Plant	N
		Silene lanceolata	Lanceleaf catchfly	Onsite	E	Plant	N
		Solanum incompletum	Popolo ku mai	Onsite	E	Plant	N
		Spermolepis hawaiiensis	Hawaiian parsley	Onsite	E	Plant	N
		Stenogyne angustifolia var. angustifolia	Creeping mint	Onsite	E	Plant	N
		Tetramolopium arenarium var. arenarium	No common name	Onsite	E	Plant	N
		Vigna o-wahuensis	Cowpea	Onsite	E	Plant	N
		Zanthoxylum hawaiiense	A`e	Onsite	E	Plant	N
		Branta sandvicensis	Nene	Onsite	E	Bird	N
		Buteo solitarius	Io	Onsite	E	Bird	N
		Pterodroma phaeopygia sandwichensis	Uau	Onsite	E	Bird	N
Schofield Barracks	HI	*Abutilon sandwicense*	No common name	Onsite	E	Plant	N
		Achatinella byronii	Pupu kuahiwi	Onsite	E	Snail	N
		Achatinella mustelina	Pupu kuahiwi	Onsite	E	Snail	N
		Achatinella sowerbyana	Pupu kuahiwi	Onsite	E	Snail	N
		Alectryon macrococcus var. macrococcus	Mahoe	Onsite	E	Plant	N

Installation	State	Scientific Name (Genus species)	Common Name	Onsite/ Contiguous	Federal Listing Status	Category	Critical Habitat Onsite
		Alsinidendron trinerve	No common name	Onsite	E	Plant	N
		Cenchrus agrimonioides var. agrimonioides	Kamanomano	Onsite	E	Plant	N
		Chamaesyce rockii	`Akoko	Onsite	E	Plant	N
		Chasiempis sandwichensis ibidis	Elepaio, Oahu	Onsite	E	Bird	Y
		Ctenitis squamigera	Pauoa	Onsite	E	Plant	N
		Cyanea acuminata	Haha	Onsite	E	Plant	N
		Cyanea grimesiana ssp. obatae	Haha	Onsite	E	Plant	N
		Cyanea koolauensis	Haha	Onsite	E	Plant	N
		Cyanea st-johnii	Haha	Onsite	E	Plant	N
		Cyrtandra subumbellata	Ha`iwale	Onsite	E	Plant	N
		Cyrtandra viridiflora	Ha`iwale	Onsite	E	Plant	N
		Delissea subcordata	Haha	Onsite	E	Plant	N
		Diellia falcata	No common name	Onsite	E	Plant	N
		Flueggea neowawraea	Mehameham e	Onsite	E	Plant	N
		Gardenia mannii	Nanu	Onsite	E	Plant	N
		Hesperomannia arborescens	No common name	Onsite	E	Plant	N
		Isodendrion longifolium	Aupaka	Onsite	T	Plant	N
		Labordia cyrtandrae	Kamakahala	Onsite	E	Plant	N
		Lepidium arbuscula	Anaunau	Onsite	E	Plant	N
		Lobelia gaudichaudii ssp. koolauensis	Haha	Onsite	E	Plant	N
		Lobelia niihauensis	Haha	Onsite	E	Plant	N
		Lobelia oahuensis	Haha	Onsite	E	Plant	N
		Lycopodium nutans	No common name	Onsite	E	Plant	N
		Neraudia angulata	Maaloa	Onsite	E	Plant	N
		Phlegmariarus nutans	No common name	Onsite	E	Plant	N
		Phyllostegia hirsuta	No common name	Onsite	E	Plant	N
		Phyllostegia kaalaensis	No common name	Onsite	E	Plant	N
		Phyllostegia mollis	No common name	Onsite	E	Plant	N
		Plantago princeps princeps	Kuahiwi laukahi Ale	Onsite	E	Plant	N
		Pritchardia kaalae	Loulu	Onsite	E	Plant	N
		Pteris lidgatei	No common name	Onsite	E	Plant	N
		Sanicula purpurea	No common name	Onsite	E	Plant	N
		Schiedea hookeri	No common	Onsite	E	Plant	N

Installation	State	Scientific Name (Genus species)	Common Name	Onsite/ Contiguous	Federal Listing Status	Category	Critical Habitat Onsite
			name				
		Schiedea kaalae	No common name	Onsite	E	Plant	N
		Schiedea nuttallii var. nuttallii	No common name	Onsite	E	Plant	N
		Stenogyne kanehoena	No common name	Onsite	E	Plant	N
		Tetraplasandra gymnocarpa	Ohe`ohe	Onsite	E	Plant	N
		Urera kaalae	Opuhe	Onsite	E	Plant	N
		Viola chamissoniana ssp. chamissoniana	Pamakani	Onsite	E	Plant	N
		Viola oahuensis	No common name	Onsite	E	Plant	N
Tripler Army Medical Center	HI	*Megalagrion xanthomelas*	Damselfly, orangeblack Hawaiian	Onsite	C	Insect	N
U.S. Army Garrison, Alaska*							
NA	NA	NA	NA	NA	NA	NA	NA

* Cook Inlet, AK – The Beluga Whale (*Delphinapterus leucas*) is a Proposed Species and has not yet been placed on the Endangered Species list. The whale species was proposed to be listed in April 2007, a final decision is pending.

APPENDIX C: SCHOOL ENROLLMENT CAPACITY (OAHU)

HONOLULU DISTRICT

	ENROLLMENT	CAPACITY	EXCESS CAPACITY	PROJECTED ENROLLMENT						AVERAGE GROWTH 2008-2013	EXCESS CAPACITY
	2007-08	07 - 08		2008p	2009p	2010p	2011p	2012p	2013p		
FARRINGTON COMPLEX											
FERN	488	549	61								
Projections Spring 07-08				488	489	490	487	482	477	-2	72
KAEWAI	274	585	311								
Projections Spring 07-08				266	272	271	264	258	253	-3	332
KALIHI	245	554	309								
Projections Spring 07-08				256	254	251	240	231	225	-6	329
KALIHI-KAI	687	854	167								
Projections Spring 07-08				664	652	645	641	636	631	-7	223
KALIHI-UKA	249	449	200								
Projections Spring 07-08				248	248	249	247	246	242	-1	207
KALIHI-WAENA	540	589	49								
Projections Spring 07-08				534	527	530	535	540	542	2	47
KAPALAMA	630	776	146								
Projections Spring 07-08				640	634	632	626	622	620	-4	156
LINAPUNI	214	271	57								
Projections Spring 07-08				211	216	220	221	219	218	1	53
PUUHALE	269	406	137								
Projections Spring 07-08				260	252	251	252	255	253	-1	153
DOLE MID	854	1061	207								
Projections Spring 07-08				832	836	835	844	845	855	5	206
KALAKAUA MID	1039	1167	128								
Projections Spring 07-08				1036	1025	1015	1000	975	972	-13	195
FARRINGTON HIGH SCHOOL	2530	2149	-381								
Projections Spring 07-08				2487	2455	2430	2415	2400	2375	-22	-226

	ENROLLMENT	CAPACITY	EXCESS CAPACITY	PROJECTED ENROLLMENT	AVERAGE GROWTH 2008-2013	EXCESS CAPACITY

	2007-08	07 - 08		2008p	2009p	2010p	2011p	2012p	2013p		
KAIMUKI COMPLEX											
ALA WAI	449	657	208								
Projections Spring 07-08				451	449	451	454	458	459	2	198
ALIIOLANI	279	483	204								
Projections Spring 07-08				273	276	279	281	284	283	2	200
HOKULANI	364	434	70								
Projections Spring 07-08				367	368	365	363	361	362	-1	72
JEFFERSON	373	674	301								
Projections Spring 07-08				308	285	283	286	282	284	-5	390
KUHIO	316	512	196								
Projections Spring 07-08				316	317	317	318	320	318	0	194
LUNALILO	523	656	133								
Projections Spring 07-08				500	490	482	476	475	475	-5	181
PALOLO	240	591	351								
Projections Spring 07-08				240	239	237	239	243	240		351
WAIALAE-Conversion	398										
Projections Spring 07-08				426	400	400	400	400	400	-5	
JARRETT MID	285	785	500								
Projections Spring 07-08				290	284	275	263	256	263	-5	522
WASHINGTON MID	1032	1162	130								
Projections Spring 07-08				987	955	910	900	878	875	-22	287
KAIMUKI HI	1203	1464	261								
Projections Spring 07-08				1195	1180	1164	1157	1153	1156	-8	308

	ENROLLMENT	CAPACITY	EXCESS CAPACITY	PROJECTED ENROLLMENT						AVERAGE GROWTH 2008-2013	EXCESS CAPACITY
	2007-08	07 - 08		2008p	2009p	2010p	2011p	2012p	2013p		
KAISER COMPLEX											
AINA HAINA	484	671	187								
Projections Spring 07-08				512	502	500	495	490	480	-6	191
HAHAIONE	405	642	237								
Projections Spring 07-08				413	407	403	400	402	399	-3	243

KAMILOIKI	367	621	254									
Projections Spring 07-08				380	373	377	376	371	368	-2		253
KOKO HEAD	273	522	249									
Projections Spring 07-08				277	272	268	265	263	256	-4		266
WAILUPE VALLEY	90	252	-115									
Projections Spring 07-08				87	86	83	85	89	91	1		161
NIU VALLEY MID	792	816	24									
Projections Spring 07-08				801	774	721	719	730	748	-11		68
KAISER HI	979	1088	109									
Projections Spring 07-08				988	990	976	950	931	920	-14		168

	ENROLLMENT	CAPACITY	EXCESS CAPACITY	PROJECTED ENROLLMENT						AVERAGE GROWTH 2008-2013	EXCESS CAPACITY
	2007-08	07 - 08		2008p	2009p	2010p	2011p	2012p	2013p		
KALANI COMPLEX											
KAHALA	524	642	118								
Projections Spring 07-08				500	497	492	488	486	484	-3	158
LIHOLIHO	324	516	192								
Projections Spring 07-08				346	343	340	339	341	334	-2	182
LILIUOKALANI	146	222	76								
Projections Spring 07-08				144	138	136	137	140	140	-1	82
WAIKIKI	391	467	76								
Projections Spring 07-08				413	414	410	405	399	401	-2	66
WILSON	552	523	-29								
Projections Spring 07-08				530	532	533	535	540	540	2	-17
KAIMUKI MID	751	1072	321								
Projections Spring 07-08				843	808	792	790	765	760	-17	312
KALANI HI	1125	1195	70								
Projections Spring 07-08				1139	1116	1108	1095	1076	1070	-14	125

	ENROLLMENT	CAPACITY	EXCESS CAPACITY	PROJECTED ENROLLMENT						AVERAGE GROWTH 2008-2013	EXCESS CAPACITY
	2007-08	07 - 08		2008p	2009p	2010p	2011p	2012p	2013p		
McKINLEY COMPLEX											

KAAHUMANU	566	714	148								
Projections Spring 07-08				555	548	544	540	538	540	-3	174
KAIULANI	396	517	121								
Projections Spring 07-08				392	393	392	392	393	395	1	122
KAULUWELA	364	431									
Projections Spring 07-08				343	339	344	346	332	333	-2	98
LANAKILA	303	609	306								
Projections Spring 07-08				298	295	296	300	302	300	0	309
LIKELIKE	382	613	231								
Projections Spring 07-08				363	368	373	385	391	393	6	220
ROYAL	373	423	50								
Projections Spring 07-08				369	359	344	347	343	345	-5	78
CENTRAL MID	457	672	215								
Projections Spring 07-08				443	436	428	423	421	420	-5	252
MCKINLEY HI	1857	2173	316								
Projections Spring 07-08				1836	1800	1780	1768	1755	1750	-17	423

	ENROLLMENT	**CAPACITY**	**EXCESS CAPACITY**	**PROJECTED ENROLLMENT**						**AVERAGE GROWTH 2008-2013**	**EXCESS CAPACITY**
	2007-08	**07 - 08**		**2008p**	**2009p**	**2010p**	**2011p**	**2012p**	**2013p**		
ROOSEVELT COMPLEX											
ANUENUE	371	588	217								
Projections Spring 07-08				376	360	367	368	370	380	1	208
LINCOLN	389	635	246								
Projections Spring 07-08				381	372	366	368	377	376	-1	259
MAEMAE	744	745	1								
Projections Spring 07-08				647	646	645	644	646	647	0	98
MANOA	583	716	133								
Projections Spring 07-08				583	585	588	590	594	595	2	121
NOELANI	459	435	-24								
Projections Spring 07-08				452	449	448	449	451	450	0	-15
NUUANU	343	324	-19								
Projections Spring 07-08				348	343	340	337	333	322	-5	2

PAUOA	328	557	229								
Projections Spring 07-08				322	319	321	324	326	325	1	232
KAWANANAKOA MID	803	1060	257								
Projections Spring 07-08				858	850	840	835	820	815	-9	245
STEVENSON MID	616	929	313								
Projections Spring 07-08				618	640	630	618	610	613	-1	316
ROOSEVELT HI	1654	1610	-44								
Projections Spring 07-08				1541	1520	1513	1508	1505	1500	-8	110

CENTRAL DISTRICT

	ENROLLMENT	CAPACITY	EXCESS CAPACITY	PROJECTED ENROLLMENT						AVERAGE GROWTH 2008-2013	EXCESS CAPACITY
	2007	07 - 08		2008p	2009p	2010p	2011p	2012p	2013p		
AIEA COMPLEX											
AIEA EL	347	550	203								
Projections Spring 07-08				335	335	360	322	314	317	-4	233
PEARL RIDGE	579	544	-35								
Projections Spring 07-08				579	569	570	569	564	566	-3	-22
SCOTT	494	774	280								
Projections Spring 07-08				474	465	454	463	452	462	-2	312
WAIMALU	551	769	218								
Projections Spring 07-08				545	545	531	532	532	533	-2	236
WEBLING	524	539	15								
Projections Spring 07-08				510	512	446	520	529	533	5	6
AIEA INT	667	728	61								
Projections Spring 07-08				609	601	597	584	593	590	-4	138
AIEA HI	1255	1293	38								
Projections Spring 07-08				1279	1258	1287	1264	1240	1210	-14	83

	ENROLLMENT	CAPACITY	EXCESS CAPACITY	PROJECTED ENROLLMENT						AVERAGE GROWTH 2008-2013	EXCESS CAPACITY
	2007	07 - 08		2008p	2009p	2010p	2011p	2012p	2013p		
LEILEHUA COMPLEX											
HALE KULA	624	952	328								
Projections Spring 07-08				770	742	732	581	581	681	-18	271
HELEMANO	573	657	84								
Projections Spring 07-08				586	589	579	580	583	569	-3	88
ILIAHI	444	524	80								
Projections Spring 07-08				413	416	417	422	426	428	3	96

KAALA	411	525	114								
Projections Spring 07-08				417	423	425	423	422	422	1	103
SOLOMON	807	1126	319								
Projections Spring 07-08				847	861	950	955	961	963	23	163
WAHIAWA EL	466	746	280								
Projections Spring 07-08				450	463	475	466	463	430	-4	316
WHEELER EL	631	751	120								
Projections Spring 07-08				494	436	479	484	540	582	18	169
WAHIAWA MID	865	1087	222								
Projections Spring 07-08				838	826	813	799	792	825	-3	262
WHEELER MID	655	852	197								
Projections Spring 07-08				665	664	662	650	647	654	-2	198
LEILEHUA HI	1907	1585	-322								
Projections Spring 07-08				1874	1862	1833	1813	1816	1813	-12	-228

	ENROLLMENT	CAPACITY	EXCESS CAPACITY	PROJECTED ENROLLMENT						AVERAGE GROWTH 2008-2013	EXCESS CAPACITY
	2007	07 - 08		2008p	2009p	2010p	2011p	2012p	2013p		
MILILANI COMPLEX											
KIPAPA	631	807	176								
Projections Spring 07-08				633	642	634	638	627	614	-4	193
MILILANI 'IKE	1059	850	-209								
Projections Spring 07-08				1070	1006	946	879	772	703	-73	147
MILILANI MAUKA	759	931	172								
Projections Spring 07-08				786	755	724	695	668	641	-29	290
MILILANI UKA	690	938	248								
Projections Spring 07-08				676	670	676	679	694	686	2	252
MILILANI WAENA	595	844	249								
Projections Spring 07-08				580	575	565	563	570	571	-2	273
MILILANI MID	1814	1896	82								
Projections Spring 07-08				1810	1815	1834	1842	1850	1836	5	60

MILILANI HI	2472	1997	-475								
Projections Spring 07-08				2440	2461	2425	2402	2442	2491	10	-494

	ENROLLMENT	CAPACITY	EXCESS CAPACITY	PROJECTED ENROLLMENT						AVERAGE GROWTH 2008-2013	EXCESS CAPACITY
	2007	07 - 08		2008p	2009p	2010p	2011p	2012p	2013p		
MOANALUA COMPLEX											
MOANALUA EL	722	817	95								
Projections Spring 07-08				681	674	671	673	672	671	-2	146
RED HILL	366	640	274								
Projections Spring 07-08				364	336	296	300	270	270	-19	370
SHAFTER	194	379	185								
Projections Spring 07-08				183	145	163	177	177	124	-12	255
SALT LAKE	779	863	84								
Projections Spring 07-08				762	766	773	771	764	747	-3	116
MOANALUA MID	842	723	-119								
Projections Spring 07-08				837	838	840	850	845	846	2	-123
MOANALUA HI	1994	1682	-312								
Projections Spring 07-08				1994	1993	1962	1993	1975	1957	-7	-275

	ENROLLMENT	CAPACITY	EXCESS CAPACITY	PROJECTED ENROLLMENT						AVERAGE GROWTH 2008-2013	EXCESS CAPACITY
	2007	07 - 08		2008p	2009p	2010p	2011p	2012p	2013p		
RADFORD COMPLEX											
ALIAMANU EL	723	939	216								
Projections Spring 07-08				805	859	850	825	805	793	-2	146
HICKAM	688	798	110								
Projections Spring 07-08				703	702	691	701	695	707	1	91
MAKALAPA	486	742	256								
Projections Spring 07-08				417	469	530	525	530	529	22	213

MOKULELE	512	681	169									
Projections Spring 07-08				547	532	457	457	523	525	-4	156	
NIMITZ	366	733	367									
Projections Spring 07-08				424	525	580	579	570	579	31	154	
PEARL HARBOR	560	730	170									
Projections Spring 07-08				589	554	591	591	657	657	14	73	
PEARL HARBOR KAI	508	713	205									
Projections Spring 07-08				543	532	532	529	527	526	-3	187	
ALIAMANU INT	793	1004	211									
Projections Spring 07-08				735	743	750	759	764	766	6	238	
RADFORD HI	1225	1301	76									
Projections Spring 07-08				1147	1133	1060	1047	1011	944	-41	357	

	ENROLLMENT	CAPACITY	EXCESS CAPACITY	PROJECTED ENROLLMENT						AVERAGE GROWTH 2008-2013	EXCESS CAPACITY
	2007	07 - 08		2008p	2009p	2010p	2011p	2012p	2013p		
WAIALUA COMPLEX											
HALEIWA	167	566	399								
Projections Spring 07-08				158	157	144	141	138	140	-4	426
WAIALUA EL	521	580	59								
Projections Spring 07-08				512	535	537	536	530	529	3	51
WAIALUA HI & INT	649	1040	391								
Projections Spring 07-08				627	600	602	601	580	569	-12	471

LEEWARD DISTRICT

	ENROLLMENT	CAPACITY	EXCESS CAPACITY	PROJECTED ENROLLMENT						AVERAGE GROWTH 2008-2013	EXCESS CAPACITY
	2007-08	07 - 08		2008p	2009p	2010p	2011p	2012p	2013p		
CAMPBELL COMPLEX											
EWA EL	934	879	-55								
Projections Spring 07-08				941	947	947	959	957	953	2	-74
EWA BEACH EL	365	672	307								
Projections Spring 07-08				332	331	333	334	335	332	0	340
IROQUOIS POINT	668	950	282								
Projections Spring 07-08				661	671	677	676	673	656	-1	294
POHAKEA	494	690	196								
Projections Spring 07-08				474	470	459	464	465	479	1	211
HOLOMUA	1444	1331	-113								
Projections Spring 07-08				1452	1464	1483	1466	1455	1442	-2	-111
KAIMILOA	649	762	113								
Projections Spring 07-08				618	615	610	606	600	593	-5	169
KEONEULA	746	742	-4								
Projections Spring 07-08				896	998	1077	1114	1148	1183	57	-441
EWA MAKAI MIDDLE											
Projections Spring 07-08											
ILIMA INT	1302	1352	50								
Projections Spring 07-08				1357	1390	1410	1430	1460	1504	29	-152
CAMPBELL HI	2491	1934	-557								
Projections Spring 07-08				2431	2411	2451	2516	2580	2629	40	-695

			EXCESS CAPACITY							AVERAGE GROWTH 2008-2013	EXCESS CAPACITY
	2007-08	07 - 08		2008p	2009p	2010p	2011p	2012p	2013p		
KAPOLEI COMPLEX											
BARBERS POINT	506	689	183								

Projections Spring 07-08				506	519	525	515	518	519	3		170
MAKAKILO	479		593	114								
Projections Spring 07-08				498	525	535	539	538	533	7		60
KAPOLEI EL	1065		1215	150								
Projections Spring 07-08				1078	1105	1112	1117	1124	1113	7		102
KAPOLEI II EL												
Projections Spring 07-08												
MAUKA LANI	547		687	140								
Projections Spring 07-08				543	545	548	550	549	547	1		140
KAPOLEI MID	1559		1847	288								
Projections Spring 07-08				1507	1463	1481	1498	1515	1520	3		327
KAPOLEI HI	2285		1957	-328								
Projections Spring 07-08				2258	2317	2407	2399	2357	2376	24		-419
			EXCESS CAPACITY							**AVERAGE GROWTH 2008-2013**		**EXCESS CAPACITY**
	2007-08	**07 - 08**		**2008p**	**2009p**	**2010p**	**2011p**	**2012p**	**2013p**			
NANAKULI COMPLEX												
NANAIKAPONO	887		1140	253								
Projections Spring 07-08				875	874	860	859	861	862	-3		278
NANAKULI EL	469		509	40								
Projections Spring 07-08				455	461	443	446	445	443	-2		66
NANAKULI HI & INT	1056		1202	146								
Projections Spring 07-08				982	985	979	977	975	970	-2		232
			EXCESS CAPACITY							**AVERAGE GROWTH 2008-2013**		**EXCESS CAPACITY**
	2007-08	**07 - 08**		**2008p**	**2009p**	**2010p**	**2011p**	**2012p**	**2013p**			
PEARL CITY COMPLEX												
MANANA	372		415	43								
Projections Spring 07-08				372	375	371	367	366	366	-1		49
PALISADES	341		479	138								

Projections Spring 07-08				325	328	325	328	329	322	-1		157
PEARL CITY EL	489	648	159									
Projections Spring 07-08				502	508	494	492	507	504	0		144
PC HIGHLANDS	344	432	88									
Projections Spring 07-08				349	348	347	348	349	347	0		85
LEHUA	395	555	160									
Projections Spring 07-08				435	436	423	413	415	416	-4		139
KANOELANI	734	850	116									
Projections Spring 07-08				720	732	724	723	725	731	2		119
MOMILANI	406	337	-69									
Projections Spring 07-08				408	407	406	405	405	404	-1		-67
WAIAU	565	694	129									
Projections Spring 07-08				565	562	554	557	561	557	-2		137
HIGHLANDS INT	989	1000	11									
Projections Spring 07-08				940	929	950	954	926	903	-7		97
PEARL CITY HI	1896	2226	330									
Projections Spring 07-08				1851	1827	1853	1806	1825	1841	-2		385
			EXCESS CAPACITY							AVERAGE GROWTH 2008-2013		EXCESS CAPACITY
	2007-08	**07 - 08**		**2008p**	**2009p**	**2010p**	**2011p**	**2012p**	**2013p**			
WAIANAE COMPLEX												
KAMAILE	654	762	108									
Projections Spring 07-08				650	687	709	713	712	711	12		51
LEIHOKU	806	1020	214									
Projections Spring 07-08				812	815	809	801	763	763	-10		257
MAILI	782	962	180									
Projections Spring 07-08				786	788	789	791	790	789	1		173
MAKAHA	540	786	246									
Projections Spring 07-08				539	541	541	543	537	540	0		246
WAIANAE EL	581	823	242									
Projections Spring 07-08				570	564	562	556	561	566	-1		257

WAIANAE INT	1029	1076	47								
Projections Spring 07-08				1030	997	1009	1023	1022	1006	-5	70
WAIANAE HI	2113	1608	-505								
Projections Spring 07-08				2002	2000	1985	1970	1969	1980	-4	-372

			EXCESS CAPACITY							AVERAGE GROWTH 2008-2013	EXCESS CAPACITY
	2007-08	**07 - 08**		**2008p**	**2009p**	**2010p**	**2011p**	**2012p**	**2013p**		
WAIPAHU COMPLEX											
AHRENS	1277	1511	234								
Projections Spring 07-08				1282	1285	1282	1295	1288	1275	-1	236
HONOWAI	819	754	-65								
Projections Spring 07-08				812	828	828	820	809	811	0	-57
KALEIOPUU	958	1041	83								
Projections Spring 07-08				962	978	973	981	959	955	-1	86
WAIKELE	649	741	92								
Projections Spring 07-08				653	646	642	628	629	632	-4	109
WAIPAHU EL	980	972	-8								
Projections Spring 07-08				973	972	968	958	952	950	-5	22
WAIPAHU INT	1306	1295	-11								
Projections Spring 07-08				1262	1237	1262	1284	1280	1249	-3	46
WAIPAHU HI	2564	2208	-356								
Projections Spring 07-08				2498	2491	2512	2483	2484	2481	-3	-273

WINDWARD DISTRICT

	ENROLLMENT	CAPACITY	EXCESS CAPACITY	PROJECTED ENROLLMENT						AVERAGE GROWTH 2008-2013	EXCESS CAPACITY
	2007-08	07 - 08		2008p	2009p	2010p	2011p	2012p	2013p		
CASTLE COMPLEX											
AHUIMANU	410	553	143								
Projections Spring 07-08				400	403	392	381	381	380	-4	173
HEEIA	514	766	252								
Projections Spring 07-08				513	508	496	504	499	494	-4	272
KAHALUU	230	400	170								
Projections Spring 07-08				227	231	225	226	222	220	-1	180
KANEOHE	614	684	70								
Projections Spring 07-08				608	609	596	597	588	583	-5	101
PUOHALA	233	612	379								
Projections Spring 07-08				229	218	206	200	201	200	-6	412
KAPUNAHALA	576	616	40								
Projections Spring 07-08				565	554	549	538	531	530	-7	86
PARKER	319	751	432								
Projections Spring 07-08				284	262	254	236	233	233	-10	518
WAIAHOLE	68	232	164								
Projections Spring 07-08				62	57	55	58	61	69	1	163
KING INT	708	1047	339								
Projections Spring 07-08				682	649	647	647	606	614	-14	433
CASTLE HI	1552	1901	349								
Projections Spring 07-08				1482	1430	1436	1354	1333	1386	-19	515

			EXCESS CAPACITY							AVERAGE GROWTH 2008-2013	EXCESS CAPACITY
	2007-08	07 - 08		2008p	2009p	2010p	2011p	2012p	2013p		
KAHUKU COMPLEX											

HAUULA	275	496	221								
Projections Spring 07-08				272	272	269	265	264	248	-5	248
KAAAWA	147	158	11								
Projections Spring 07-08				142	135	137	139	138	141	0	17
KAHUKU EL	501	587	86								
Projections Spring 07-08				499	502	499	497	483	480	-4	107
LAIE	609	924	315								
Projections Spring 07-08				622	615	615	603	590	575	-9	349
SUNSET BEACH	387	466	79								
Projections Spring 07-08				389	391	390	388	382	381	-2	85
KAHUKU HI/INT	1736	1802	66								
Projections Spring 07-08				1694	1749	1706	1684	1681	1650	-9	152
			EXCESS CAPACITY							**AVERAGE GROWTH 2008-2013**	**EXCESS CAPACITY**
	2007-08	**07 - 08**		**2008p**	**2009p**	**2010p**	**2011p**	**2012p**	**2013p**		
KAILUA COMPLEX											
ENCHANTED LAKE	396	665	269								
Projections Spring 07-08				394	392	393	384	383	381	-3	284
KAELEPULU	191	275	84								
Projections Spring 07-08				179	183	182	182	182	164	-3	111
KEOLU	178	364	186								
Projections Spring 07-08				171	170	163	165	164	163	-2	201
LANIKAI-PCS	304	371	67								
Projections Spring 07-08				304	330	330	330	330	330	5	41
MAUNAWILI	415	523	108								
Projections Spring 07-08				422	420	411	403	397	409	-3	114
OLOMANA	179	191	12								
Projections Spring 07-08				189	189	189	189	189	189	0	2
POPE	279	508	229								
Projections Spring 07-08				277	265	261	262	257	247	-6	261

WAIMANALO EL & INT	519	538	19								
Projections Spring 07-08				517	508	497	490	491	500	-3	38
KAILUA HI	988	1225	237								
Projections Spring 07-08				972	894	869	820	809	792	-36	433

			EXCESS CAPACITY							AVERAGE GROWTH 2008-2013	EXCESS CAPACITY
	2007-08	**07 - 08**		**2008p**	**2009p**	**2010p**	**2011p**	**2012p**	**2013p**		
KALAHEO COMPLEX											
AIKAHI	496	666	170								
Projections Spring 07-08				489	478	467	465	458	460	-6	206
KAILUA EL	366	546	180								
Projections Spring 07-08				345	342	341	340	340	340	-1	206
KAINALU	536	761	225								
Projections Spring 07-08				534	508	500	481	466	465	-14	296
MOKAPU	750	792	42								
Projections Spring 07-08				778	770	768	753	748	747	-6	45
KAILUA INT	706	1305	599								
Projections Spring 07-08				672	647	614	597	609	574	-20	731
KALAHEO HI	922	1138	216								
Projections Spring 07-08				893	838	813	773	727	708	-37	430

APPENDIX D: RESPONSES TO COMMENTS ON THE DRAFT SUPPLEMENTAL PROGRAMMATIC ENVIRONMENTAL IMPACT STATEMENT

D.1 Summary of Comments on the DSPEIS

The DSPEIS was available for public review and comment from May 16, 2008 through June 30, 2008. The document (hard copy or CD) was distributed to federal and state recipients, and recipients located in Alaska and Hawaii. It also was available on the Internet for review or downloading. During the review period, a variety of agencies, elected officials, businesses, organizations, and individuals submitted letters, facsimiles, and e-mails containing comments on the DSPEIS.

107 comments were received regarding the DSPEIS. Of those, 76 pertained to the Proposed Action in Hawaii, 25 pertained to the Proposed Action in Alaska, and 6 were not location-specific.

D.2 Analysis of Comments

Respondents submitted a variety of comments on the DSPEIS. The Army reviewed the comments and arranged them into groups with comment concerns. Then, a primary comment statement was prepared for each group of comments. Finally, a response was generated for each comment statement. Overall, the comments primarily focused on the NEPA process and alternatives; air quality; airspace; cultural resources; noise; soil resources; biological resources; wetlands; water resources; facilities; energy demand and generation; land use; hazardous materials and hazardous waste; traffic; socioeconomics; and cumulative effects.

Table D-1, which follows the section on comments and responses, identifies the individuals, businesses, organizations, and agencies that responded to the DSPEIS. The table lists each respondent alphabetically and identifies the comment statement or statements attributed to the letter, e-mails, facsimile, or verbal statement.

The identifiers for the comment statements are associated with each comment statement in the section immediately preceding the table. The actual letters, e-mails, facsimiles, and transcripts of verbal statements are available for public review in the administrative record.

D.3 Comment Statements and Responses

This section presents the comment statements developed by the Army and their responses. The comment statements are numbered sequentially from 1 to 107 to facilitate references to them in Table D-1. However, they are organized in this section to follow the discussions of resource areas in the EIS. In addition to the discussion of resource areas, comments and responses regarding alternatives, the NEPA process, editorial changes, and other related issues have been included.

D.3.1 NEPA Process/Alternatives/Planning/Scoping

1. Failure to Justify Conclusion that Hawaii is Capable of Supporting Any Growth Units
   In our April 14, 2008 scoping comments, we noted the Army has long complained about a shortage of available training ranges and maneuver space in Hawaii. We cited the Army's April 2003 Land Use Requirement Study, which found that, even using the most intensive training period for all available range, there is a shortfall of 52,687,134 acre-days for training. We also cited the Army's March 2007 report to Congress, which stressed that the Army's ranges in Hawaii:

   > Do not reflect the Army's most modern and realistic standards for live-fire training required for the challenges of current and future combat. Additionally, the number of live-fire ranges does not support the frequency of training required or the density of Army units and Soldiers on [sic] Hawaii, nor the USMC and other sister services.

3/07 Report on Army Live-Fire Ranges in the State of Hawaii at 1-2. The report further noted that the strain on Hawaii's ranges has already been exacerbated by the "estimated 5,000 personnel (or 34%) increase in Army troop strength in Hawaii" from FY05 to FY08. Id. at 2.

Given the Army's constant refrain there is inadequate training capacity to support the number of Soldiers already stationed here, there is no apparent basis for the Draft SPEIS's assertion that Schofield Barracks and Fort Shafter are both "capable of supporting growth and realignment." Draft SPEIS at 73. Merely saying it does not make it so. NEPA demands that the Army back up its claim Hawaii can accommodate more Soldiers. 40 C.F.R. §§ 1500.1(b) ("information must be high quality"). 1502.24 (analyses must have integrity, and agency "shall make explicit reference by footnote to the …sources relied upon for conclusions in the statement"). The Draft SPEIS contains virtually no citations to the sources on which it relies to support its conclusions. While NEPA allows the Army to incorporate material by reference, such material must "be cited in the statement and its content briefly discussed." 40 C.F.R. §1502.21.

David Henkin, Earthjustice

Response:

Army-wide land use requirements studies show that almost all US Army installations have a shortfall in training land. The Army's recent stationing decisions assigned many units to installations that had training land shortfalls. It is also important to note that the units being stationed under this action are not combat maneuver brigades but instead are support troops. They operate in the training footprint of the maneuver BCTs. They therefore do not exacerbate the shortfall.

The screening criterion for having adequate modernized range facilities is based upon HQDA's Sustainable Range Program (SRP) tiers (28 December, 2006). As indicated in section 3.4, installations are only eliminated from consideration under the modernized training range portion of the training screening if they are not tier one or tier two training installations under the SRP Tiers.

The EIS explains in detail how Fort Shafter and Schofield Barracks would accommodate growth, both in terms of training and cantonment area construction.

2. Failure to Analyze the "No Action" Alternative
NEPA requires agencies to include in their EISs analysis of the "alternative of no action" to serve as a benchmark against which the potential effects of proposed actions can be evaluated. Id. § 1502.14(d); see also 46 Fed. Reg. 18,026,18,027 (Mar 23, 1981). While the Draft SPEIS claims "the 'no action' alternative [has] been analyzed," Draft SPEIS at 37, it fails to present any of that analysis, violating NEPA's command to "present the environmental impacts of the proposal and the alternatives in comparative form, thus sharply defining the issues and providing a clear basis for choice among options by the decision-maker and the public." 40 C.F.R. §1502.14. It is well-established in the Ninth Circuit that the failure to analyze a "no action alternative renders an EIS inadequate.

David Henkin, Earthjustice

Response:

The FSPEIS has been revised to add additional analysis of the environmental consequences of the no action alternative.

Alternative.

3. Failure Adequately to Analyze Action Alternatives
The Draft SPEIS details changes to existing Army units in Hawaii that would take place under Alternative 1, with an increase of 807 Soldiers at Schofield Barracks and an increase of 190 Soldiers at Fort Shafter. See Draft SPEIS at 38-41. Under Alternative 2, Fort Shafter would see the same

increase as under Alternative 1, and an additional 863 Soldiers would be stationed at Schofield Barracks, bringing a total of 1,670 more Soldiers to Schofield Barracks. Id. at 43. The Draft SPEIS acknowledges that implementing either Alternative 1 or 2 would involve "construction of cantonment facilities, training infrastructure construction, and the execution of live-fire and maneuver training." Id. at 40, 43. While the Draft SPEIS claims these actions will be discussed "in more detail" in Chapter 4, it fails to do so. Id.

David Henkin, Earthjustice

Response:

The purpose of this EIS is to present a comparative analysis of the Proposed Action and alternatives. It therefore includes the level of detail that is necessary to perform that analysis and to inform the decision maker of the environmental trade-offs among alternatives. The SPEIS describes the training and construction that would occur in connection with stationing scenarios. The text has been updated with additional information regarding training and construction activities. The Army believes that the EIS provides the appropriate level of detail for stationing decisions being made at this time. Additional installation-specific analysis will be prepared, as appropriate.

4. Instead of disclosing the specific construction and training that would occur if Alternatives 1 or 2 were selected and analyzing the impacts associated with these specific undertakings, the Draft SPEIS considers only generic stationing scenarios – involving increases of 1,000 or 3,000 Combat Support Services or Combat Support Soldiers – that do not accurately capture the changes that would actually occur at either Schofield Barracks or Fort Shafter under Alternatives 1 or 2. The Army cannot fulfill its obligations under NEPA to take a hard look at impacts by analyzing fictional scenarios that bear no resemblance to the actions it actually proposes to undertake. Since Alterative 3 would include full implementation of Alternatives 1 and 2, the deficient analyses of Alternatives 1 and 2 render inadequate the analysis of Alternative 3 as well.

David Henkin, Earthjustice

Response:

The purpose of this EIS is to present a comparative analysis of the Proposed Action and alternatives. It therefore includes the level of detail that is necessary to perform that analysis and to inform the decision maker of the environmental trade-offs among alternatives. The SPEIS describes the training and construction that would occur in connection with stationing scenarios. The Army believes that the EIS provides the appropriate level of detail for stationing decisions being made at this time. The text has been updated with additional information regarding training and construction activities.

5. A decision to implement Alternative 1, 2, or 3 would necessarily result in the stationing of additional Soldiers in Hawaii, with associated construction and training. The Draft SPEIS thus "proposes to make an 'irreversible and irretrievable commitment of the availability of resources' to a particular project at a particular site." California v. Block, 690 F.2d 753, 761 (9th Cir. 1982). This "critical decision" triggers the Army's obligation under NEPA to evaluate thoroughly the site-specific impacts of each of the alternatives under consideration. Id. The Draft SPEIS fails to do so, providing no specific information about the construction , training and other activities that would take place should each alternative be selected. Draft SPEIS at 79-85, 143, 172-174.

   The analysis of the impacts that would result from carrying out the action alternatives consists of nothing more than conclusory statements that the effects on various "valued environmental components" would be "minor," "less than significant," "significant but mitigable," or "significant adverse." Id. at 78, 142, 170. The Army cannot invoke agency expertise to justify its failure to provide the requisite information and analysis, including quantification of impacts involving, among other things, soil erosion, water quality, acreage burned by wildfires, cultural resource damage, traffic, economics, toxins, habitat and listed species loss, air quality, and noise. It is well-established that the NEPA documents are inadequate if they contain only narratives of expert opinions. Because public

scrutiny of an agency's analysis is vital to accomplishing NEPA's goals, NEPA requires that the public receive the underlying environmental data from which the Army's experts derived their opinions. See 40 C.F.R. §§1500.1(b), 1500.2(d). The Draft SPEIS fails to comply with this mandate.

David Henkin, Earthjustice

Response:

The purpose of this EIS is to present a comparative analysis of the Proposed Action and alternatives. It therefore includes the level of detail that is necessary to perform that analysis and to inform the decision maker of the environmental trade-offs among alternatives. The SPEIS describes the training and construction that would occur in connection with stationing scenarios. The Army believes that the EIS provides the appropriate level of detail for stationing decisions being made at this time. The text has been updated with additional information regarding training and construction activities.

One of the references for this document is the 2008 SBCT stationing EIS. This document contained an abundance of analytical data which is available to the decision-maker for this EIS. The decision-maker would know, for instance, the magnitude of impacts of the cantonment area construction in Fort Richardson. He or she would not necessarily know the precise design or exact location of buildings. In fact, such detailed planning would not make sense at Alaska until it is known whether new units will be stationed there. This level of analysis is appropriate for the tiered analysis the Army is conducting.

6. Failure to Address Potential Impacts Associated with Training at Makua Military Reservation
In our scoping comments, we explained that, to comply with the NEPA's mandate to take a "hard look" at the potential impacts of its proposed undertaking, the Army must address whether adding Soldiers to Hawaii would require the use of Makua Military Reservation ("MMR") or otherwise preclude return of MMR to the people of Hawaii. The only response in the Draft SPEIS – that Army growth units would not need to use MMR to attain operational readiness – fails to provide a complete answer to the question. See Draft SPEIS at 74. Even if the individual units the Army proposes to add to Hawaii "could perform live-fire training at other ranges," the question remains whether, by increasing the overall demand for live-fire and other training opportunities, the addition of thousands of Soldiers would increase the demand for training at MMR. Id.; see also Draft SPEIS at 80-85, 173, 175-76.[2] If so, even in the alleged absence of direct impacts, the decision to bring growth units to Hawaii would cause indirect impacts at MMR that the Army must disclose in its discussion of environmental consequences. 40 C.F.R. §§1502.16, 1508.8.[3]

[2] Notably, in the record of decision for the permanent stationing of the 2/25th Stryker Brigade Combat Team, the Army stated that the alternative of building a substitute facility at Pohakuloa Training Area ("PTA") on Hawai'i Island for the training proposed for MMR "will be included in the [final EIS] for Military Training Activities at MMR." 4/11/08 Record of Decision at 18. To comply with NEPA's mandate to provide public officials and citizens with "high quality" information about the environmental effects of bringing additional units to Hawai'i "before decisions are made and before actions are taken," the Army must disclose in the SPEIS whether stationing growth units in Hawai'i would determine MMR's fate by eliminating the PTA alternative as a reasonable and feasible means of satisfying the Army's alleged training needs. 40 C.F.R. § 1500.1(b).

[3] [Until the Army completes the EIS for training proposed for MMR, it may not "commit resources prejudicing selection of alternatives" or otherwise limit alternatives for conducting that training. 40 C.F.R. §1502.2(f); see also Id. 1506.1.]

David Henkin, Earthjustice

Response:

Analysis of impacts at MMR is not required to support this stationing decision. The implementation of stationing scenarios do not involve an increase in the number of CALFEX exercises across USAG-HI.

The frequency of CALFEX exercises is primarily driven by the number of combat maneuver units. No combat maneuver units are being stationed as part of alternatives evaluated in this SPEIS. The final EIS indicates that the new units proposed in this action do not require the use of Makua. It also states that the stationing decision is being made on the assumption that Makua will not be available. The possible resumption of live-fire training at MMR is, however considered in the cumulative impact section.

It is important to note that the Army is still working on an EIS for resumption of live fire at Makua. That document will have to take into account all requirements to include any related to these units. The units under consideration in this EIS have very limited live-fire requirements of the type that could be met at MMR. This stationing action would not eliminate or limit reasonable alternatives and would not commit resources that would prejudice the selection of alternatives for the MMR EIS.

In this case we must remember that there is no live-fire training occurring at MMR and no decision has been made as to whether and/or to what extent training may resume there. Any live-fire training will be the subject of the ongoing MMR EIS.

7. The Draft SPEIS also fails to discuss the Army's proposal to resume military training at MMR in its discussion of cumulative impacts. See Draft SPEIS at 205-217; see also 40 C.F.R. §1508.7 ("cumulative impact" on the environment "results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions"). All of the training alternatives currently under consideration for MMR involve activities that even the Army concedes would have significant impacts on land use and recreation, noise, geology and soils, biological resources, cultural resources, environmental justice, and wildfires. 3/05 Draft EIS for Military Training Activities at Makua Military Reservation ("MMR DEIS") at ES-37 to 42. The Army is obliged to disclose those impacts in the Supplemental PEIS, whether they are "direct, indirect, or cumulative." 40 C.F.R. §1508.8.

   [For example, many of the federally listed plants and animals that would be threatened by resumption of military training at MMR are also at risk should the Army station growth units here. See Draft SPEIS at 106-112, 393-395; MMR DEIS at 3-138 to 140, 3-150 to -151, 4-115 to -138. The Draft SPEIS fails to address the cumulative impacts on these irreplaceable biological resources.

David Henkin, Earthjustice

Response:

The EIS now identifies "resumption of live-fire training at Makua" or "establishment of live-fire facilities at PTA to replace those at Makua" as reasonably foreseeable future actions. See section 4.5. These projects are reasonably foreseeable in that the Army is analyzing them under an EIS. The precise impacts of these projects are not now known and will be the subject of the MMR EIS The Makua EIS, since it will occur later in time, will be required to analyze the cumulative impacts of itself, in combination with this action.

8. Failure to take a hard look at Cumulative Impacts
   The Draft SPEIS falls far short of satisfying NEPA's mandate to analyze the impact of growth alternatives in light of the alternative's interaction with the effects of past, current, and reasonably foreseeable future projects. 40 C.F.R. §1508.7. Initially, the Draft SPEIS does not provide adequate information regarding the time, type, place and scale of the past, present, and future projects included in the cumulative impact analysis. The Draft SPEIS claims that "[p]ast and present actions are accounted for in the description of the affected environment for each resources." Draft SPEIS at 205. Review of Chapter 4 reveals, however, that the Draft SPEIS neither identifies the specific past and present projects that cumulatively affect the resources under review not does it discuss the connection between individual projects and prior environmental harm. Vague discussion of the general impact of past and present activities, without identifying the environmental impacts from such projects on an individual basis, fails to satisfy NEPA.

The Draft SPEIS's discussion of "reasonably foreseeable future actions" for the islands of Oahu and Hawaii also fails to comply with NEPA. Id. at 206. The few word descriptors in the Draft SPEIS give no idea of what is being evaluated or of the time, type, place or scale of those projects. See, e.g., Draft SPEIS at 206-208 (no descriptions of golf course at Fort Shafter; expansion of a physical fitness center; Funston Road roundabout; construction of new Fort Shafter chapel; Macomb roundabout; new Brigade Complex, "PH I and II;"" parking structure Quad F7; AAFES shopping center 6; central wash facility; construction of Child Development Center; Army Facility Strategy Program; "Live-Fire Training;" Air Force Housing Privatization program; residential development at Koa Ridge; Central Oahu Sustainable Communities Plan; construction of Navy facility at NCTAMS/Kunia Tunnel; North-South Road; Renton Road improvements; residential development at Ocean Point; Kapolei Parkway; Waianae Sustainable Communities Plan; Waianae Coast Emergency Alternative Route; Kamehameha Highway, replacement of South Kahana Stream bridge; 2121 Kuhio Avenue condominium/timeshare development; Oahu Arts Center; Hawaii SuperFerry; light rail transit project; Future Combat Systems fielding; training by U.S. Marine Corps Grow the Army Soldiers; construct mock airfield at PTA; establish military training routes in the Hawaiian Island chain & construction of a combat mobility element facility; "New Highway;" PanSTARRS project).

Having failed adequately to identify the projects under consideration, the Draft SPEIS then offers no quantified or detailed data about cumulative effects, failing to specify impacts by project or to provide anything other than general, conclusory statements. Factors such as soil erosion, water quality, acreage burned by wildfires, cultural resource damage, traffic, economics, toxins, habitat and listed species loss, air quality, noise, and so forth can be quantified, and, absent justification regarding why more definitive information cannot be provided, the Army is required to do so. The Draft SPEIS illegally fails to quantify cumulative impacts or to justify why it doesn't quantify impacts.

The Draft SPEIS's failure properly to analyze cumulative impacts prevents the Army, the public and elected officials from comparing the cumulative impacts of the alternatives presented for consideration and making a reasoned choice between them. See 40 C.F.R. §§1500.1(c), 1502.1, 1502.14.

[By lumping "the impacts of stationing at both at the home-station site ([Schofield Barracks] or Fort Shafter) and the individual training sites to include PTA," the Draft SPEIS further obfuscates the cumulative impact of the various alternatives under consideration. Draft SPEIS at 205.]

David Henkin, Earthjustice

Response:

The cumulative impacts section in the Final SPEIS has been revised to provide additional analysis.

9. The Army has not adequately invited public participation regarding Growth and Force Structure Realignment in Hawaii. Hawaii may get more than 3,000 Soldiers and 100 helicopters; the risk of fire would increase; and endangered species and native Hawaiian Cultural sites are at risk. In addition multiple actions impacting Hawaii include depleted uranium, military research, SBCT (which took 25,000 acres of land, National Guard construction, Navy range complex plans that impact marine life, and missile impacts that impact Paphanaumokuakea.

Cory (Martha) Harden
Gay Barfield
Gerlinde Morris

Response:

The Army has made considerable effort to ensure that the potentially affected public has had the chance to provide input and comments on the Army's Proposed Action to grow and realign its force structure to better support operational needs in the Pacific Theater. Parties who expressed interest in

the SBCT EIS, or the Army thought would reasonably have an interest in this action, were sent individual letters of notification to solicit comments and input. Scoping announcements and announcement of availability of the draft SPEIS were published in local newspapers. In addition, the Army released information to mainstream media sources where the story was picked up and published in several local papers to ensure the public had awareness. Finally, the Army ensured that hard copies of the draft document were sent to public libraries and that the SPEIS was posted on-line for public access at www.aec.army.mil.

As part of the Army's Preferred Alternative, Hawaii would receive approximately 2,000 Soldiers in units capable of performing a variety of missions to include construction, engineering, law enforcement, peacekeeping, humanitarian aid missions and general combat support. Much of the growth is attributable to Army-wide force structure changes happening across the organization to improve operational efficiency and ensure the Army is better able to execute whatever missions are assigned. The growth includes a number of additional engineer assets, such as construction and prime power units, which are needed to respond to humanitarian crisis which the Army recognizes the Pacific Rim region is prone to. The Army has revised its impact ratings for biological and cultural resources, changing impact ratings to significant adverse for training sites on the island of O'ahu.

Under all CS/CSS unit stationing scenarios, the increase in frequency and intensity for live-fire and maneuver training at PTA is estimated to be less than one percent of the total current training activities (minimal). Therefore, the associated environmental impacts are estimated to be minimal. However, the Army has amended section 4.4.8 to reflect significant adverse impact ratings for biological and cultural resources under the CAB stationing scenario, which includes an increased potential for wildfire.

With regard to cumulative impacts, actions that must be taken to support the stationing of new Soldiers as part of the Proposed Action have been considered with all other past, present and reasonably foreseeable future actions the Army is aware of. On-going actions, such as the stationing of the 2/25th SBCT, National Guard Actions, and Navy, Air Force and Marine activities as well as other agencies being considered in this document as part of the Cumulative Effects analysis.

With regard to Depleted Uranium, implementation of the Proposed Action under all scenarios does not involve the use of depleted uranium munitions. These munitions are not authorized for use for military training and are only used in combat scenarios per DoD regulation.

10. The impact ratings for the Valued Environmental Components (VEC) range in intensity from No Impact, Minimal or Minor Impacts, to Less than Significant, to Significant but Mitigable, and up to Significant Adverse Impacts . Beneficial Impact (+) is also included in the discussion. A significant omission in the DSPEIS is that there is NO definition, qualification, and/or quantification assigned to the impact intensity ratings. How were these values derived? How were numbers assigned? Do the ratings indicate a specific value or a range of values? What is the basis and foundation for these ratings? For instance, how can NO IMPACT be considered the same as a MINIMAL and MINOR impact? NO IMPACT should be defined as an absence of negative impact, while these 3 impacts should be categorized separately and distinctly? What determines impacts to be LESS THAN SIGNIFICANT - what values or numbers?

Pablo McLoud

Response:

A description of how determination of significance of effects is made is found in Chapter 4.0 of the DSPEIS. The significance of potential direct, indirect, and cumulative effects has been determined by evaluating the proposed action and its alternatives as it relates to the individual environmental components (e.g., air quality, noise, and others). Thank you for your comment. We made no changes to the SPEIS as a result of this comment.

11. The DSPEIS Executive Summary omits information that would present a clearer understanding of the negative impact of the five proposed scenarios. Page IV of the Executive Summary details *only* potentially SIGNIFICANT IMPACTS. The Executive Summary and Executive Summary Tables (ES-1 through ES-6) *must* also present and discuss LESS THAN SIGNIFICANT impacts and SIGNIFICANT BY MITIGABLE impacts. Omission of this information is calculated biasness and a dilution of the true impacts of the proposed scenarios.

Pablo McLoud

Response:

The impact ratings for each VEC, by each stationing scenario, are located in Chapter 4, tables 4.0-1 through 4.0-7 of the SPEIS. This information is available to all reviewers, including the decision-maker. Thank you for your comment. We made no changes to the SPEIS as a result of this comment.

12. The SBCT is a maneuver brigade that includes approximately 4,105 Soldiers (infantry, artillery, engineers, and other Army specialties) and 1,000 vehicles (including about 320 Stryker Wheeled Armored Vehicles). The [Stryker] FEIS identified the direct, indirect, and cumulative impacts that would occur if the SBCT were stationed in Hawaii. The FEIS is relevant to the DSPEIS because the scope of activities, locations, and resources of interest that are under review are nearly identical in both analyses. Because the DSPEIS does not take into consideration the findings and conclusion of the FEIS nor the cumulative effects of SBCT activities on Oahu or the Big Island, the DSPEIS undervalues its impact and is deficient in its own findings and conclusions.

Pablo McLoud

Response:

The SPEIS does take the impacts of the SBCT stationing into account and the analysis in that document has served as a basis for formulating impact assessment in this document. The Army does not feel that it has underrepresented impacts. This is true for the following reasons:

First, many of the significant impacts ratings in the SBCT document were related to possible impacts to Hawaii's sensitive cultural and natural resources through range construction in Hawai'i. Most of the CS/CSS stationing scenarios, to include the Army's preferred alternative, would not require additional construction of training ranges. Proposed implementation of the Army's Preferred Alternative will result in the stationing of approximately 2,000 new CS/CSS Soldiers in Hawaii. Training activities for these CS and CSS units will be completed on existing and planned ranges. Because there is no additional range construction, there are no range construction-related impacts as part of the Preferred Alternative. The Army has accounted for new range construction to applicable stationing scenarios both directly and indirectly in the Final SPEIS.

Second, many of the impact assessment ratings were significant in the SBCT FEIS because of potential impacts to endangered species, sensitive biological resources, and cultural resources from increased live-fire and maneuver training at Pohakuloa Training Area (PTA). Units proposed for stationing as part of the combat support stationing scenarios of the FSPEIS and the Army's Preferred Alternative would not perceptibly increase the frequency or intensity of maneuvers or live-fire training activities at PTA. The Army projects a less than one percent increase in the total training at PTA as result of implementation of the preferred alternative. The frequency and intensity of use of PTA for maneuvers and live-fire activities are inherently linked to the number and type of combat maneuver units (BCTs and battalions) stationed in Hawaii. These units drive the requirements for the number of combat maneuver rotations and Combined Arms Live Fire Exercises (CALFEX's) that would take place on Hawaii and at PTA. Combat support units accompany combat maneuver units and support integrated training events. Although there may be an increase in individual training requirements, the addition of these CS/CSS units allows for soldiers to remain at their home station longer, deploy less

frequently, while maintaining the same level of support for combat units conducting training at PTA. The Army has accounted for increased live-fire activities attributable to aviation gunnery both directly and indirectly in the Final SPEIS.

Implementation of the most intensive scenario of combat support units involves an approximate 15 percent increase in live fire training activities. Implementation of the Army's Preferred Alternative is projected to result in a 10-15% increase in live fire training activities to support semi-annual small arms and crew served weapons qualification requirements. These qualification requirements are projected to take place primarily at SBMR's range complex. Many units proposed for stationing under the Preferred Alternative are headquarters units who routinely engage in virtual command and control exercises (i.e. computer simulations) and require minimal maneuver. The implementation of the Army's Preferred Alternative is projected to result in an approximate five percent increase in Maneuver Impact Miles to training areas primarily on Oahu where small elements (platoons and companies) of support units would conduct maneuver training activities in preparation for supporting combat unit maneuver rotations at PTA and for deployment abroad. Because of the low level increase in training, the same level of projected use of PTA, and lack of requirement for range construction activities the Army feels that it has accurately captured impact ratings as part of this FSPEIS.

13. Where can I find a copy of the original Programmatic EIS?

Andrea Gall

Response:

An electronic copy of the Programmatic EIS for Army Growth and Force Structure Realignment may be downloaded from the U.S. Army Environmental Command (USAEC) web site at www.usaec.army.mil. More information may be obtained by contacting the Public Affairs Office, U.S. Army Environmental Command, Building E4460, 5179 Hoadley Road, Attention: IMAE-PA, Aberdeen Proving Ground, MD 21010-5401, telephone: (410) 436-2556, facsimile: (410) 436-1693, email: publiccomments@aec.apgea.army.mil.

14. I support the Army's plans for deployment. How can one not in the World we live in. Many thanks to the Defense Department.

Tom Pickard

Response:

We thank you for your comment and participation in the NEPA process. Your comment has been considered and included in the administrative record for this process.

15. Expressed concern over Global Warming and urgency for public hearings regarding military stationing actions in Hawaii.

Carol R. Campbell

Response:

Scientists have concluded that human activities are changing the composition of the atmosphere, and that increasing the concentration of greenhouse gases will change the planet's climate. There is uncertainty as to how much it will change, and at what rate it will change. This action contributes greenhouse gases to the earth's atmosphere by adding vehicles and their associated carbon emissions to Alaska and Hawai'i. It could also remove vegetation, which would otherwise absorb carbon dioxide. This is not a significant cumulative impact when taken in context of the global situation and the Army's efforts. To begin, the new units would be stationed somewhere in the United States and the decision to create them is driven by Army mission requirements. Even if the units

were not stationed in Alaska and Hawai'i, they would be somewhere else in the United States and the net addition to global carbon dioxide emissions would be the same. It is also important to place these carbon emissions in the context of the federal government's overall plan to reduce carbon emissions. Executive Order 13423 sets as a goal for all federal agencies the improvement of energy efficiency and the "reduc[tion] of greenhouse gas emissions of the agency, through reduction of energy intensity by (i) 3 percent annually through the end of fiscal year 2015, or (ii) 30 percent by the end of fiscal year 2015, relative to the baseline to the agency's energy use in fiscal year 2003." The U.S. Army Energy Strategy for Installations (U.S. Army Energy Strategy for Installations, 8 July 2005, available at http://army- energy.hqda.pentagon.mil/docs/strategy.pdf) also contains strategies to reduce energy waste and improve efficiency. USAG-HI is in the process of developing a master planning approach to limit the need for vehicular travel on and off-post to limit carbon emissions. In addition the installation is looking for opportunities to expand renewable energy sources while at the Army level efforts to acquire equipment requiring less fuel consumption have been underway for several years. Taking these policies into account, this action does not represent a net incremental addition to the global climate change problem.

The Army believes that its public involvement process is appropriate for this programmatic action to support stationing decisions. The Army has made considerable effort to ensure that the potentially affected public has had the chance to provide input and comments on the Army's Proposed Action to grow and realign its force structure to better support operational needs in the Pacific Theater. Parties who expressed interest in the SBCT EIS, or the Army thought would reasonably have an interest in this action, were sent individual letters of notification to solicit comments and input. Scoping announcements and announcement of availability of the draft SPEIS were published in local newspapers. In addition, the Army released information to mainstream media sources where the story was picked up and published in several local papers to ensure the public had awareness. Finally, the Army ensured that hard copies of the draft document were sent to public libraries and that the SPEIS was posted on-line for public access at www.aec.army.mil.

16. Expressed opposition to war and to Army growth.

Adam L. Tucker

Response:

We thank you for your comment and participation in the NEPA process. Your comment has been considered and included in the administrative record for this process.

17. The Army's NEPA analysis does not fulfill the environmental laws of the state of Hawaii, and does not adequately meet the terms of the DLNR US Army-DoD lease of PTA; nor the Hawaii Supreme Court decision and the Precautionary Principle or Hazardous Waste Constituents to include DU

Daniel Morimoto

Response:

As a federal agency, the Army's responsibility is to comply with NEPA, the federal environmental analysis statute. The Army believes that it is in compliance with the terms of its leases related to PTA. The Army also believes this NEPA analysis complies with all applicable court guidance. The comment is too vague to allow for a more detailed response.

D.3.2 Executive Summary

18. Page VI. Facilities (continued from page V a top of page): Comment on last sentence "Due to the amount of construction that would be required…" The utility systems have been privatized and all coordination is done by DU, which is regulated utility. Socio-Economic (second paragraph): Comment on "There may also be a shortage of off-post housing, although there may be vacant buildable space

available." RCI is addressing this. Change last sentence: Beneficial effects would be expected as additional Soldiers and Families would have some….

George E. Gordon, President/CEO, Doyon Utilities

Response:

The Facilities portion of this text is generally referring to the build structures such as barracks. More details on privatized construction regarding utilities is discussed in Chapter 4. We did change the word "could" to "would" in the last sentence regarding potential socioeconomic effects.

19. Page V. Air Quality (top of page Scenarios 1 & 2): Comment on "The use of boiler units…" Excess heat capacity exists; new troops can be added without adding to Title V issues. All required boilers are installed already.

George E. Gordon, President/CEO, Doyon Utilities

Response:

The construction of new facilities and their heating requirements would be best determined at the site-specific level of analysis when details such as planned locations and proximities to steam heat sources versus the need for individual boil units would best be determined. This comment will be available for the U.S. Army Garrison Alaska if additional Soldiers are stationed at those locations.

20. Air Quality (bottom of page-Scenarios 3 & 4): Comment on "The use of boiler units and generators, coupled with increased steam load or coal consumption at the installations' power plant would considerably contribute to the installations' overall air pollutant emissions, further degrading air quality." This isn't correct; the plant is permitted for more coal than is presently used. New electric generating facilities replacing older facilities will increase efficiency which will decrease consumption of coal for the same amount of heat and electricity produced.

George E. Gordon, President/CEO, Doyon Utilities

Response:

The statement examined the potential impacts of two stationary air emissions sources, 1) individual boiler units and generators used in new cantonment area construction where tying in to existing utility lines for heat is not feasible; and 2) the emissions generated by the local power plant in order to meet additional energy consumption requirements, presumed to be associated with incoming Soldiers and facilities. Although new technology (not currently implemented) may demonstrate increased efficiency and decrease coal consumption, stationary source emissions would increase due to use of individual equipment. We removed the following text from the Executive Summary, Page V, of the SPEIS, "…coupled with increased steam load or coal consumption at the installations' power plant would considerably contribute to the installations' overall air pollutant emissions, further degrading air quality."

21. Evaluate in detail impacts combined with Stryker impacts, which are already severe; p. vii (under Scenario 6) "…the occurrence of wildfire may increase within the impact area of PTA. (Pohakuloa Training Area) While the installation could take measures to mitigate the level of impact of wildfires, it remains a significant impact the Army would anticipate given the sensitivity of local plant populations and high levels of endemism…Wildfires events open up opportunities for colonization by invasive non-native vegetation…The severity of impact of wildfire and probability of wildfire caused by CAB (Combat Aviation Brigade) at PTA could not be mitigated to less than significant.

Cory (Martha) Harden

Response:

The FSPEIS has been adjusted to reflect the estimated direct and cumulative significant adverse impact to wildland fire at PTA resulting from stationing of a CAB. In addition, the stationing of a CAB is not part of the preferred alternative.

22. Evaluate in detail impacts combined with Stryker impacts, which are already severe; p. xi Table ES-6, p. 170 Table 4.4-1 show "significant adverse impacts" to biological resources at PTA from CAB

Cory (Martha) Harden

Response: Table ES-6 on page XI of the DSPEIS does demonstrate a potential significant adverse impact to biological resources from the stationing of a CAB. A table indicating the Description of VEC Ratings on page VIII of the Executive Summary demarcates the symbol ⊗ = Significant Adverse. A consolidated table of significant impacts is summarized in tables ES-1 through ES-6. These tables provide an overview of anticipated significant impacts in connection with each stationing scenario at installations analyzed in the SPEIS. Less than significant impacts, and impacts to major training installations analyzed in the PEIS are not captured in the Executive Summary tables. Tables 4.0-1 through 4.0-6 in Chapter 4 of the SPEIS provide a comparison of all of the anticipated impacts from each of the six stationing scenarios.

D.3.3 Air Quality

23. Air Quality (Scenario 5 bottom of page) Comment on "Given regional air quality…" Any air quality issue is primarily in winter. Additionally, as more modern and efficient equipment is installed in the privatized utility, air quality will improve.

George E. Gordon, President/CEO, Doyon Utilities

Response:

Thank you for your comment. The analysis presented in this document is based on the potential impacts or consequences of Army actions to the current environmental conditions. Although we can identify the long-term plans for the improvement of regional air quality, the statement that a 25 percent increase in the population of Fort Wainwright could have (at this time) implications to regional air quality (in the FNSB former CO non-attainment area) is accurate. However, if an additional 1,600 Soldiers were to be stationed at Fort Wainwright, AK the Army would need to conduct a "tiered-off" NEPA analysis of potential environmental impacts to include the potential influence that 1,600 Soldiers and their activities could have to regional air quality. Thank you for your comment and your participation in the public comment process. We have made no changes to the SPEIS as a result of this comment.

24. The DSPEIS-Pacific army growth plan for Fort Wainwright shows growth resulting in "Significant Adverse" effect on air quality within the FNSB. The FNSB's Air Quality program and Air Quality Maintenance Plan has been very successful in addressing the carbon monoxide problem Fairbanks had experienced for decades. The population of the borough has increased from 82,840 in 2000 to 97,484 in 2007, yet during that time period violations of the National Air Quality Standards for CO within the FNSB consisted of only 1 day in February 2000. All privately owned vehicles must meet the Inspection/Maintenance (I/M) criteria for that specific model; failure to meet the standard results in a vehicle that cannot be registered and driven. Assuming the vehicles meet I/M standards, an extra 2000-4000 private vehicles on the roads around the FNSB (as stated on page 289, line 47) should not significantly degrade local air quality.

    The federal government has privatized all utility systems on Fort Wainwright and Fort Greely, the end of the Operations Transition Period is August 15, 2008 when full ownership transfers to Doyon

Utilities, LLC.(Doyon Utilities) Under a 50 year license agreement. All Title V and I air permits will be in DU's name and DU will be responsible for compliance. DU is working to install an additional 13 to 18 MW of additional turbine capacity within Fort Wainwright's Combined Heat and Power facility that will serve the base without degradation of air quality or increases in the quantity of coal consumed. DU will be responsible for modifications to its air quality permits.

Jim Whitaker, Mayor, Fairbanks, Alaska

Response:

The text on page 289, line 47, chapter 4.8.3.2, reflects that air emissions generated from an additional 2,000 to 4,000 vehicles would only contribute to air contaminants (criteria air pollutants) primarily in the cantonment area of the installation. The Army acknowledges that although vehicles would be a contributing factor, these emissions would account for a rather small component of emissions that may otherwise be generated from stationary sources, and therefore would in itself not be significant. The Army also acknowledges that an effort is underway by Doyon Utilities to replace existing infrastructure with cleaner, more efficient technology, which could result in a reduction in criteria air emissions if Fort Wainwright, AK were to experience Army Growth.

25. Air Quality is an issue that appears to be significantly affected by the proposed scenarios. None of the scenarios appears to take into account the direct impact of the specific use of the proposed PTA Trail by Humvees and other large vehicles traveling from Kawaihae Harbor to the Keamuku Parcel and onward to PTA. The 26-mile PTA Trail traverses dry, arid, and sparsely vegetated areas directly upwind and/or adjacent to cultural areas (e.g. Puukohola Heiau), resorts (e.g. Mauna Kea Beach Hotel), and densely populated residential communities (e.g. Waikoloa).

Pablo McLoud

Response:

Under all CS/CSS unit stationing scenarios, the increase in frequency and intensity for live-fire and maneuver training at PTA is estimated to be less than one percent of the total current training activities (minimal). As a result, vehicle traffic along the PTA trail, when built, will not appreciably increase as a result of the implementation of stationing scenarios. Therefore, the associated environmental impacts, are estimated to be minimal.

26. As stated in the DSPEIS, live-fire trainings are expected to create a "potential significant risk of igniting wildfires" that "could be unmanageable" (p.180). The risk of wildfire from these scenarios is too high and unacceptable based on the critical and sensitive natural habitat and the high-wind and "tinder-box" dry conditions on the Waikoloa plain between Kawaihae Harbor and PTA.

Pablo McLoud

Response: Under all CS/CSS unit stationing scenarios, the increase in frequency and intensity for live-fire and maneuver training at PTA is estimated to be less than one percent of the total current training activities (minimal). Therefore, the associated environmental impacts are estimated to be minimal. The Army has amended section 4.4.8 to reflect significant adverse impact ratings for biological resources under the CAB stationing scenario, which includes an increased potential for wildfire.

27. Page 288. CSS (1000, CS (1000) Comment on entire paragraph 2 "Long term effects from stationing…" The current boiler capacity and permitting can serve substantial additional loads-DU [Doyon Utilities] would provide new units as required as well as required permitting if needed.

George E. Gordon, President/CEO, Doyon Utilities

Response:

Thank you for your comment. The additional need for boilers and other stationary sources will have long-term implications to air quality due to the additional loading of emissions; however, we do not believe these implications will be significant in nature. Site-specific analysis would more accurately determine the long-term effects to air quality from stationing additional Soldiers at the installation.

28. Page 289. Fires Brigade (1600) Comment on entire first paragraph "Cantonment Construction- last two sentences. See previous comments. Comments on second paragraph "Long term effects from stationing these units…." Additional generation can be added without increasing air quality problems. By installing a back pressure turbine with a higher efficiency more power can be generated while supplying steam without increasing emissions or, in fact, coal consumption. Doyon Utilities (DU) will upgrade generating systems to reduce emissions by heat rate and other technology improvements.

George E. Gordon, President/CEO, Doyon Utilities

Response:

The following text was added to Chapter 4.8.3.2, "Long-term effects from stationing these units at FWA could include an increase in stationary source emissions such as from boiler units and generators, or the possible extension of utilidors to new facilities. However, as indicated through the public comment process, additional power generation could be added without increasing air quality emissions, through the use of higher efficiency equipment that would be installed during utility privatization (Doyon Utilities, 18 June 2008)."

29. How often is this expected to recur with Stryker, plus this action? p. 178 (Alternative of Combat Service Support—1,000 Soldiers and Combat Support—1,000 Soldiers) "Maneuver activities for these units could reduce vegetative cover and could lead to increased susceptibility to wind erosion (at PTA)."

Cory (Martha) Harden

Response:

Potential impacts to soils and air quality from live-fire and maneuver training at Pohakuloa Training Area (PTA) have been changed in section 4.4.3 and 4.4.7 to predict significant but mitigable impacts for CS/CSS unit stationing scenarios. Units proposed as part of these stationing scenarios would not perceptibly increase the frequency or intensity of maneuvers or live-fire training activities at PTA, and therefore would minimally add to the risk of wildland fire, the loss of vegetation, or the increase of water and windborne soil erosion at PTA. The Army projects a less than one percent increase in the total training at PTA as result of implementation of the preferred alternative. The frequency and intensity of use of PTA for maneuvers and live-fire activities are inherently linked to the number and type of combat maneuver units (BCTs and battalions) stationed in Hawaii. These units drive the requirements for the number of combat maneuver rotations and Combined Arms Live Fire Exercises (CALFEX's) that would take place on Hawaii and at PTA. Combat support units accompany combat maneuver units and support integrated training events. Although there may be an increase in individual training requirements, the addition of these CS/CSS units allows for soldiers to remain at their home station longer, deploy less frequently, while maintaining the same level of support for combat units conducting training at PTA. The implementation of this action is projected to minimally (less than one percent) increase the frequency and/or intensity of training use of PTA and therefore does not directly or cumulatively add to significant impact ratings to air quality or windborne soil erosion.

D.3.4 Airspace

30. According to the Draft EIS, PTA will support training activities under all unit stationing scenarios at SBMR and Fort Shafter. The noise caused by aviation traffic transporting Soldiers to PTA will significantly intensify, especially if a Combat Aviation Brigade with approximately 80-100 helicopters is approved. The cumulative effects on air quality, cultural resources, noise, soil erosion, biological resources, land use, and traffic and transportation for the Combat Aviation Brigade is listed as significant adverse in the EIS. These issues are similar to those that were posed for the stationing of the Stryker Brigade in Hawaii. Statistics found in the May 2004 SBCT EIS indicate an average of 900 aircraft movements per month, 99 percent of which involve helicopters. Now with the SBCT, additional aircraft movement will directly effect the quality of life for neighboring residents to PTA and any additional brigades such as the Combat Aviation Brigade would be detrimental. Past helicopter overflight activities over Waiki'i Ranch resulted in injury to livestock, disrupted homes, and created clouds of dust and dirt.

    Request that the Army prohibit aircraft overflights over Waiki'i Ranch except in emergency situations, and work with the Waiki'i Ranch Homeowner's Association to establish guidelines for communication between the Army and the community.

Lorraine R. Inouye, Senator, 1st District

Response:

Thank you for your comment and request, which will be forwarded to the PTA Commander for consideration. The Army maintains an open dialogue with the Waikii Ranch Homeowner's Association. It should be noted that stationing of the CAB in Hawai'i is not part of the Army's preferred alternative.

31. The Waiki'i Ranch community requests that the Army adopt a strict training policy prohibiting aircraft overflights of Waiki'i Ranch, and that the policy be prepared in consultation with the Ranch's Board of Directors.

David D. Higgins, President, Waiki'i Ranch Homeowner's Association

Response:

Thank you for your comment, your request will be forwarded to the PTA Commander for consideration. It should be noted that stationing of the CAB in Hawai'i is not part of the Army's preferred alternative.

32. In accordance with the ruling by the United States Fifth Circuit Court of Appeals (No. 02-60288), any environmental studies conducted under the National Environmental Policy Act (NEPA) must include discussion regarding the impact to civil and commercial aviation. The ruling states "Civil and Commercial aviation are part of the modern human environment broadly defined, and because the [proposed airspace] would impact aviation, NEPA required the Air Force to address that impact in the EIS." AOPA expects the Army to take into consideration all aspects of these impacts including the safety and economic impacts.

Pete Lehmann

Response:

The Army has conducted a programmatic-level analysis of potential impacts to airspace resources to inform stationing decisions of senior Army decision-makers. Impacts to airspace resources have been included as a topic of discussion in this SPEIS. Airspace resources for each installation may be found in the following sections of the SPEIS, Schofield Barracks 4.2.4, Fort Shafter 4.3.4, Pohakuloa Training Area 4.4.4, Fort Richardson 4.7.4, and Fort Wainwright 4.8.4. This programmatic-level of analysis allows for appropriate decision-making to cover army-wide actions; whereas tiered-off analyses would be better suited to analyze the specific influence that stationing actions may have to

airspace and installation natural infrastructure resources. Because the decision-maker has not yet determined the exact unit configuration to station at any particular location, a more detailed level of analysis for airspace resources cannot be determined at this time. It should be noted that the stationing scenario to place an additional Combat Aviation Brigade in Hawaii is not a part of the Army's preferred alternative in the final SPEIS, and the Army's preferred alternative focuses on the stationing of ground based units. Thank you for your comment. No changes have been made to the SPEIS as a result of this comment. Your comment has been considered and included in the administrative record for this process.

33. AOPA recommends the Army include an Adverse Impact Matrix in the EIS as was done in the original Programmatic Environmental Impact Statement (PEIS). This allows users and interested parties to understand the full effect of each alternative and its associated impacts. Categorizing the impact on airspace that a troop increase would have on each installation by Short or Long term and Low, Moderate or High was useful in the original PEIS. AOPA encourages the use of such a system in the SPEIS to allow users the ability to quickly ascertain the impact on airspace for a given installation.

Pete Lehmann

Response:

The Army has included a matrix of predicted impacts from each stationing scenario in section 4.0 (see tables 4.0-1 through 4.0-7). Significant adverse impacts are also presented separately in the Executive Summary. Thank you for your comment. The Army believes the current analysis of potential impacts is sufficient to support the stationing decisions.

34. With the amount of Special Use Airspace (SUA) already in existence, AOPA contends that any installation that would require the expansion or creation of additional SUA to support the increase in personnel should be dropped from consideration, or otherwise rate those installations with a High Adverse Impact with regard to airspace.

Pete Lehmann, AOPA

Response:

Thank you for your comment. No scenario under consideration in this SPEIS would require the expansion or creation of additional Special Use Airspace.

35. The military, in cooperation with the State of Alaska and the FAA has established no-fly zones and altitude restrictions in airspace to minimize the impact on commercial and general aviation. The FNSB has established policies of planning and zoning to control or prohibit residential or commercial activities that may conflict with military activities. The 2006 JLUS established compatible use zones and air safety zones around both Fort Wainwright and Eielson Air Force Base. Uses not compatible with clear zones, and Accident Potential Zone class I and II are not allowed to ensure the operational utility of each airfield.

Jim Whitaker, Mayor, Fairbanks, Alaska

Response:

Thank you for your comment. We modified the text in chapter 4.8.4.1 to state the following, "The military, in cooperation with the State of Alaska and the FAA has established no-fly zones and altitude restrictions in airspace to minimize the impact on commercial and general aviation. The FNSB has established policies of planning and zoning to control or prohibit residential or commercial activities that may conflict with military activities. In addition, a 2006 Joint Land use Study (JLUS) (FNSB, 2006) established compatible use zones and air safety zones around both Fort Wainwright and Eielson Air Force Base."

D.3.5 Cultural Resources

36. Under the context of Cultural Resources, the DSPEIS and the FEIS both state "the area encompassing the lands on and between the mountains of Mauna Kea ad Mauna Loa is one of the most sacred areas to Native Hawaiians" (p. 181 and 3-34, resp). PTA and the Keamuku Parcel encompass 132,000+ acres of this culturally and spiritually significant land. The DSPEIS concludes that impacts from live-fire and maneuver training would be Less than Significant, especially considering that rockets, missiles, bombs, and machine guns would be used in areas where there are hundreds of known prehistoric and historic sites as well as hundreds of others not yet discovered. The impact from these proposed scenarios must only be identified as Significantly Adverse as shown in Table 4.5-1 in the DSPEIS and 5-1 in the FEIS.

Pablo McLoud

Response:

The Final Supplemental EIS for stationing of the 2/25th SBCT determined significant impacts to CR on the basis of extensive range construction and significant increase in live-fire and maneuver activities that could potentially affect documented and undocumented CR at PTA. Under all CS/CSS unit stationing scenarios, there will be no new range construction, no increase in requirements for CALFEX exercises, and the increase in frequency and intensity for live-fire and maneuver training at PTA is estimated to be less than one percent of the total current training activities. Therefore any impacts to cultural resources under CS/CSS stationing scenarios would be minimal. CS/CSS stationing scenarios will not perceptibly increase the use of munitions at PTA. In spite of this the Army has revised impact rating to reflect significant impacts to fully account for impacts of on-going actions taking place as part of the No Action Alternative. The Army has also revised the impact rating for the CAB stationing scenario and added additional text to section 4.4.5.2. The final SPEIS now states that the impacts for stationing of a CAB would be significant adverse.

D.3.6 Noise

37. Noise may be defined as an unwanted or unpleasant sound, and its impact is entirely subjective. An acceptable sound to some may be an unwanted and unhealthy noise to others. The DSPEIS identifies the effects from live-fire and maneuver trainings for scenarios 1 through 4 to be Less than Significant. This conclusion is astonishing since the Keamuku Parcel, where these activities would occur, surrounds on three sides the residential Waikii Ranch development and the Kilohana Girl Scout Camp. Impacts on families and small children should always be considered Significant until only proven otherwise after in-situ monitoring and long-term studies of the impacted population.

Pablo McLoud

Response:

The Army has made changes to the ratings associated with noise impacts. Changes have been made to impact ratings primarily to better reflect on-going actions which will be taking place as part of the No Action alternative. CS/CSS stationing scenario noise impacts have been changed to predict significant but mitigable impacts. Noise ratings for the stationing of a CAB have been adjusted to reflect significant impacts.

It should be noted that the increase in frequency and intensity for live-fire and maneuver training at PTA is predicted to be imperceptible. Any potential increase in training activity is estimated to be less than one percent of the total current training activities and any increase in noise would be imperceptible. The CS/CSS units scheduled for stationing at O'ahu will conduct the vast majority of their live-fire training on the island of O'ahu. The Army has revised the estimated noise impacts for Schofield Barracks and training sites on O'ahu as significant under all stationing scenarios.

38. Scenario 5 (p.185), consisting of the Combat Aviation Brigade, shows its impacts to be Significant but Mitigable. These impacts come from the infrastructure construction, live-fire training (i.e. rockets and missiles) and maneuver training. The most significant aspect is maneuver training because it entails helicopters flying at low altitudes (@ 300 ft above ground level) from Wheeler Army Airfield on Oahu to PTA. The aircraft, consisting of Apache, Cobra, Blackhawk, and Chinook helicopters, would pass over or near residential areas of the Big Island. The noise impact to residents and visitors in these areas would be Significant and would not be mitigable.

Pablo McLoud

Response:

The text in section 4.4.6.2 has been modified to clarify that standard operating procedures prescribe over flight of residential areas is avoided to the maximum extent, or if not possible, then it is conducted at higher elevations. During training maneuvers, helicopters may fly at lower altitudes in designated, approved training areas. However, the Army has revised its assessment of the potential noise impacts to residents and visitors for the CAB stationing scenario to significant. It should be noted that the stationing of a CAB in Hawai'i is not part of the preferred alternative.

39. The DSPEIS document reports noise levels only in Ldn, which is an average over a 24-hour period with night noise increased by 10dB. This limited amount of information is insufficient to properly assess the noise impact of each scenario. The noise levels for ALL types of vehicles (e.g. Humvee), artillery (e.g. cannon), aircraft (e.g. helicopter), and machinery (e.g. generators) used in construction, live-fire and maneuver training at PTA should be clearly identified and tabulated. The Sound Equivalent Level (SEL), which is the sound from an entire event concentrated into a single pulse of 1-second duration, should be reported for each item. The Effective Perceived Noise Level (EPNdB) for each item should also be reported.

Pablo McLoud

Response:

The Army has made changes to the ratings associated with noise impacts. Changes have been made to impact ratings primarily to better reflect on-going actions which will be taking place as part of the No Action alternative. CS/CSS stationing scenario noise impacts have been changed to predict significant but mitigable impacts. Noise ratings for the stationing of a CAB have been adjusted to reflect significant impacts.

It should be noted that the increase in frequency and intensity for live-fire and maneuver training at PTA is predicted to be imperceptible. Any potential increase in training activity is estimated to be less than one percent of the total current training activities and any increase in noise would be imperceptible. The CS/CSS units scheduled for stationing at O'ahu will conduct the vast majority of their live-fire training on the island of O'ahu. The Army has revised the estimated noise impacts for Schofield Barracks and training sites on O'ahu as significant under all stationing scenarios.

The Army feels that Ldn is the appropriate measure to gauge noise impacts. Thank you for your comment.

40. Pg. 192 [Combat Aviation Brigade – 2,800] "Noise impacts to biological resources are expected to significantly increase. Although wildlife has been demonstrated to adapt to changes in noise, some species may have a more difficult time adapting to the increase in ordnance use and helicopter overflights."

Cory (Martha) Harden

Response:

The Army has amended section 4.4.8 to reflect significant adverse impact ratings for biological resources and noise impacts under the CAB stationing scenario and has added additional text describing impacts to biological noise receptors to the section discussion. The Army has consulted with the USFWS in the 2003 PTA Biological Opinion, and recognizes that there are biological noise receptors at PTA that could be significantly affected by increased aviation activities. The Army does take measures to reduce impacts, however, the Army cannot conclusively state that noise impacts from stationing of a CAB would not significantly impact species, such as the Hawaiian Hoary Bat and other biological noise receptors. If the CAB stationing scenario were selected, the Army would complete formal Section 7 consultation and follow all minimization measures and terms and conditions contained therein. It should be noted that the stationing of a CAB in Hawai'i is not part of the preferred alternative.

41. The 2006 JLUS assessed land use and noise contours around both bases and identified areas where non-military construction should not occur due to noise created by military activities. These areas are clearly identified and have limitation placed on them for development. A need to expand the firing range for any alternatives within DSPEIS-Pacific will not create noise problems as residential construction has not occurred within the higher noise impact areas.

Jim Whitaker, Mayor, Fairbanks, Alaska

Response:

Based upon the text provided, chapter 4.8.6.1 was modified to include some discussion on limitations on development surrounding FWA. In addition, chapter 4.8.6.2 has been slightly modified to reflect a less than significant potential impact from increased noise from live-fire activities at the FWA small arms range complex.

D.3.7 Soil Erosion

42. Section 4.4.2 of the DSPEIS discusses the existing baseline conditions for each environmental resource (VEC) at PTA and the consequences of the 5 different stationing scenarios on the VEC. Matters of concern include: Soil Erosion will proportionally increase in direct response to maneuver training intensifying from 5 to 25% (pg 186). To say this increase in vehicle traffic is Less than Significant is inappropriate. Furthermore, the DSPEIS reports that "exposure to chemical contaminants in soils at maneuver training areas could occur through several pathways, including direct contact of contaminated soils, ingestion, or through inhalation of windblown dust". Potential exposure to chemical contaminants through water and wind erosion and transport are highly probable scenarios that should be considered Significant due to the arid and windy conditions along the PTA trail and in the PTA region as well as the frequently intense rainstorm events (storm squalls).

Pablo McLoud

Response:

Potential impacts to soil resources from increased live-fire and maneuver training at Pohakuloa Training Area (PTA) are accurately described as less than significant under CS/CSS stationing scenarios. Units proposed for stationing in Hawaii as part of the combat support stationing scenarios of the FSPEIS and the Army's Preferred Alternative would not perceptibly increase the frequency or intensity of maneuvers or live-fire training activities at PTA, and therefore are not anticipated to increase water or wind erosion at PTA. The Army projects a less than one percent increase in the total training at PTA as result of implementation of the preferred alternative. The frequency and intensity of use of PTA for maneuvers and live-fire activities are inherently linked to the number and type of combat maneuver units (BCTs and battalions) stationed in Hawaii. These units drive the requirements for the number of combat maneuver rotations and Combined Arms Live Fire Exercises (CALFEX's) that would take place on Hawaii and at PTA. Combat support units accompany combat

maneuver units and support integrated training events. Although there may be an increase in individual training requirements, the addition of these CS/CSS units allows for soldiers to remain at their home station longer, deploy less frequently, while maintaining the same level of support for combat units conducting training at PTA. The implementation of this action is projected to minimally (less than one percent) increase the frequency and/or intensity of training use of PTA and therefore does not directly or cumulatively add to significant impact ratings to soil resources. The Army has made a change to reflect that the stationing of a CAB in Hawaii would be projected to have significant impacts to soil erosion at PTA.

43. One contributing factor to soil erosion is the occurrence of wildfires, which reduces vegetative cover and increases soil exposure to wind and water erosion. The DSPEIS reports that "wildland fires occur infrequently in Hawaii" (pg 187). This DSPEIS statement is inaccurate due to numerous sizeable (25,000 ac ['05], 2,000 ac ['07], etc.) wildland fires caused by natural and manmade sources. The risk of wildland fires is high in the PTA ROI due to naturally dry climate setting, unseasonably dry rainfall patterns, and ongoing drought conditions. The potential for increased maneuver and live-fire training associated with all 5 possible scenarios, the impact to soil erosion should be considered no less than Significant.

Pablo McLoud

Response:

The statement on page 187 of the DSPEIS on the infrequency of wildland fires refers to fires caused by natural conditions such as lightning. It is therefore not inaccurate since it does not refer to manmade sources. The potential increase in wildfire and the resultant impacts to soil resources from increased live-fire and maneuver training at Pohakuloa Training Area (PTA) are accurately described as less than significant under all CS/CSS unit stationing scenarios. Units proposed as part of these stationing scenarios would not perceptibly increase the frequency or intensity of maneuvers or live-fire training activities at PTA, and therefore would minimally add to the risk of wildland fire, the loss of vegetation, or the increase of water and windborne soil erosion at PTA. The implementation of this action is projected to minimally (less than one percent) increase the frequency and/or intensity of training use of PTA and therefore does not directly or cumulatively add to significant impact ratings to soil resources.

Because of the imperceptible increase in the projected use of PTA, the Army believes that it has accurately captured impact ratings for CS/CSS stationing scenarios as part of this FSPEIS. Discussion within section 4.4.7 of the FSPEIS has been updated to reflect significant adverse impacts that may result from the stationing of a CAB.

44. What mitigation is planned for craters? Pg. 187 (Combat Aviation Brigade—2,800) "Munitions impact can directly create craters and remove patches of vegetation…long-term impacts are expected…would reduce these impacts to less than significant."

Cory (Martha) Harden

Response:

We have amended the impact rating for soil erosion under the CAB stationing scenario to predict significant impacts. The aviation gunnery range is in an active impact area, which makes it impracticable to mitigate craters and other soil erosion impacts.

D.3.8 Biological Resources

45. The impact from a Combat Aviation Brigade to biological resources would be Adversely Significant and irreparable; and when you consider that 38% of the plants found on PTA are indigenous or

endemic (pg 3-73 FEIS) and that fourteen plant species are federally listed as endangered, the impact is too high and unacceptable. In addition, fifteen species of birds are found throughout PTA, including 5 federally listed endangered species. 4,218 acres of critical habitat for the endangered Palila bird are present in the northeast corner of PTA. Appendix B incorrectly reports the habitat to be "contiguous" versus "onsite". Sensitive endemic species of insects (2), snails (8), and caterpillar (3) also reside inside the boundaries of PTA. The endangered Hawaiian Hoary Bat is distributed throughout PTA. Because it is the only native terrestrial mammal in Hawaii, its presence is important.

Pablo McLoud

Response:

The Army has updated section 4.4.8 to reflect significant adverse impacts to biological resources as a result of the CAB stationing scenario. Impacts from this stationing scenario could not be mitigated to less than significant levels. If the CAB stationing scenario were selected, the Army would complete formal Section 7 consultation and follow all minimization measures and terms and conditions contained therein. It should be noted that the stationing of a CAB in Hawai'i is not part of the preferred alternative. Corrections have been made to Appendix B to resolve inconsistencies.

46. The DSPEIS does not identify migratory birds as a biological resource, while the FEIS reports (pg 3-59) that eleven species of migratory birds have been observed at PTA. The Migratory Bird Treaty Act (MBTA) and Executive Order 13186 under the MBTA protects these birds. As such, eleven birds should be identified in Appendix B, and included in the discussion of Biological impact by possible stationing scenarios in the DSPEIS.

Pablo McLoud

Response:

Migratory Birds have been included as Appendix F, and the final SPEIS has been adjusted to include discussion of migratory birds. USAG-HI will remain in compliance with the MBTA.

47. Line 11 on page 189 of the DSPEIS states that "fourteen federally-listed endangered plants and nine species of concern are found at PTA and the Keamuku Parcel". Appendix B only lists twelve plant species; the other two species should be identified. Because the issue was put into text, the Appendix B table should also clearly indicate the nine plant "species of concern".

Pablo McLoud

Response:

Appendix B has been updated since the DSPEIS and lists 15 federally-listed plant species. In addition, chapter 4.4.8.1 has been updated to reflect that there are 15 federally-listed plant species. The text regarding species of concern in chapter 4.4.8.1 was corrected from nine (9) species of concern to three (3) species of concern found at PTA. These species were listed for the reader. The reference document is, Status of the Implementation of Actions Identified in the 2003 US Fish and Wildlife Service's Biological Opinion for Pohakuloa Training Area, Island of Hawaii, January 2007.

48. Omitted endangered bird species from Appendix B that were mentioned in text (DSPEIS and FEIS) include Io (*Buteo solitarious*), Nene (*Branta sandvicensis*), and Dark-rumped petrel (u'au) (*Pterodroma phaeopygia*). The DSPEIS reports the dark-rumped petrel has not been detected at PTA in the last eight years (2007). Meanwhile, the FEIS dated February 2008 reports that the petrel is known to occur on PTA, and a survey is planned to determine the presence of the dark-rumped petrel.

Pablo McLoud

Response:

The table has been corrected to reflect the correct species. The dark rumped petrel has not been detected at PTA since a radar survey conducted in 1994 detected three flying over the eastern portion of PTA. Since the Biological Opinion was issued in 2003, surveys have been conducted by the Army Natural Resource staff annually and have not detected a single petrel. The Army and the USFWS do not believe this species currently reside at PTA but the Natural Resource Program will continue to conduct surveys on an annual basis as outlined in the Biological Opinion.

49. Table 5-1 on Page 5-1 in the FEIS shows the impacts to VEC from the permanent stationing of the SBCT in Hawaii. The table identifies Wildfire Management as a VEC that would have SIGNIFICANTLY ADVERSE impact. On the other hand, the DSPEIS does not identify Wildfire Management as a VEC nor does it give the topic significant weight or discussion. The only presentation of fire management is found on Page 190, which states the Army must manage the Keamuku parcel as an Intensive Fire Management Area. Because the FEIS identifies impacted, the DSPEIS must do the same.

Pablo McLoud

Response:

The wildfire management VEC is incorporated under the Biological Resources VEC. Under all CS/CSS unit stationing scenarios, the increase in frequency and intensity for live-fire and maneuver training at PTA is estimated to be less than one percent of the total current training activities (minimal). Therefore, the associated environmental impacts are estimated to be minimal. The Army has amended section 4.4.8 to reflect significant adverse impact ratings for biological resources under the CAB stationing scenario, which includes an increased potential for wildfire.

50. Table 5-1 in the [Stryker] FEIS also identifies Noxious Weeds as a VEC, while the DSPEIS does not. The SBCT impact on Noxious Weeds is identified to be SIGNIFICANT BUT MITIGABLE . The DSPEIS presents noxious weeds in Section 4.4.8.2, but does not discuss the extent of significant nor mitigation measures. Because Hawaii is very vulnerable to the introduction and invasion of introduced plant species, especially noxious weeds, this VEC should be weighed more heavily in the DSPEIS as in the FEIS, particularly because each of the 5 scenarios involve the transport of vehicles between islands. There is a high probability of introducing noxious weed species with any of the 5 proposed stationing scenarios.

Pablo McLoud

Response

An assessment of the impacts from noxious weeds is included in the analysis of biological resources. This includes potential increase in the spread of noxious weed species. Under all CS/CSS unit stationing scenarios, the increase in frequency and intensity for live-fire and maneuver training at PTA is estimated to be less than one percent of the total current training activities. As a result, transport of vehicles between islands will not appreciably increase.

51. Appendix B of the DSPEIS lists the threatened and endangered species identified as relevant to the affected environment; I feel this is incomplete. The document should include all sensitive species that are indigenous and endemic to Hawaii that are found in the ROI of each installation, including PTA. The absence of migratory birds, invertebrates, and other bird species from Appendix B clearly indicates a “willful undervalue” designation of animal species that are not federally listed as threatened or endangered.

Pablo McLoud

Response:

The Army has updated Appendix (G) to include all sensitive species. Migratory Birds have been included as a separate Appendix (F) and additional discussion has been added to applicable biological impacts sections.

52. The increase in ordnance use, especially missiles and rockets, and helicopter overflights associated with the combat aviation brigade is too significant an impact to the sensitive and rare native plant and animal species. If this scenario is selected, site-specific population studies and impact analyses are needed before this scenario is initiated.

Pablo McLoud

Response:

The Army has amended section 4.4.8 to reflect significant adverse impact ratings for biological resources under the CAB stationing scenario. It should be noted that the stationing of a CAB in Hawai'i is not part of the preferred alternative.

53. Pg. VII [Scenario 6] "…the occurrence of wildfire may increase within the impact area of PTA. While the installation could take measures to mitigate the level of impact of wildfires, it remains a significant impact the Army would anticipate given the sensitivity of local plant populations and high levels of endemism…Wildfire events open up opportunities for colonization by invasive non-native vegetation…The severity of impact of wildfire and probability of wildfire caused by a Combat Aviation Brigade at PTA could not be mitigated to less than significant."

Cory (Martha) Harden

Response:

The Army has amended section 4.4.8 to reflect significant adverse impact ratings for biological resources under the CAB stationing scenario. It should be noted that the stationing of a CAB in Hawai'i is not part of the preferred alternative.

Under all CS/CSS unit stationing scenarios, the increase in frequency and intensity for live-fire and maneuver training at PTA is estimated to be less than one percent of the total current training activities (minimal). Therefore, the associated environmental impacts are estimated to be minimal.

54. Please evaluate impacts on animals: Fourteen federally-listed plants [sic] endangered plants and nine species of concern are found at PTA and Keamuku Parcel…"

Cory (Martha) Harden

Response:

Impacts to biological resources, including animals, are analyzed in section 4.4.8. A full list of species can be found in Appendix B along with Appendix G which includes a list of sensitive species documented in Alaska and Hawii.. Under all CS/CSS unit stationing scenarios, the increase in frequency and intensity for live-fire and maneuver training at PTA is estimated to be less than one percent of the total current training activities (minimal). Therefore, the associated environmental impacts are estimated to be minimal. Thank you for your comment.

55. "Hawaiian hoary bat is the only native terrestrial mammal in Hawaii, and it is…endangered…resident breeding populations are not found only the islands of Hawaii and Kauai…studies…[are] ongoing."

There should be enough studies to determine how to protect the bat before the planned action goes forward.

Cory (Martha) Harden

Response:

Studies of the bat are ongoing pursuant to the 2003 Biological Opinion. The Army is a member of the Hawaiian Hoary Bat Working Group that meets to determine study objectives and funds research. Under all CS/CSS unit stationing scenarios, the increase in frequency and intensity for live-fire and maneuver training at PTA is estimated to be less than one percent of the total current training activities (minimal). Therefore, the associated environmental impacts are estimated to be minimal.

The Army has amended section 4.4.8 to reflect significant adverse impact ratings for biological resources under the CAB stationing scenario. If the CAB stationing scenario were selected, the Army would complete formal Section 7 consultation and follow all minimization measures and terms and conditions contained therein. It should be noted that the stationing of a CAB in Hawai'i is not part of the preferred alternative.

56. Pg. 190 "In accordance with a 2006 Memorandum of Agreement between the US Army and the Waikii Ranch [sic] Homeowner's Association, the Keamuku Parcel…requires the Army to manage the parcel as an intensive Fire Management Zone…the MOA also requires several mitigation measures…" What recourse does Waikii have if the MOA is not followed?

Cory (Martha) Harden

Response: The MOA between the Waiki'i Ranch Homeowners Association and the Army contains several clauses requiring cooperation and anticipates changing circumstances. It includes a requirement to share environmental monitoring data and both parties agreed to maintain open communication. The agreement contains a dispute resolution mechanism and also will be renegotiated after expiration of its initial term. Under the agreement, when disputes are resolved, the resolution will be incorporated as an amendment to the agreement.

57. Pg. 193 "The incidence of wildfire may increase as a result of training…the effects are anticipated to be significant adverse."

Cory (Martha) Harden

Response: Commenter quoted text with no expressed question or comment to which we can respond.

58. Pg. 212-213 [Cumulative Effects] "Biological Resources…the cumulative impact of implementing any of the stationing scenarios in Hawaii will be significant. Actions which will be taken to station the 2/25th SBCT will result in significant biological impacts in a timeframe which would overlap with the construction of projects and training that would take place to implement growth of the Army needed to support Pacific Theater Operations…Other projects [no specified] could have detrimental affects [sic] on vegetation in their vicinity, and consequently on the species that have been supported by these habitats. There would be a cumulative increase in the number of nonnative species…Construction and increased use of roads would introduce additional nonnative species and further spread those that already occur…the disturbance caused by construction and demolition and increase use of improved roads would leave the surrounding habitats vulnerable to nonnative species that can thrive in conditions where native species cannot…The overall cumulative impact from the spread of nonnative species from other proposed projects in the area could be significant…the cumulative effect on sensitive species that would result from project-related habitat loss and degradation would be significant."

Cory (Martha) Harden

Response: Commenter quoted text with no expressed question or comment to which we can respond.

59. Pg. 213 "There would be a cumulative increase in the potential for fire…Since there is an increased risk of wildfire which additional live-fire activities for new units adds to, that could result in an irretrievable loss of individuals of sensitive species…the impacts may not be reduced to a less than significant level…the cumulative impacts involving wildfires are expected to be significant."

Cory (Martha) Harden

Response: Commenter quoted text with no expressed question or comment to which we can respond.

D.3.9 Wetlands

60. The FNSB planning department is in the process of creating the Tanana Valley Watershed Riparian Management Plan. The Tanana Valley Watershed Association has partnered with the Fairbanks North Star Borough Planning Commission and the Department of Community Planning to formulate a riparian management plan for the FNSB's consideration and potential implementation. The 7,361 square-mile FNSB encompasses more than 9,000 miles of waterways that would be addressed by the riparian management plan. About 800 miles of these waterways are within the relatively densely populated and developed Greater Fairbanks Area, with an additional 2,500 miles of these waterways within easy access (one-half mile) of roads or navigable watercourses. The Borough's waterways remain mostly unspoiled and free flowing, providing outstanding fishing, wildlife, recreation, home sites and economic opportunities. Healthy riparian corridors are important for streambank stability and for fish and wildlife habitat. The FNSB is willing to work with the Army on wetland conservation issues and would like to include Fort Wainwright within the riparian management plan.

Jim Whitaker, Mayor, Fairbanks, Alaska

Response:

Thank you for your comment. The Army's partnership with the Fairbanks North Star Borough is an important element of installation sustainability and strengthening Soldier readiness. Our common goals include responsible environmental management of our shared resources while encouraging smart development in anticipation of regional population growth. The Army wishes to remain a good neighbor and community partner with the FNSB and looks forward to this continued partnership.

D.3.10 Water Resources

61. Data should be collected and analyzed for this EIS. p. 193 "Few data on surface water quality are available for the PTA watersheds."

Cory (Martha) Harden

Response:

The data is difficult to collect due to the lack of surface water resultant from the limited rainfall and the very porous nature of the soils at PTA, particularly in the impact and training areas. PTA has limited urbanized areas and there is no current requirement to collect surface water data.

62. How is the wastewater handled? Are laws about large capacity cesspools followed? What are the environmental effects of how the wastewater is handled? p. 194 "There is no wastewater treatment plant on PTA"

Cory (Martha) Harden

Response:

The waste water is handled through septic tanks and underground injection wells. The Army is in compliance with cesspool regulations. The Army was required by EPA Region IX to remove all of its large capacity cesspools, replace them with septic tanks and obtain a Underground Injection Control (UIC) permit issued by the State Department of Health, Safe Drinking Water Branch. The waste water is managed in accordance with Federal and State regulations.

There would be no perceptible increase in waste water generating activities at PTA under all stationing scenarios analyzed to support the proposed action.

D.3.11 Facilities

63. Page 334. First paragraph-Comment on Cantonment Construction: Sentence "These facilities would be tied in to existing utilities…" The utility systems that have been privatized are being systematically upgraded-overhead distribution and substantial portions of the power system will be completely replaced by 2010. A new electrical substation scheduled for completion June of 2009, and other upgrades, will handle 50 percent more load than currently exist.

    Last section-Fire Brigade (1600) Comment on sentences beginning "Construction would involve all new facilities…Ending next page with "Additional Family housing…" Electrical systems completely replaced with higher capacity systems by the end of 2010 by Doyon Utilities. Heat systems may be extended, but no new capacity will be required.

George E. Gordon, President/CEO, Doyon Utilities

Response:

Thank you for your comments. The following text was added to Chapter 4.8.11.1 supporting the affected environment (baseline information) for Facilities located at Fort Wainwright, AK, "The power distribution system at FWA is being systematically upgraded, and substantial portions of the power system will be completely replaced by 2010. A new electrical substation is scheduled for completion June of 2009. Technology upgrades will handle 50 percent more load than currently existing power infrastructure." The analysis provided in Chapter 4.8.11.2 provides that upgrades to infrastructure would be required in order to accommodate additional Army unit requirements. These upgrades are likely to occur in addition to planned infrastructure upgrades due to the potential need for new construction. No changes were made to Chapter 4.8.11.2 as a result of this comment.

64. It might be nice if you planned on where you are going to put these people before they arrive in Hawaii. I see no new parking or office space for a post that is currently bursting at the seams with recent additions. Temporary trailers have been added to provide office space for some of the folks but no need parking has been provided. MILCON projects take at least 6 years and what if any are in the process? Additionally, funneling all the folks through one open gate to avoid cost of staffing second gate will cause an even larger back up at morning rush hour and lunch time.

Darryl Bardusch

Response:

This EIS is the first step for assessing impacts on the natural and human environment. The Army is planning for facilities to accommodate all new soldiers associated with this stationing action, to

include adequate parking. These issues will addressed in the follow-on site specific NEPA document. Thank you for your comments. We made no changes to the SPEIS as a result of this comment.

65. Page VI. Facilities (continued from page V a top of page): Comment on last sentence "Due to the amount of construction that would be required…" The utility systems have been privatized and all coordination is done by DU [Doyon Utilities], which is regulated utility.

    Socioeconomic (second paragraph): Comment on "There may also be a shortage of off-post housing, although there may be vacant buildable space available." RCI is addressing this. Change last sentence: Beneficial effects would be expected as additional Soldiers and Families would have some….

George E. Gordon, President/CEO, Doyon Utilities

Response: (Facilities) The text refers to the built environment, separate from the utilities infrastructure. Thank you for your comment. We have made no changes to the document. (Socioeconomic) The Army has received comments regarding housing in Fairbanks, Alaska that have resulted in modifications to this text. Thank you for your comment and your participation in the public comment process.

66. Page 282. Scenario 3 Cantonment Construction: Comment on "Power, sewage water lines and roads would need to be extended…" These utilities would be provided by Doyon Utilities (DU). In the privatized scenario routine capacity upgrades and improvements are planned in advance as the requirements change. Increased housing needs (except for utilities which will be provided by DU) will be addressed by RCI/ACTUS which assumes control of Ft. Wainwright housing on January 1, 2009.

George E. Gordon, President/CEO, Doyon Utilities

Response:

The following change was made to sections 4.7.11.1 and 4.8.11.1, for both Fort Richardson and Fort Wainwright; "Housing requirements for accompanied Soldiers in USAG Alaska will be privatized, and will be met by the Residential Communities Initiative (RCI) beginning 1 January 2009." And, "All utility services provided to USAG Alaska will be privatized in August of 2008."

67. Page 285. "Facilities could not be sited in the current cantonment area and power, sewage lines, water lines, and roads would need to be extended to the expansion location for the new cantonment area. This area would consist of between 75-120 acres of land to the north of the Chena River, power can and will be easily provided by DU. Water and wastewater service has been extended to housing constructed in 2007 and 2008 by Golden Heart Utilities. Natural gas for heating is being provided by Fairbanks Natural Gas.

George E. Gordon, President/CEO, Doyon Utilities

Response:

Thank you for your comment. The facilities referenced in Chapter 4.8.1, Scenario 5, involve administrative operations and company operation facilities in support of unit operations; and barracks supporting unaccompanied Soldiers. Family housing units are under the purview of Residential and Communities Initiative (RCI). However, the following text was added to Energy, Chapter 4.7.12.1, "Natural gas for heating is currently being provided by Fairbanks Natural Gas."

D.3.12 Energy Demand/Generation

68. As a result of utilities privatization in Alaska, twelve (12) separate utility systems will be privatized and transferred to private ownership. Doyon Utilities [DU] will maintain, operate, and own all utilities on these three installations and be fully capable of and responsible for expansion to serve new facilities and needs as required. All Permits to include necessary Titles V and I air permits will be in DU's name and DU will be responsible for compliance. (Separation from Army permits and issuance in DU's name is expected by 15 August 2008.).

    During the first five years of operation, all electric facilities at all three posts will be completely rebuilt. Feeders will have 50 percent extra capacity; three new substations (one at each post) are being constructed in the first 18 months with completion at Fort Wainwright scheduled for 1 June 2009. These stations will have 50 percent excess capacity (or more) and can be expanded by simply adding an additional transformer. (All electrical circuits and supply systems are being constructed with 50 percent extra capacity and loop feed capabilities to accommodate future growth.)

George E. Gordon, President/CEO, Doyon Utilities

Response:

The following text was included for Fort Wainwright, chapter 4.8.12.1, "As a result of utilities privatization in Alaska, twelve (12) separate utility systems will be privatized and transferred to private ownership. Doyon Utilities will maintain, operate, and own all utilities on these three installations and be fully capable of and responsible for expansion to serve new facilities and needs as required. During the first five years of operation, all electric facilities at all three posts will be completely rebuilt. Feeders will have 50 percent extra capacity; three new substations (one at each post) are being constructed in the first 18 months with completion at Ft. Wainwright scheduled for 1 June 2009. These stations will have 50 percent excess capacity (or more) and can be expanded by simply adding an additional transformer. All electrical circuits and supply systems are being constructed with 50 percent extra capacity and loop feed capabilities to accommodate future growth (Letter from Doyon Utilities, June 2008)."

The following text was included for Fort Richardson, chapter 4.7.12.1, "All utility services provided to USAG Alaska will be privatized in August of 2008. Beginning at that time, Doyon Utilities will update the electrical distribution system, which would increase the carrying capacity of the existing feeder system and eliminate power overloads after October 2008. During the first five years of operation, all electric facilities will be completely rebuilt, feeders will have 50 percent extra capacity, and three new substations (one at each post: FRA, FWA, and DTA) are planned for construction within the first 18 months of privatization. In addition, the utility is planning to install new substations and transformers, and add a new standby generating facility with a minimum of 7.5 MW to replace the obsolete 6.5 MW facility currently located at the installation."

69. Ft. Wainwright CHPP does not utilize more than 50 percent of its capacity to produce steam for heat. DU [Doyon Utilities] will be installing approximately 13 to 18 mw of additional turbine capacity to utilize extra steam. This will make Ft. Wainwright totally energy self sufficient within the next two to three years and allow energy wheeling to Ft. Greely or other posts. DU will be ceasing installation of utilidors in favor of more efficient and competitive direct bury for water, wastewater, and heat systems. Additional heat and electric energy loads will be served without increases in quantity of coal consumed or degradation of air quality. Additionally, (although with changed air quality parameters DU will have to seek changes to its permits) the use of technology to control boiler and turbines will actually lower emissions.

George E. Gordon, President/CEO, Doyon Utilities

Response:

The following text in chapter 4.8.12.1 was revised to read, "As a result of utilities privatization in Alaska, twelve (12) separate utility systems will be privatized and transferred to private ownership. Doyon Utilities will maintain, operate, and own all utilities on these three installations (FWA, FRA,

DTA) and be fully capable of and responsible for expansion to serve new facilities and needs as required. During the first five years of operation, all electric facilities at all three posts will be completely rebuilt. Three new substations (one at each post as listed above) will be constructed within the first 18 months, with completion at FWA scheduled for 1 June 2009. These stations will have 50 percent excess capacity (or more) and can be expanded by simply adding an additional transformer. All electrical circuits and supply systems are being constructed with 50 percent extra capacity and loop feed capabilities to accommodate future growth (Letter from Doyon Utilities, June 2008).

FWA has a central coal-filled power plant that produces electricity and steam heat for the installation and is responsible for approximately 95 percent or more of the energy capability throughout FWA. The power plant also provides heat in the form of steam to a majority of structures throughout the cantonment area (many of the buildings there are also heated by individual boilers). Doyon Utilities will install approximately 13 to 18 MW of additional turbine capacity to utilize extra steam. This technology upgrade will make FWA completely energy self-sufficient within the next two to three years and allow energy wheeling to For Greely or to other installations. In addition, Doyon Utilities will cease the installation of utilidors in favor of more efficient direct bury heat systems (Letter from Doyon Utilities, June 2008)."

70. 4.7.12.1: Entire First Sentence. Beginning of paragraph "FRA obtains its energy from the Railbelt Transmission Grid- Presently they are purchasing from Anchorage Municipal Light and Power…12 MW. DU is installing new substations and feeders starting in 2008. No overloads will exist after October 2008. Sentence: Doyon also plans to install new substations and transformers, and add a new standby generating facility with a minimum of 7.5 mw to replace…the obsolete 6.5 mw facility.

    Line 44-Sentence: "Studies by Doyon are proposed which explore the use of alternative…"

George E. Gordon, President/CEO, Doyon Utilities

Response:

The following text has replaced the text identified to be faulty in Chapter 4.7.12.1; "FRA obtains its energy from the Railbelt Transmission Grid. Presently, the installation purchases power from Anchorage Municipal Light and Power. The current peak draw is approximately 12 MW, however the current feeder system to the installation is overloaded. All utility services provided to USAG Alaska will be privatized in August of 2008. Beginning at that time, Doyon Utilities will install new substations and feeders, eliminating power overloads after October 2008. The utility is planning to update the electrical distribution system which would increase the carrying capacity of the existing feeder system. Doyon also plans to install new substations and transformers, and add a new standby generating facility with a minimum of 7.5 MW to replace the obsolete 6.5 MW facility currently located at the installation.

Studies by Doyon are proposed which explore the use of alternative energy supplies including harvesting natural gas from the Anchorage municipal landfill. Natural gas for heating is currently being provided by Fairbanks Natural Gas.

71. Page 335. 4.8.12.1 Affected Environment. Comment on entire first sentence at "…steam heat for the installation" and Ft. Greely. Comment on the last sentence: "Some plans are underway by DU to install additional generation so the facility need not rely on GVEA."
    FWA has a central coal-filled power plant that produces electricity and steam heat for the installation and is responsible for approximately 95 percent or more of the energy capability throughout Ft. Wainwright. The new turbine will allow wheeling to Ft. Greely, et al. Seasonal maintenance of the power generation facility will not create a 5 mw shortfall as maintenance is routinely performed only in the summer months.

George E. Gordon, President/CEO, Doyon Utilities

Response:

Thank you for your comment. The text provided was used to construct the following statement in Chapter 4.8.12.1; "FWA has a central coal-filled power plant that produces electricity and steam heat for the installation and is responsible for approximately 95 percent or more of the energy capability throughout FWA. The installation of a new turbine by Doyon Utilities will allow "wheeling" of power to Fort Greely."

72. Page 336. Last full sentence/ paragraph top of page "Power needs at DTA are supplied via a combination of the GVEA, the power plant at Ft. Greely…" (Delete remainder of this sentence and replace with "the power plant at Ft. Wainwright by wheeling."

George E. Gordon, President/CEO, Doyon Utilities

Response:

Subject Matter Experts located at FWA and DTA indicated that individual generators do exist at DTA in order to provide limited unit power requirements. The text on page 336, Chapter 4.812.1 was replaced with the following text; "Power needs at DTA are supplied via a combination of the Golden Valley electric Association (GVEA), the power plant at Fort Greely, the power plant at FWA, and on-post generators that are managed by National Missile Defense personnel"

73. Doyon Utilities' immediate work schedule for the Fort Wainwright combined heat and power plant calls for expansion of power generating capacity using the current power facility and fuel inputs. They will achieve approximately a 13 to 18 MW increase in electrical power capacity which will make Fort Wainwright totally energy self sufficient in the next few years and allow energy wheeling to Fort Greely. This excess generation capacity will allow Fort Wainwright to meet any future growth scenarios.

    Electrical generation for export from the facility is expected to be in the 75 MW to 125 MW range which would alleviate concerns for energy shortfalls as mentioned within the DSPEIS-Pacific on page 336, lines 21-22: *"The 3000 soldier scenarios would exceed the energy capacity of the installation and additional power may need to be purchased from GVEA, potentially creating energy shortfalls"* The study, conducted by Hatch Engineering, will be complete by October 2008; the next phase, design and engineering will commence as soon as possible after that date. The study will also address carbon dioxide issues and carbon sequestration; as life cycle greenhouse gas emissions associated with the production and combustion of the fuels produced in the synthetic fuels plant will not exceed emissions from conventional petroleum-based fuels that are used in the same applications.

Jim Whitaker, Mayor, Fairbanks, Alaska

Response:

Chapter 4.8.12.1 was previously revised, please see comments 65, 67, and 68. Chapter 4.8.12.2 has been revised to reflect a Less than Significant impact, and now reads as follows; "For any level of growth, long-term impacts to the power generation system are expected. The installation's current energy infrastructure may not be able to accommodate the addition of 1,000 to 3,000 Soldiers. An increase in population associated with any of these stationing scenarios would increase demand on the power plant, energy distribution lines, and infrastructure. Given that privatization will result in technology upgrades and increased efficiency in power and heat distribution; the overall influence that Army growth is anticipated to have to regional power demand and generation capability is expected to be minimized to a less than significant impact."

74. PTA is located in an area the received a lot of solar radiation (UV, visible, and IR). In order to lesson its energy demand on the local utility (HELCO), the Army should ramp up efforts to be more energy self-sufficient and to utilize renewable sources, especially solar. The existing 50-kW photovoltaic power system should be expanded to meet future need of PTA, including interior lighting of offices, Quonset huts, and other buildings. Furthermore, solar water heating systems should be installed to further utilize solar energy and reduce PTA's use of conventional energy sources (e.g. LP and electrical utility grid).

Pablo McLoud

Response:

These are excellent suggestions and the Army is constantly assessing its operations for opportunities to implement energy conservation measures and alternative energy solutions as reflected in section 4.4.12.

D.3.13 Land Use Conflict/Compatibility

75. The 2006 JLUS Advisory Committee developed a list of compatibility tools to address future issues that could arise between the military and civilian community. It is the intent that options promote collaborative regional decision making and provide a means to balance community and military interests. The resulting set of tools assured both the protection of the critical military missions performed by personnel at Fort Wainwright and Eielson AFB; and the protection of the health, safety, welfare, and overall quality of life of those who live and work in the FNSB and surrounding region. The tools established clear mechanisms for information exchange among residents, local governments, and the military. The resulting increased communications raised the overall awareness of military activities and associated impacts and continually assists in identifying possible approaches to reduce land use conflicts with surrounding communities.

Jim Whitaker, Mayor, Fairbanks, Alaska

Response:

Thank you for your comment. No changes to the SPEIS has been made in response to this comment. The Army wishes to remain engaged with the FNSB and the Air Force to address land use compatibility issues while ensuring a high quality of life for those who live and work in the region, and dually support sustainability of the military mission.

D.3.14 Hazardous Materials/Hazardous Waste

76. Were environmental studies done? If not, when will they be done? p. 198 (Combat Aviation Brigade—2,800) "Range expansion would indirectly affect nearby land uses as a result of…adverse effects on public views…" What is being done to remove these substances? What are the levels in water and where does that water go? What testing is being done to check if they are in dust blowing off PTA? P. 200 Re. DU (depleted uranium). Live-fire should be stopped until characterization and human health risk assessments for Pohakuloa are completed and reviewed by independent experts, and a decision on how to handle the DU made with community involvement. The EIS should state that the exact location of the DU are unknown, due to incomplete records, so live-fire and practice bombing may be generating hazardous airborne DU from undiscovered spotting rounds.

Cory (Martha) Harden

Response:

Under all CS/CSS unit stationing scenarios, the increase in frequency and intensity for live-fire and maneuver training at PTA is estimated to be less than one percent of the total current training activities (minimal). Therefore, the associated environmental impacts are estimated to be minimal.

For the CAB stationing scenario, training activities would occur in existing dudded impact areas in line with existing land use. It should be noted that the stationing of a CAB is not part of the preferred alternative in the final SPEIS.

As stated in section 4.4.14, depleted uranium (DU) was found in USAG-HI. The Army is continuing to work with the state of Hawai'i to investigate this issue and will provide all information obtained to the Hawai'i department of Health in a timely manner. The Army has worked with the Waki'i Ranch homeowners association in commissioning a study of this issue. A qualified private organization picked by the homeowner's association, not the Army, conducted a study of levels of Depleted Uranium isotope from windborne material that had settled in the vicinity of Waki'i Ranch. The results of the study indicated that the levels of Depleted Uranium were less than 1% of that of naturally occurring background levels of uranium on the Big Island of Hawaii and that this was statistically insignificant. The summary of this report has been included as Appendix H to this EIS.

77. Table 5-1 in the [Stryker] FEIS identifies the impact from Hazardous Materials/Hazardous Waste to be SIGNIFICANT BUT MITIGABLE. Table 4.5-1 in the DSPEIS shows the impact from the 5 proposed scenarios to be LESS THAN SIGNIFICANT.

Pablo McLoud

Response:

Table 4.5-1 and related text have been changed to reflect cumulative significant but mitigable impacts for all scenarios except for the CAB, which has been changed to significant adverse impacts under cumulative effects.

78. Opposition to proposed Stryker Brigade deployment to Pohakuloa Training Area and expressed concern over the use of Depleted Uranium.

Nancy K. Stukan

Response:

Thank you for your comment. This Supplemental Programmatic EIS for Army Growth assumes already the permanent stationing of the 2/25th Stryker Brigade Combat Team (Record of Decision (ROD) published March 2008). The actions associated with the 2/25th SBCT are not within the scope of this EIS. Current Army policy prohibits the use of DU ammunition for training worldwide (AR 385-63). This action will not involve any use of Depleted Uranium ammunition. See section 4.2.14.

79. The DSPEIS states, "the observed concentrations (e.g., explosives TNT and RDX) were generally lower than industrial PRGs". This statement is an affront and clever misrepresentation of the truth, especially when using the qualifier "generally" and comparing soil investigation results to industrial PRGs. Industrial soil PRGs are intended for use on industrial properties; however, because receptors downwind of PTA ROI military maneuvers and training consists of residential, communal, and resort areas, the use of Residential Soil PRGs would be more appropriate.

Pablo McLoud

Response:

PRGs are a metric for soil contamination cleanup. The industrial standard assumes adult outdoor worker exposure for a 25-year period (8 hours per day, 5 days per week). The use of the industrial standard is more appropriate for military training purposes due to the intermittent and short duration of exposure. There are no applicable air quality standards for airborne concentrations of RDX and TNT. Furthermore, none of the stationing scenarios appreciably increases the training at PTA,

therefore, we do not anticipate any concerns with air quality in the training areas or downwind from the Proposed Action.

80. p. 171 "PTA supports the training of not just Army units, but also U.S. Navy, Marines, Air Force, Special Operations Forces and allied armed forces from around the Pacific Region." What other countries use PTA? What types of forces (army, navy, etc.) do they send? Are forces from other countries required to follow US regulations re. hazardous substances and environmental protection? If so, how is this monitored and enforced?

Cory (Martha) Harden

Response:

Among the foreign forces historically utilizing PTA are the Japanese Self Defense Forces, Australian Forces, Gurkha (India), and British Forces. They are required to follow US regulations regarding hazardous substances and environmental protection. This is monitored by U.S. Army personnel.

81. p. 174-5 "Scenario 5: Impacts from Aviation Gunnery…The volume of (aviation) firing activities (at PTA)…would… more than double…the volume of live-fire and training ordnance usage would more than double on this (aviation gunnery) range." Identify constituents and evaluate effects of soil, water, air, people, animals and plants. p. 179-180 (Alternative of Combat Aviation Brigade) "Live-fire training would involve the release of…munitions constituents at the point of impact…"

Cory (Martha) Harden

Response:

The Army believes the current level of analysis is appropriate for the proposed action and for the decisions to be made at the programmatic level. Additionally, the Final SPEIS establishes that the stationing of a Combat Aviation Brigade is not a part of the Army's preferred alternative. Additional information regarding munitions constituents can be found in section 4.4.14.1.

82. p. 199 " Unexploded ordnance…at PTA includes grenades, mortars, and artillery weapons used during live-fire training; all other ammunition is considered inert."

Specify types of ammunition considered inert.

Cory (Martha) Harden

Response:

The use of the term "inert" in the DSPEIS was inaccurate. The Army's definition of the term "inert" refers to items and components, including those practice and service items manufactured or made empty for use in training, demonstration, and displays.

83. *p. 200* "These [TNT, RDX, aluminum, iron, lead, antimony, semi-volatile organic compounds] were found at levels exceeding USEPS Region IX PRGs…Lead can also be found in live-fire ranges on PTA…"
What is being done to remove these substances? What are the levels in water and where does that water go? What testing is being done to check if they are in dust blowing off PTA?

Cory (Martha) Harden

Response:

Under all CS/CSS unit stationing scenarios, the increase in frequency and intensity for live-fire and maneuver training at PTA is estimated to be less than one percent of the total current training activities (minimal). Therefore, the associated environmental impacts are estimated to be minimal.

Water quality data is difficult to collect due to the lack of surface water resultant from the limited rainfall and the very porous nature of the soils at PTA, particularly in the impact and training areas. PTA has limited urbanized areas and there is no current requirement to collect surface water data.

There are no applicable air quality standards for airborne concentrations of RDX and TNT. None of the stationing scenarios appreciably increases the training at PTA, therefore, we do not anticipate any concerns from these substances related to the Proposed Action.

The actions associated with cleanup of operational ranges are not within the scope of this EIS.

D.3.15 Traffic and Transportation

84. Traffic and transportation issues surround PTA and its relations with the local communities on the west side of the Big Island. To date, the 26-mile PTA Trail from Kawaihae Harbor to PTA has **not** been completed, and, as such, military convoys continue to use major roadways (Hwys 19, 190, and 200, and Waikoloa Road) to access PTA. For many, many years, these slow-moving convoys have presented an adverse, yet temporary, impact to local traffic movement. The affect of the military convoys has been SIGNIFICANT, but will be MITIGATED with the completion of the PTA trail.

Pablo McLoud

Response: Under all CS/CSS unit stationing scenarios, the increase in frequency and intensity for live-fire and maneuver training at PTA is estimated to be less than one percent of the total current training activities (minimal). The Army anticipates traffic impacts to be minimal and believes that the analysis in the Final SPEIS supports a determination of less than significant impact for this proposed action.

D.3.16 Socioeconomics

85. The Fairbanks North Star Borough (FNSB) would like to take this opportunity to offer correction to a few statistical items concerning the FNSB referenced in the Draft SPEIS. Page 345, line 20, should read "…total population is 94,803." The Robert D. Niehaus, Inc. Housing Market Analysis (HMA) of august 2005 referenced on page 345 lines 30-37 did not accurately portray housing construction because it relied on building permits required in the City of Fairbanks and North Pole, and did not take into account that building permits are not required in the majority of the FNSB. The US Census Bureau recently documented that the FNSB has 38,598 housing units, instead of 34,046 listed in the HMA and an average of 780 new units per year since 2000 were constructed instead of 331 average incorrectly reported in the HMA. Page 346, line 44, should read "Combined, the Army and Air Force presence exceeds 20 percent of the FNSB population…"

Jim Whitaker, Mayor, Fairbanks, Alaska

Response: Thank you for your comments and your participation in the public comment process. We have made the following changes to the SPEIS based on your comments. In Chapter 4.8.16.1, we changed the reported population estimate from 86,754 to 94,803 as recommended.

In addition, we added the following text regarding the Robert D. Niehaus Housing Market Analysis. "Conversely, the City of Fairbanks recognized that the HMA did not accurately portray housing construction because it relied on building permits required in the City of Fairbanks and North Pole, and did not take into account that building permits are not required in the majority of the FNSB. The U.S. Census Bureau recently documented that the FNSB has 38,598 housing units, instead of 34,046

listed in the HMA and an average of 780 new units per year since 2000 were constructed instead of the 331 average reported in the HMA."

The following text was deleted from Chapter 4.8.16.2, "According to the 2005 housing analysis conducted by FWA, there would be a shortfall in available vacant housing space on the installation to accommodate the additional Soldiers."

86. The FNSB works hard to maintain a high quality of life for its residents and visitors. The quality of life at Fort Wainwright is unmatched at any base in the nation. Fairbanks offers all the cultural, sporting, educational, and spiritual amenities of any large American city. With outdoor activities ranging from world class salmon fishing to activities in nearby Denali National Park, soldiers and their dependents have a hard time leaving the area once their duty station changes. This love of Fairbanks by soldiers is reflected in Census figures that show nearly 17% of the FNSB population are veterans compared to 14% statewide and 10% nationwide. Local community support for the military is also very high. For example, a local hearing for the 2005 BRAC process, which threatened closure of Eielson AFB, attracted an overflow crowd of nearly 6,000 for a three hour event. The local government, as evidenced by this response, the JLUS process, the economic diversification process, and our monthly meetings with local military commanders, excels at providing support for the military and its personnel.

Jim Whitaker, Mayor, Fairbanks, Alaska

Response:

Thank you for your comment. The Army will consider your comment as part of the decision making process. The Army values its partnership with the FNSB and the natural resources it shares and manages.

87. The FNSB School District can easily meet a population surge resulting from additional troops being stationed at Fort Wainwright. According to Appendix A, page 374 an additional 1000 soldiers is projected to increase the number of children around 401, for 3000 soldiers that figure is estimated at 1203 children. The SPEIS states on page 346, line 35*…"It is anticipated the school system can absorb this growth…"* the FNSB is very confident that any re-assignment option proposed within the SPEIS can be handled by the FNSB School District as the district has the capacity to enroll an additional 2290 children without the need for new or expanded facilities. The public school system can absolutely handle any growth from any combination of military re-assignment of units to Fort Wainwright up to the addition of 5000 soldiers and their children.

Jim Whitaker, Mayor, Fairbanks, Alaska

Response:

Thank you for your comment. As a result, the text in chapter 4.8.16.1 has been revised to reflect the statement that the FNSB can handle additional capacity without the need for new or expanded facilities.

88. The FNSB operates the elementary schools on the base, provides transportation services, and regulates community development activities assuring operational utility of the base and training ranges. The Fairbanks Economic Development Corporation, in partnership with the FNSB and the University of Alaska, is in the final stages of preparing airspace models to better regulate civilian and commercial flight activities near the base and training ranges. The city of Fairbanks, of which Fort Wainwright's main post lies in has invested in roads and highways to support base operations. The Alaska Railroad Corporation is constructing a rail line by-pass around base to remove trains from the central core of the base and airfield; along with that a new rail yard and cantonment area is under construction to support rapid mobilization of the Stryker Combat Team. The state of Alaska has

invested in new highways to support movement of military vehicles between the various training ranges and the base.

The local building industry has proven it can provide low-cost housing for the troops and their dependants. Over the last five years an average of 500 homes a hear have been built within the FNSB. The FNSB School District can easily meet a population surge if more troops were to be stationed at Fort Wainwright as funding solutions between the school district and the state allow for rapid new construction and new teacher hires. Local and state government as well as private industry can easily meet the needs of significantly more troops on base.

Jim Whitaker, Mayor, Fairbanks, Alaska

Response: Chapter 4.8.16.1 has been revised to reflect the capability for FNSB to support regional growth. Thank you for your comment.

89. Sections 4.2.15.2 and 4.3.16.2 of the DSPEIS include projections from Army-wide statistics for public school students that would be generated by additional military personnel at Schofield Barracks and Fort Shafter. The Department of Education prepares projections of students attending public schools within each school complex. Our office can provide you with student projections that are specific to the Schofield Barracks and Fort Shafter areas. We can send you our projections to use in the Final SPEIS and subsequent documents.

Duane Y. Kashiwai, Public Works Administrator, Office of School Facilities and Support Services

Response:

Thank you for your offer to help us with this EIS process. The Army looks forward to continuing to work with you to present the best information possible.

90. Please consider some other venue that is not Hawaii. I can live without the revenues you might bring here. Then I can actually enjoy what I fought to preserve in a previous war. Peace. It is a beautiful thing, peace, if it is actually peaceful. Let us live here in Hawaii in true peace without the sights and sounds of war.

Tom Beach

Response:

We thank you for your comment and participation in the NEPA process. Your comment has been considered and included in the administrative record for this process.

91. The interaction between the military and civilian population is very good here in Hawaii. We welcome the military being stationed here.
Aloha

Doris Reichert

Response:

We thank you for your comment and participation in the NEPA process. Your comment has been considered and included in the administrative record for this process.

92. Despite the large contingent of anti-American, anti-military people living on the big island there are many people who appreciate the military being here and are heartily in favor of their presence. My husband and I certainly welcome all of our armed forces that want to come and train on our island.

Sandra Gray

Response:

We thank you for your comment and participation in the NEPA process. Your comment has been considered and included in the administrative record for this process.

93. Table 5-1 in the FEIS [Stryker] identifies the impact to Socioeconomics to be SIGNIFICANT BUT MITIGABLE. Table 4.5-1 in the DSPEIS shows the impact from the 5 proposed scenarios to be BENEFICIAL (+). This wide disparity must be clarified.

Pablo McLoud

Response:

Table 4.5-1 has been updated to reflect significant but mitigable impacts as well as beneficial economic impacts as previously discussed in the text.

94. Evaluate the cost to residents of possible evacuations and relocation, plus lower real estate values.
    - p.184 (Alternative of Combat Service Support—1,000 Soldiers and Combat Support—3,000 Soldiers) "The use of blank ammunition and simulator devices on West PTA may potentially create noise effects within the Waikii Ranch development and the Kilohana Girl Scout Camp…"
    - p.184 (Alternative of Combat Support—1,000 Soldiers and Combat Support—3,000 Soldiers) "…noise from small arms firing with blank ammunition could have substantive noise effects at Waikii Ranch and the Kilohana Girl Scout Camp…The Zone II noise at Mauna Kea State Park would expand slightly…"
    - p.185 (Alternative of Combat Aviation Brigade) "…aviation gunnery activities would more than double at PTA…the (helicopter) flight route may lie above some residential areas. Helicopters generally fly…around 300 feet…An increase of an aviation brigade would result in an increase in helicopter over flights resulting in the impacts to some receptors from noise."
    - p. 186 "Some of the firing points (at PTA) have become denuded, resulting in vegetation loss and subsequent major erosion and dust issues. PTA soil substrates are primarily fine, volcanic ash prone to wind, erosion and dust."
    - p. 188 "explosive residues RDX and HMX…once dissolved in water, both can be highly mobile in soil."

Cory (Martha) Harden

Response:

Under all CS/CSS unit stationing scenarios, the increase in frequency and intensity for live-fire and maneuver training at PTA is estimated to be less than one percent of the total current training activities (minimal). Therefore, the associated environmental impacts are estimated to be minimal. The combat support units scheduled for stationing as part of the proposed action would be able to meet all live-fire weapons qualification requirements and small unit maneuver training requirements on the island of Oahu.

Under the CAB stationing scenario there would be an increase in aviation training activities. It should be noted that the CAB stationing scenario is not a part of the Army's preferred alternative. Analysis sections have been updated to accurately reflect the Army's training intent for PTA.

D.3.17 Cumulative Effects

95. Table 4.5-1 illustrates the cumulative effects for the five stationing scenarios, and 8 of the 13 VEC show a SIGNIFICANT ADVERSE impact. However, assessment of the VEC should *not* include

Airspace and Wetlands because these specific environs are not areas of concern at PTA. Specifically, airspace over PTA is restricted and wetlands at PTA do not exist. As such, the thirteen VEC should be reduced to eleven, and when the eight SIGNIFICANT ADVERSE impacts are compared to eleven total VEC then negative impacts of the proposed scenarios increase from 62% (8 of 13) to 73% (8 of 11). Subsequently, when SIGNIFICANT BUT MITIGABLE are included, 10 of 11 VEC are negatively impacted, which totals 91%.

Pablo McLoud

Response:

We thank you for your comment and participation in the NEPA process. This recalculation of the percentage of VECs negatively impacted at PTA has been considered and included in the administrative record for this process.

96. Table 4.5-1 illustrates the cumulative effects for the five proposed stationing scenarios on 13 VEC. As stated above, 8 of 13 show a SIGNIFICANT ADVERSE impact and 2 of 13 show a SIGNIFICANT BUT MITIGABLE impact, which indicates that 77% of the VEC will be SIGNIFICANTLY affected in a negative manner. Three other VEC, Airspace, Wetlands, and Hazardous Material/Hazardous Waste, show impact to be LESS THAN SIGNIFICANT. Please note that although these VEC have been slated as LESS THAN SIGNIFICANT, the impact is still negative. The impact is identified to be sufficient and greater than MINOR or NO IMPACT. Therefore, ALL five scenarios discussed in the DSPEIS will have a negative impact on all thirteen valued environmental components-that is a damage rate of 100%.

Pablo McLoud

Response:

We thank you for your comment and participation in the NEPA process. This calculation of the percentage of VECs negatively impacted at PTA has been considered and included in the administrative record for this process.

97. Section 4.5 of the DSPEIS reports that the cumulative impacts of past, present, and foreseeable future actions were taken into consideration. Several actions that have recently arisen on the Big Island, and which should be taken into account and weighed under foreseeable future actions for the Island of Hawaii (p. 208) include: 1) C-17 Globemaster III cargo aircraft touch-and-go training at Kona International Airport; 2) C-17 training routes over and around 2,720 square miles of the Big Island; and 3) a low-altitude C-17 military training route (MTR) slated for 570 square miles of the Big Island (a Draft EA is in preparation [*Air Force Times, 4/08*]).

Pablo McLoud

Response:

The C-17 projects have been added to section 4.5 as part of the cumulative effects analysis.

98. Table 4.5-1 on Page 206 illustrates the cumulative effect for the five stationing scenarios discussed in the DSPEIS. Thirteen VEC were evaluated to assess the degree of impact by the proposed scenarios. Eight of the 13 VEC show a SIGNIFICANT ADVERSE impact, and include Air Quality, Cultural Resources, Noise, Soil Erosion, Biological Resources, Facilities, Land Use Conflict/Compatibility, and Traffic and Transportation. These eight VEC represent a negative impact rate of 62%. When your consider SIGNIFICANT BUT MITIGABLE impacts, an additional two VEC, Water Resources and Energy Demand/Energy Generation, are negatively affected by the proposed scenarios, which brings the SIGNIFICANT impact to 10 of 13 VEC and a negative impact rate of 77%.

Pablo McLoud

Response:

We thank you for your comment and participation in the NEPA process. This calculation of the percentage of VECs negatively impacted at PTA has been considered and included in the administrative record for this process.

99. All in all, the environmental consequences of each of the 5 stationing scenarios (Table 4.5-1) studied in the DSPEIS are clearly SIGNIFICANT. Because of these adverse impacts, none of these scenarios should be approved and the Army's Record-of-Decision on the DSPEIS should reflect that choice. In addition, when the cumulative effects identified in Table 5-1 of the [Stryker] FEIS are also weighed, it is clear that *both projects would have a profound and negative impact to Hawaii*, and, in response, the NO ACTION ALTERNATIVE is the only choice the Army should make concerning the DSPEIS. The SBCT will be stationed at Schofield Barracks and training at PTA, and the negative impacts from that project alone will be enough. An escalation of those impacts from Army growth and realignment detailed in the DSPEIS would be best described as severe, acute, and excessive.

Pablo McLoud

Response:

Thank you for your comment. All impacts associated with all stationing scenarios will be considered in the Record of Decision.

100. Another future action, which must be considered, is 4) the use of the Superferry to transport troops, equipment, and vehicles from Oahu into Kawaihae Harbor on the Big Island. (The State of Hawaii is currently preparing an environmental impact statement (EIS) concerning State harbors [e.g. Kawaihae] and large capacity interisland ferry vessels, and it's not expected to be completed until mid-2009. The EIS should cover potential effects on water quality, marine habitat, invasive species, whales, etc.] Because Kawaihae Harbor and the near-shore and offshore waters between Oahu and the Big Island are included in the PTA Region of Influence (ROI) (FEIS, p. 3-75), the military's use of the Superferry or other transport vessels must take into account potential impact to the Hawaiian Islands Humpback Whale National Marine Sanctuary Waters and other designated sanctuary waters. In addition, because adjacent coastline areas in the ROI may provide habitat for some marine wildlife, such as endangered sea turtles (green, hawksbill, leatherback, loggerhead, and olive ridley) and Hawaiian monk seals, those areas must also be assessed for potential impact.

Pablo McLoud

Response:

Hawaii's Superferry is listed as a reasonably foreseeable action for the island of O'ahu. The EIS has been updated to include it as an action potentially affecting Hawai'i. The Army does use private contract vessels for inter-island transport. When the Army uses private contract vessels, it is required to request bids from multiple vendors, and no particular vender is assured a contract for transport. The Army does not know if the Superferry would ever bid on such a contract or if it could even be configured to carry military equipment with the chains and bracing needed to transport military vehicles. No contract currently exists or is being formulated between the Army and the Superferry.

101. These cumulative impacts seem to be nothing less than Adversely Significant. The impact of maneuver training of 3,000+ Soldiers has a significant impact as the large number of troops and vehicles elevates the risk of wildfire, noise, soil disturbance, and introduction of noxious and invasive weeds. The Army states most impacts are mitigable; the word "most" is not a qualifier and does not indicate which impacts would be mitigated more effectively than others.

Pablo McLoud

Response:

The cumulative effects section has been updated. The Army believes the level of analysis for these issues is appropriate to the decisions to be made.

102. Pg. 213 "Stationing proposals are not expected to result in a significant cumulative effect on marine wildlife." Include impacts from the Superferry on marine wildlife.
Cory (Martha) Harden

Response:

The proposed action will not result in any increased use of water transport for military equipment to the Hawai'i. Because of this, there will be no incremental additional impact to marine wildlife. Therefore, there will be no cumulative effect.

103. p. 212-213 (Cumulative Effects) "Biological Resources…the cumulative impact of implementing any of the stationing scenarios in Hawaii will be significant. Actions which will be taken to station the 2/25th SBCT (Stryker) will result in significant biological impacts in a timeframe which would overlap with the construction of projects and training that would take place to implement growth of the Army needed to support Pacific Theater Operations. Other projects (not specified) could have detrimental affects (sic) on vegetation in their vicinity, and consequently on the species that have been supported by these habitats. There would be a cumulative increase in the number of nonnative species…Construction and increased use of roads would introduce additional nonnative species and further spread those that already occur…The disturbance caused by construction and demolition and increased use of improved roads would leave the surrounding habitats vulnerable to nonnative species that can thrive in conditions where native species cannot…The overall cumulative impact from the spread of nonnative species from other proposed projects in the area could be significant…the cumulative effect on sensitive species that would result from project-related habitat loss and degradation would be significant."
Cory (Martha) Harden

Response:

Commenter quoted text with no expressed question or comment to which we can respond. The spelling error has been corrected.

104. p. 216 (Cumulative Effects) Transportation. Would Saddle Road have been improved if there were no Stryker and no Pacific expansion?
Cory (Martha) Harden

Response:

The Army cannot answer this question as this was not an Army project. It should be noted, however, that the Saddle road project was approved prior to the consideration of GTA initiatives in the Pacific area of operations.

105. p. 216 (Cumulative Effects) Socioeconomics, Environmental Justice, and Protection of Children Socioeconomics. What is the monetary value of air, soil, water, animals, and plants that will be affected? What would it cost for people to duplicate the services that the affected natural systems provide for free? (for example: air-clean air to breathe; soil-places for crops, structure, hunting and

recreation; water-for multiple uses; animals-food, balanced ecosystems; plants-erosion prevention; storing water)

Cory (Martha) Harden

Response:

The value of these resources cannot be quantified in monetary terms. The Army remains committed to conservation of natural resources and the environmental sustainability of our installations.

APPENDIX E: CUMULATIVE EFFECTS PROJECT DESCRIPTIONS

CEQ regulations implementing NEPA require that the cumulative impacts of a proposed action be assessed (40 CFR Parts 1500-1508). A cumulative impact is an "impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions". Cumulative impacts may result from individually minor but collectively significant actions taking place over time. 32 CFR 651.51 also requires that cumulative actions, when viewed with other proposed actions that have cumulatively significant impacts, should be discussed in the same impact statement.

TABLE OF CONTENTS

E.1 USAG Hawai`i and USAG Alaska Project List

	Project Name	Related Project Location	Project Sponsor
1	Golf Course at Fort Shafter	Oahu	Army
2	Consolidated Motor Pool at Fort Shafter	Oahu	Army
3	Construction of Command and Control Facility, Fort Shafter	Oahu	Army
4	Expand Physical Fitness Center	Oahu	Army
5	Improvements to Lyman Gate at Fort Shafter	Oahu	Army
6	Improvements to Kawamura Gate at Wheeler Army Airfield	Oahu	Army
7	Funston Road Roundabout	Oahu	Army
8	Construct new Ft. Shafter chapel	Oahu	Army
9	Macomb Roundabout	Oahu	Army
10	8th TSC Motor Pool and Maintenance Shop, Schofield Barracks	Oahu	Army
11	New Brigade Complex, PH I and II	Oahu	Army
12	Warrior in Transition facilities, Schofield Barracks	Oahu	Army
13	Parking structure Quad F7	Oahu	Army
14	AAFES Shopping Center 6	Oahu	Army, Air Force
15	Central Wash Facility	Oahu	Army
16	Whole Barracks Renewal Program	Oahu	Army
17	Vehicle Maintenance Shop, 307th ITSB, HMR	Oahu	Army
18	Soldier and Family Readiness Center	Oahu	Army
19	Construction of Child Development Center	Oahu	Army
20	Gate Alignments	Oahu	Army
21	Army Facility Strategy Program	Oahu	Army
22	Prescribed Burns at Army Installations in Hawai`i	Oahu	Army
23	Resumption of Live-fire Training at MMR or Establishment of Live-fire at PTA / Makua Implementation Plan	Oahu	Army
24	Oahu Implementation Plan	Oahu	Army, U.S. Fish and Wildlife Service
25	SBCT Live-Fire Training	Oahu	Army
26	Residential Communities Initiative	Oahu	Army
27	Integrated Training Area Management (ITAM)	Oahu	Army
28	25th ID(L) and USAG-HI Revitalization Program	Oahu	Army
29	Implementation of the Integrated Natural Resources Management Plan (INRMP)	Oahu	Army, U.S. Fish and Wildlife Service
30	Implementation of the Integrated Cultural Resource Management Plan (ICRMP)	Oahu	Army, Hawai`i State Historic Preservation Office

	Project Name	Related Project Location	Project Sponsor
31	Implementation of Proposed Range and Training Land Program Development Plan Actions	Oahu	Army
32	Drum Road Upgrade	Oahu	Army
33	Construct Army Reserve Center Training Facility, FS Flats (Construct a 200 member training facility)	Oahu	Army Reserve
34	Air Force Housing Privatization Program	Oahu	Air Force
35	Air Force C-17 use at Hickam Air Force Base	Oahu	Air Force
36	Growth and Realignment of the Army	Oahu	Army
37	USARPAC Transformation to Warfighting Headquarters	Oahu	Army
38	25th Infantry Division Transformation to Modular Force Structure	Oahu	Army
39	Future Combat Systems Fielding	Oahu	Army
40	Stationing of the 2/25th SBCT in Hawai`i	Oahu	Army
41	Joint training with National Guard units (including Guam), USAF, USMC	Oahu	National Guard, Air Force, Marine Corps
42	Growth of the Marine Corps Base Hawaii and use of USAG-HI facilities	Oahu	Marine Corps
43	Regional SATCOM Support Center	Oahu	Army
44	Privatization of Army Lodging, TAMC	Oahu	Army
45	Construct a Post Traumatic Stress Disorder Residential Rehabilitation Program Facility, TAMC (Construct a new 13,000 SF facility to consolidate the current outpatient and inpatient services)	Oahu	Army
46	Armored Security Vehicle	Oahu	Army
47	Construction of Navy facility at NCTAMS/Kunia Tunnel	Oahu	Navy
48	Residential Development at Koa Ridge between Pearl City and Mililani	Oahu	Castle & Cooke Homes Hawaii, Inc.
49	Central Oahu Sustainable Communities Plan	Oahu	City of Honolulu Department of Planning and Permitting
50	North-South Road	Oahu	State of Hawaii Department of Transportation
51	Farrington Highway Improvement	Oahu	State of Hawai'i
52	Renton Road Improvements (Ewa Town)	Oahu	City of Honolulu Department of Transportation Services
53	Residential Development – up to 900 new homes at Ocean Point	Oahu	Haseko Homes, Inc.
54	Kapolei Parkway	Oahu	State of Hawaii Department of Transportation
55	Waianae Sustainable Communities Plan	Oahu	City of Honolulu Department of Planning and Permitting
56	Waianae Coast Emergency Alternate Route	Oahu	City of Honolulu Department of

	Project Name	Related Project Location	Project Sponsor
			Transportation Services
57	Kamehameha Hwy, Replacement of South Kahana Stream Bridge	Oahu	State of Hawaii Department of Transportation
58	2121 Kuhio Avenue Condominium/Timeshare Development	Oahu	K3 Owners LLC
59	Oahu Arts Center	Oahu	Oahu Arts Center
60	Hawai`i Superferry	Oahu	Hawai'i Superferry
61	Turtle Bay Resort improvements	Oahu	Turtle Bay Resort
62	Light Rail Transit project and Nimitz "Flyover" Project	Oahu	State of Hawaii Department of Transportation
63	Honolulu High-Capacity Transit Corridor Project	Oahu	City of Honolulu Department of Transportation Services
64	Kawaihae Deep Draft Harbor	Hawai`i	Army Corps of Engineers
65	PTA Implementation Plan	Hawai`i	Army
66	Growth and Realignment of the Army	Hawai`i	Army
67	USARPAC Transformation to Warfighting Headquarters	Hawai`i	Army
68	25th Infantry Division Transformation to Modular Force Structure	Hawai`i	Army
69	Vehicle Maintenance Shop, 307th ITSB	Hawai`i	Army
70	Future Combat Systems Fielding	Hawai`i	Army
71	Range Modernization Projects at PTA	Hawai`i	Army
72	Joint training exercises with National Guard and allied forces	Hawai`i	National Guard
73	Training by US Marine Corps Grow the Army Soldiers	Hawai`i	Marine Corps
74	Construct Mock Airfield, PTA	Hawai`i	Army
75	Saddle Road Realignment	Hawai`i	Federal Highway Administration-Central Federal Lands Highway Division, Hawai'i Department of Transportation
76	Kawaihae/Waimea Road	Hawai`i	Hawai`i County Public Works Department
77	New Highway	Hawai`i	Federal Highway Administration
78	UXO Cleanup	Hawai`i	Department of Defense
79	Former Waikoloa Maneuver Area and Nansay Sites	Hawai`i	Army Corps of Engineers
80	PanSTARRS Project	Hawai`i	University of Hawaii Institute for Astronomy
81	Outrigger Telescopes Project	Hawai`i	NASA
82	Cantonment Area Projects at Fort Richardson	South-Central Alaska	Army
83	Rapid Deployment Facility (completed)	South-Central	Army

	Project Name	Related Project Location	Project Sponsor
		Alaska	
84	Ammunition Supply Point Upgrade (completed)	South-Central-Alaska	Army
85	Whole Barracks Renewal (completed)	South-Central Alaska	Army
86	Stationing of the Airborne Brigade Combat Team(ABCT) at FRA	South-Central Alaska	Army
87	Mission Operations on Urbanized Terrain (MOUT) (completed)	South-Central Alaska	Army
88	Multi-purpose Training Range (completed)	South-Central Alaska	Army
89	U.S. Air Force (Elmendorf AFB)	South-Central Alaska	Air Force
90	Year-round training at Eagle River Flats	South-Central Alaska	Army
91	Fort Richardson Fencing Project	South-Central Alaska	Army
92	Installation Boundary Fence Project (completed)	Interior Alaska	Army Garrison - Alaska
93	Cantonment Construction at Fort Wainwright	Interior Alaska	Army
94	Sniper Range (completed)	Interior Alaska	Army
95	Stationing of the Stryker Brigade Combat System (SBCT) at FWA (completed)	Interior Alaska	Army
96	Range Upgrade and Expansion at FWA (on-going)	Interior Alaska	Army
97	Collective Training Range at DTA (completed)	Interior Alaska	Army Garrison – Hawai'i
98	Cold Regions Test Center Automotive Test Complex at DTA (completed)	Interior Alaska	Army
99	Space and Missile Defense System (completed)	Interior Alaska	Army
100	U.S. Air Force (Eielson AFB) aircraft stationing actions (completed)	Interior Alaska	Air Force
101	ITAM Projects	Interior Alaska	Army Garrison – Hawai'i
102	FWA Housing Projects	Interior Alaska	Army
103	Aviation Task Force Construction (proposed)	Interior Alaska	Army Garrison – Hawai'i
104	Proposed Addition of OH-58D Kiowa Warrior Helicopters	Interior Alaska	Army
105	Range Operations Center	Interior Alaska	Army
106	C-17 Landing Strip	Interior Alaska	Army
107	Direct Fire Range	Interior Alaska	Army
108	USAF Training	South-Central and Interior Alaska	Air Force
119	Pacific Alaska Range Complex	Interior Alaska	Air Force
110	DTA East Mobility and Maneuver Enhancement	Interior Alaska	Army

	Project Name	Related Project Location	Project Sponsor
	Projects		
111	DTA West Winter Trail Improvement	Interior Alaska	Army
112	RCI	Interior Alaska	Army
113	Utilities Privatization	Interior Alaska	Army
114	Community Development at Fairbanks North Star Borough, City of North Pole, and City of Delta Junction	Interior Alaska	City of Fairbanks State of Alaska Alaska Railroad Corporation
115	Alaska Railroad Expansion	Interior Alaska	Alaska Railroad Corporation
116	ARRC Fort Wainwright Realignment Project	Interior Alaska	Alaska Railroad Corporation
117	Tanana River Bridge	Interior Alaska	Alaska Department of Transportation/Public Facilities, Federal Highway Administration
118	Bureau of Land Management (BLM) Alaska Fire Service Campus Upgrades	South-Central Alaska	Bureau of Land Management
119	Natural Gas Pipeline	South-Central and Interior Alaska	State of Alaska under Alask Gasline Inductment Act (AGIA)
120	Richardson Highway Upgrade	South-Central and Interior Alaska	Alaska Department of Transportation/Public Facilities
121	Richardson and Alaska Highways	South-Central and Interior Alaska	Alaska Department of Transportation/Public Facilities
122	Delta Agricultural Project	Interior Alaska	State of Alaska, City of Delta Junction
123	Multiple use land management under the Tanana Valley Management Plan	Interior Alaska	State of Alaska Department of Natural Resources
124	Subsistence on public and private lands	South-Central and Interior Alaska	Federal Law - ANILCA
125	Recreation on public and private lands	South-Central and Interior Alaska	State of Alaska, Army
126	Knik Arm Bridge	South-Central Alaska	State of Alaska

E.2 Military Projects on the Island of Oahu

1. Golf Course at Fort Shafter

The project's purpose is to make improvements to the Walter J. Nagorski Golf Course at Fort Shafter, Hawai`i. This would be to make the existing nine holes more challenging and appealing as a major revenue-generating operation for the Soldiers and authorized DoD patrons. The project includes the following: complete remodeling all greens, tees, and fairways by installing an irrigation system, water storage lakes, cart paths, and a driving range; build a permanent golf academy facility, complete with night lighting, putting and chipping greens, and three additional practice holes. The golf academy will include state-of-the-art technology, including video cameras, video recording equipment, and video monitors, to analyze each golfer's swing; and increase the yardage of current nine holes from 2,830 to 3,350 to raise par from 34 to 36.

The Army will construct a permanent golf course maintenance facility for Nagorski Golf Course at Fort Shafter. Primary facilities include a mechanics work area for equipment maintenance and storage of maintenance equipment parts, irrigation system parts and tools, a turf equipment storage area, a fertilizer storage area, an administration office, employee locker room/restroom, a break room, covered equipment area, and concrete storage bins (approximately 246 feet each) for bulk material. It also includes a paved, open maintenance area, with sites dedicated for chemical mixing/loading, and a portable chemical storage shed. Supporting facilities include electric, water, and sewer services, storm drainage system, and site improvements. All areas will be handicap accessible.

2. Consolidated Motor Pool at Fort Shafter

This proposed project would construct flood control structures at Fort Shafter Flats so that some of the Fort Shafter Flats land can be used for construction of a consolidated motor pool. The proposed site currently contains an existing building that would be demolished.

3. Construction of Command and Control Facility, Fort Shafter

This is part of the USARPAC restructuring action and involves constructing a new USARPAC command and control center building at Fort Shafter of at least 225,000 square feet. The proposed site at Fort Shafter is currently vacant.

4. Expand Physical Fitness Center

The Army will make significant repairs and expand the existing physical fitness facilities at Schofield Barracks.

5. Improvements to Lyman Gate at Fort Shafter

This project has been completed. It realigned the road to allow vehicle stacking and included a visitor center and search area with parking. The guardhouse was updated and now includes new lighting and surveillance equipment.

6. Improvements to Kawamura Gate at Wheeler Army Airfield

This project will realign the road to allow vehicle stacking and will include a visitor center and search area with parking. The guardhouse will be updated and will include new lighting and surveillance equipment. Tentative funding is for fiscal year 2007 and 2008.

7. Funston Road Roundabout

The Army will construct a new traffic roundabout at the intersection of Funston and Wisser Roads. This project will include a new paved roundabout, approach road and striping, roundabout central landscaped island, approach splitter islands, signage, curb and gutters, handicap curb ramps, concrete sidewalks, landscaping, and storm drainage.

8. Construct new Ft. Shafter chapel

The Army will construct a 200-seat, standard-design, nondenominational chapel, which will include worship areas, worship support areas, administrative areas, classrooms, nursery, baptismal pool, elevator, and playground. Army chapel standard definitive design will be used as much as possible.

Supporting facilities include utility connections, electric service, exterior lighting, fire protection and alarm systems, paving, walks, curbs and gutters, parking, storm drainage, information systems, antiterrorism/force protection (ATFP) measures, and site improvements. Access for the handicapped will be provided. Comprehensive interior design is required and will be provided.

This project has been coordinated with the installation physical security plan and no security improvements are required. All required ATFP measures are included. Sustainable principles will be integrated into the design, development, and construction of the project, in accordance with Executive Order 13123 and other applicable laws and executive orders.

9. Macomb Roundabout

The Army will construct a new traffic roundabout at the intersection of Macomb Road and Wai`anae Avenue; it will reconfigure the intersections of Wai`anae Avenue and Flagler Road and of Wai`anae Avenue and Jecelin Street and will re-stripe Wai`anae, Heard Avenue, and Flagler Road on SBMR. This project includes construction of a new paved roundabout and reconfigured intersections, including approach roadways and striping, landscaped islands, signage, curbs and gutters, handicap curb ramps, concrete sidewalks, landscaping, and storm drainage.

10. 8th TSC Motor Pool and Maintenance Shop, Schofield Barracks

This project would construct new motor pool facilities at Schofield Barracks at a vacant site that previously had warehouses, primarily for use by 8th TSC units.

11. New Brigade Complex, PH I and II

The Army will construct two-story, standard-design Battalion Headquarters with troop aid station. Battalion Headquarters includes lobby, offices, conference room, storage, resource center, classrooms, toilets, showers, janitor's closet, mechanical room, electrical room, telecommunications room, and elevator. One standard-design 200-person barracks will be built. Barracks include living/sleeping rooms, baths, walk-in closets, service areas, janitor's closets, mechanical rooms, electrical room, telecommunication room, and elevators. A central plant will be built for chilled water air conditioning/hot water heating to support the facilities being constructed under this project. ATFP measures are required for all buildings in this project, and the minimum standards will be provided. The high ATFP costs in the primary facility are due to the limited real estate available at the site. Installation of blast rated windows is required. The ATFP cost in the supporting facility includes provisions for entry control barriers into parking and service entrances. Supporting facilities include utilities, electric service, exterior lighting, fire protection and alarm systems, paving, walks, curbs, and gutters, parking, storm drainage, information systems, site improvements, and road improvements. Access for the handicapped will be provided per standard design. Air conditioning is estimated at 235 tons. Asbestos abatement for removal of all friable asbestos-containing material is required before building demolition. The supporting facility cost is high due to relocation of utility lines, road improvements, and permanent relocation of telephone/LAN/ocean cables. Comprehensive building and furnishings-related interior design services are required. Eight buildings, totaling 10,879 square feet, will be demolished.

12. Warrior in Transition facilities, Schofield Barracks

The Army is working to field and fully staff new warrior transition units and facilities, which provide critical support to wounded soldiers and their families. The Warrior Care Clinic provides care to Soldiers until they are found fit-for-duty, end their tour of service, change their duty station, and/or complete the medical board process.

13. Parking structure Quad F7

Parking structure to support barracks. Construction on this project has already been completed.

14. AAFES Shopping Center 6

Construction of a 177,000 square foot, New Shopping Center at Schofield Barracks is complete. The project entailed demolition of existing AAFES facilities and construction of a new shopping center on the existing18-acre AAFES retail facilities site.

15. Central Wash Facility

The Army will construct a central vehicle wash facility with ten cleaning bays. The bays will be 60 feet long by 24 feet wide to support various sizes of vehicles. The proposed facility will consist of the preparation area, two pre-wash baths, wash stations, and an assembly area. The high-pressure wash system will recycle water to minimize wastewater disposal. The water will flow through a sediment basin, oil-water separators, an equalization basin, sand filters, and a water supply basin. Treatment will include oil and grease removal, grit removal, and organic control. A structure is also provided to house the mechanical secondary treatment units and the control panels necessary for the facility. The control building will house restrooms and maintenance equipment. Supporting facilities include utilities, paving, curbing, fencing, and site improvements. The islands at the wash facility will be double-tower to ensure that 60-foot-long vehicles can be accommodated. Concrete curbs will be provided at the wash facility to control the flow of wastewater. A trench drain will lie perpendicular, on the entrance side of the wash station and running the entire width of the facility. Lighting for security and night time washing will be provided. A seven-foot-high chain-link fence with barbed wire will enclose the site.

16. Whole Barracks Renewal Program

The Army is upgrading unaccompanied enlisted personnel housing in Hawai`i. SBMR structures have an average age of 68 years. Over 50 percent of the barracks were built prior to 1922, and over 80 percent are eligible for the NRHP. Upgrades would take place on WAAF, SBMR, and TAMC grounds. The program includes new guidelines for upgrading the barracks by increasing the housing square footage for Soldiers. Closet space will replace the current wardrobe locker system, and two person bathrooms will replace gang latrine systems. The Army intends to complete upgrades in this seven-phase plan by 2010. Based on current estimates of SBCT troop increases and associated decreases in current force troops, no additional housing upgrades will occur outside of what is already planned. Funding and scheduling of this project are moving ahead. There is also a possibility of purchasing land currently included in the Residential Communities Initiative footprint for future barracks, headquarters, and motor pool sites. The following project listings are individual projects within the Whole Barracks Renewal (WBR) Program.

SBMR/WAAF WBR—Quad E Renovations

Two buildings in Quad E will be renovated to provide barracks, and two other buildings in Quad E will be renovated to house two small battalion headquarters, and seven company operations facilities (one medium and six small) will be renovated. IDS will be installed in arms vaults. ATFP will be provided by structural reinforcement, special windows and doors, and site measures. Supporting facilities include utilities, electric service, fire protection and alarm systems, paving, walks, curbs, and gutters, storm drainage, information systems, and site improvements. Supporting facilities costs are high due to the requirement to replace deficient utility lines to the central plant in Quad F. Air conditioning (456 tons) will be provided, as will access for the handicapped. Comprehensive building and furnishings-related interior design services are required.

This project has been coordinated with the installation physical security plan, and all physical security measures are included, along with all required ATFP measures. An economic analysis has been prepared and was used in evaluating this project, which is the most cost-effective method to satisfy the requirement. Sustainable principles will be integrated into the development, design, and construction of the project, in accordance with Executive Order 13123 and other applicable laws and executive orders.

The Army will also renovate Building 551 to provide barracks and will renovate Building 550 to house one small battalion headquarters and four medium company operations facilities. Lead paint and asbestos tile removal will be required. An elevator will be included in the administrative building. For historical preservation purposes, maintaining the architectural character of all buildings to be renovated will be emphasized. Installation costs for IDS in arms vaults are included. Supporting facilities includes electric service, waterlines, fire protection and alarm systems paving, walks, curbs and gutters, storm drainage, information systems, and site improvements. Air conditioning will be for 246 tons. ATFP will be provided by structural

upgrades/reinforcement, special windows and doors, and site measures. Access for persons with disabilities will be provided in public areas. Comprehensive building and furnishings-related interior design services are required.

SBMR/WAAF WBR—Quad C Renovations

The Army proposes to renovate/modernize two buildings in Quad C, to provide barracks in accordance with Army standards. The barracks will house a maximum of 100 soldiers. One building will house one large battalion headquarters and the administrative functions of the company operations facility for four large companies. The other building in Quad C will house a dining facility, company operations facility for two large companies, and soldier community support functions, such as laundry, bulk storage, and activity rooms. The renovation of both buildings in this project will also include structural upgrades to meet current standards. A covered soldier gear wash area will be built within the quad for cleaning personal gear and will be designed for use as a covered recreational area for social gatherings.

For historical preservation purposes, maintaining the architectural character of all buildings to be renovated will be emphasized. Renovation work will also include removing ACM, such as floor tile, mastic, and pipe insulation. ATFP measures will include laminated glass, resistance to progressive collapse, and provisions for entry control barriers into parking and service entrances. IDS will be installed in all arms vaults. Supporting facilities include utilities, electric service, paving, walks, curbs and gutters, storm drainage, fire protection and alarm systems, information systems, and site improvements. Air conditioning (320 tons) will be provided. Elevators will be provided in the two administrative buildings, along with access for the handicapped. Comprehensive building and furnishings-related interior design services will be required. The project includes extended warranties on major building systems and components. This project also requires associated administrative and operational facilities, in accordance with Army standards.

SBMR WBR Brigade Complex Phase IID

This complex was authorized in FY 2003 for $49 million. A new barracks complex will include barracks, eight company operations facilities with covered gear wash areas (two large and six small), and a multipurpose court. IDS will be installed, and ATFP will be provided by structural reinforcement, special windows and doors, and site measures. ATFP costs are high because site constraints prevent having the normal standoff distances between buildings and roads and parking areas. Supporting facilities include utilities, electric service, exterior lighting, fire protection and alarm systems, paving, walks, curbs, and gutters, parking, storm drainage, information systems, site improvements, and road improvements. The supporting facility costs are high due to relocation of utility lines and telephone/local area network/oceanic cables, road improvements, and the demolition of four buildings, totaling 109,286 square feet. Access for the handicapped will be provided, along with air conditioning of 160 tons. Comprehensive building and furniture-related interior design services are required.

SBMR WBR Williston Facilities

The Army will construct two standard design Battalion Headquarters and five medium Company Operations Facilities. It will provide energy monitoring and control systems, fire alarm detection and reporting systems, and automatic building sprinklers. The Army will construct covered soldier gear wash areas. ATFP measures will be provided by resistance to progressive collapse, special windows and doors, and site measures. Supporting facilities include utilities, electric service, exterior lighting, fire protection and alarm systems, paving, walks, curbs and gutters, parking, storm drainage, information systems, site improvements, and road improvements. Access for individuals with disabilities will be provided in public areas. Asbestos abatement is required before demolishing four site buildings, for a total of 58,813 square feet. Air conditioning is estimated at 68 tons.

SBMR WBR CAPRON Avenue Phase 3 Barracks

The Army will build a barracks complex, including barracks, battalion headquarters with troop aid stations, brigade headquarters, and a central cooling plant building. Supporting facilities include utilities, electric service, exterior lighting, fire protection and alarm systems, paving, walks, curbs, and gutters, parking, road improvements, storm drainage, information systems, and site improvements. Air conditioning is estimated at 195 tons.

ATFP will be provided by structural reinforcement, special windows and doors, and site measures. The ATFP cost is high because site constraints prevent meeting the minimum setback distances. In these situations, the buildings require hardening. Access for persons with disabilities will be provided in public areas. Comprehensive interior and furnishings-related design services are required. Fifty-three buildings will be demolished for a total of 126,495 square feet.

SBMR WBR Reilly Street Barracks

The Army will construct a standard design barracks complex with a six-story barracks and four medium company operations facilities. Phase 2 (PN 58294) will be programmed in a future budget request. IDS will be installed for all arms vaults in the Company Operations Facilities. A mass notification system will be installed for all buildings. The Army will construct covered soldier gear wash areas adjacent to the Company Operations Facilities for cleaning personal military gear. The facility will also be used as a formation area during inclement weather. A fire pump house with a diesel-driven fire pump and fuel storage tank are required to ensure that this project will have sufficient water supply and pressure for the required fire demand. ATFP will be provided by resistance to progressive collapse, special windows and doors, and site measures. Supporting facilities include utilities, electric service, exterior lighting, fire protection and alarm systems, paving, walks, curbs, and gutters, parking, storm drainage, information systems, site improvements, and road improvements. Access for individuals with disabilities will be provided in public areas. Air conditioning will be provided for all buildings, except the pump house. Two buildings, totaling 102,236 square feet, will be demolished; along with the basketball court in Quad I. Asbestos abatement for removal of vinyl asbestos tile flooring is required before the buildings are demolished. Also to be demolished are three buildings at Fort Shafter, totaling 31,172 square feet, 25 buildings at Schofield Barracks, totaling 248,980 square feet, and four buildings at WAAF, totaling 13,476 square feet. Air conditioning is estimated at 240 tons.

SBMR WBR PH 2CI Facilities

The Army will construct a standard-design barracks complex, two 2-story battalion headquarters with classrooms (one large with a troop aid station and one small), and a brigade headquarters. It will construct a central plant for chilled water air conditioning/hot water heating to support the facilities. An IDS will be installed, and ATFP measures include resistance to progressive collapse, laminated glass, and provisions for entry control barriers in parking and service entrances.

A multipurpose court will be built. Supporting facilities include utilities, electric service, exterior lighting, fire protection and alarm systems, paving, walks, curbs, and gutters, parking, storm drainage, information systems, site improvements, and road improvements. Air conditioning will be provided. Seven buildings, totaling 266,052 square feet, will be demolished. The supporting facility cost is high due to relocation of utility lines, road improvements, permanent relocation of communications cables, and the demolition of buildings. Comprehensive building and furnishings-related interior design services are required. Access for the handicapped will be provided.

17. Vehicle Maintenance Shop, 307th ITSB, HMR

The proposed project would construct new motor pool facilities for the 307th ITSB, on a site currently occupied by existing motor pool facilities.

18. Soldier and Family Readiness Center

This project would construct facilities for the Red Cross, Aloha Furniture, housing referral, passport and ID, retirement services, vehicle registration, and others. Construction is scheduled to begin in 2009 and would be completed by 2010.

19. Construction of Child Development Center
Construct a 195 child capacity 23,000 square foot facility for children ages 6-10 to support the current need for programs and services for school age children.

20. Gate Alignments

Foote Gate, SBMR
This project will realign the road to allow vehicle stacking and will include a visitor center and search area with parking. The guardhouse will be updated and will include new lighting and surveillance equipment.

Macomb Gate, SBMR
This project will realign the road to allow vehicle stacking and will include a visitor center and search area with parking. The guardhouse will be updated and will include new lighting and surveillance equipment.

Lyman Gate, SBMR
This project has been completed. It realigned the road to allow vehicle stacking and included a visitor center and search area with parking. The guardhouse was updated and now includes new lighting and surveillance equipment.

WAAF Gate Connections with SBMR
This project has been completed, creating a direct link between SBMR and WAAF. Signal lights and crosswalks have been added to improve traffic safety for pedestrians and motorists.

Kawamura Gate, WAAF
This project will realign the road to allow vehicle stacking and will include a visitor center and search area with parking. The guardhouse will be updated and will include new lighting and surveillance equipment.

21. Army Facility Strategy Program
The AFS program provides for construction of new facilities, including construction of a consolidated motor pool at Fort Shafter, an aviation motor pool complex at WAAF, two physical fitness centers (SBMR, WAAF), a general instruction building and upgrades to the range at SBER, and a chapel at Fort Shafter.

The current fuel storage facility at SBMR has a 60,000-gallon (227,125-liter) capacity. The Army is proposing to increase this capacity to 120,000-gallons (454,249-liters). At WAAF, an increase in fuel storage capacity for petroleum, oil, and lubricants storage is needed for the Aviation Brigade Motor Pool expansion (Bow 2002).

22. Prescribed Burns at Army Installations in Hawai`i
Prescribed burns have been conducted at Army installations in Hawai`i in the past on small areas (typically 4 to 5 acres) at SBMR and on about 800 to 900 acres at MMR. Controlled burns have recently been conducted on larger areas and on a more regular basis. Approximately 1,200 to 1,500 acres are burned at SBMR to reduce vegetation (fuel load) and to allow the Army to conduct UXO clearance and cultural survey activities. Aerial broadcast spraying of herbicide by helicopter is applied before some burns to reduce live vegetation prior to the prescribed burn.

The first burn in this area was in May 2003 and would be conducted every year or two based on vegetation regrowth and fuel continuity. The Army is likely to also conduct controlled burns at DMR, MMR, and PTA. At this time, it is not anticipated that burns will be needed in the SBSR or at KTA or KLOA.

Approximately 1,200 to 1,500 acres at SBMR were the subject of a prescribed burn EA. The burn took place in the West Range impact area for five to six days, starting around June 7, 2003. The burn allowed for UXO cleanup, archaeological surveys, and fuel reduction for wildfires. The EA for this prescribed burn

was available for public and agency comment until May 15, 2003, and a finding of no significant impact was signed on May 16, 2003 (US Army 2003).

Approximately 800 to 900 acres at MMR were burned under the program to prevent large-scale wildfires, in compliance with the settlement agreement and stipulated order between Mālama Makua and the US Army. The burn took place between the north and south firebreak roads and on small parcels outside the firebreak roads for four days between October 29 and November 1, 2002. The burn allowed for UXO cleanup and archaeological surveys. The EA for this prescribed burn was available for public and agency comment until October 8, 2002, and a finding of no significant impact was signed on October 28, 2002 (Miura 2002).

The most recent prescribed burn was conducted on July 22, 2003. Preparation and execution of the prescribed burn was performed according to the Army's burn plan (US Army, undated). The Army coordinated the prescribed burn with the USFWS, US Forest Service, State Department of Health (Clean Air Branch), State DNLR— Division of Forestry and Wildlife, Federal Fire Department, Honolulu Fire Department, Hickam Fire Department, and the National Weather Service. The prescribed burn was designed to burn between 800 and 900 acres, but the prescribed burn area escaped the firebreak road due to a sudden 180 degree wind shift and an increase in wind speed from 9 miles an hour to 20 to 25 miles an hour within five to ten minutes. As a result, the fire burned uncontrolled for three days and burned 2,100 acres. The fire was under control by July 24, 2003.

23. Resumption of live-fire training at MMR or establishment of a live-fire facility at PTA / Makua Implementation Plan

The Army is currently conducting environmental analysis to examine the impacts of resuming live-fire training at MMR or establishing a live-fire facility at PTA. The purpose of this facility would be to provide a training venue for Soldiers to conduct CALFEX and other training events.

The US Army's Makua Implementation Plan (MIP) is a guide to conservation efforts toward stabilizing 28 endangered species that could be affected by military training at MMR. This plan covers 27 plant species and one Hawaiian tree snail species. The land needed for stabilizing these plants and animals is divided into 23 management units in the Wai`anae and Ko`olau Mountains of Oahu where the most important wild populations of these species occur (USARHAW 2003, 2005).

The MIP identifies stabilization plans for each species, which in turn outline specific actions critical to stabilizing population levels. These actions include threat abatement measures and reintroductions where appropriate. Actions are also outlined for the management units addressing habitat level management. The MIP, which is projected over 20 years, will employ an adaptive management approach to refine these actions and strategies based on monitoring data.

24. Oahu Implementation Plan

This project outlines mandatory and optional natural resource stabilization and recovery methods for endangered, rare, and threatened species and communities existing on Army installations on Oahu. Interagency consultation was initiated with USFWS, and public coordination efforts were made in compliance with the Sikes Act. The programs guaranteed funding are those that involve ESA Section 7 consultation, some watershed and pest management programs, and some conservation and community outreach programs.

25. SBCT Live-Fire Training

Live-fire training for the 2/25th involves both munitions and explosives that would be used in combat and non-explosive training rounds. At a minimum, all Soldiers in the 2/25th SBCT must qualify on individual and crew/vehicle weapons at least twice per year. In addition, platoons, companies, and battalions of the 2/25th must conduct collective live-fire training exercises on firing ranges to ensure they have rehearsed and coordinated battle procedures and are prepared to deploy to support wartime operations.

Various weapons systems use different types of munitions. When practicable, some weapons systems use rounds of lesser environmental impact. These rounds include inert or non-explosive training rounds and stainless steel training rounds.

The following training ranges are required for SBCT training: 25 m Zero Range; Modified Record-Fire Range; Combat Pistol Qualification Course; Multipurpose Machine Gun & Sniper Field Fire; Grenade Launcher Range; Sniper Field Fire Range; MK–19 Range (for Anti-Tank (AT)–4, Javelin training also); Hand Grenade Qualification Course; Anti-Armor Tracking Range Mortar; Digital multipurpose Training Range; Battle Area Complex; Infantry Squad Battle course; Infantry Platoon Battle Course; Urban Assault Course (contains Live-fire Breach Facility and Live-fire Shoot House); and Combined Arms Collective Training Facility. Range descriptions may be found in Training Circular 25-8 (TC 25-8) *Training Ranges* (U.S. Army, April 2004).

26. Residential Communities Initiative

The US Army has completed an EA and finding of no significant impact for the full privatization of family housing at the following installations in Oahu: SBMR, HMR, WAAF, Āliamanu Military Reservation, Fort Shafter, Tripler Army Medical Center, and Kia`i Kai Hale (USACE 2004). This initiative is a program for the Army to turn over approximately 8,000 units of housing on Oahu to a private developer, Actus Lend Lease, LLC, for ownership and operation for 50 years. The land beneath these homes has been leased to the developer for the same term. Actus Lend Lease has teamed with the Army to establish a new management organization, Army Hawai`i Family Housing, operated from SBMR. This program is meant to eliminate inadequate housing and to improve neighborhoods and communities. Demolition and renovation of old homes and construction of new homes is underway.

27. Integrated Training Area Management (ITAM)

The ITAM Program is the Army's formal strategy for implementing the sustainable use of training and testing lands. The intent of the program is to systematically provide uniform training land management capability across USAG-HI lands and to ensure that the carrying capacity of the training lands is maintained over time. The Army manages its lands to minimize loss of training capabilities in order 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 integrates elements of operational, environmental, master planning, and other programs that identify and assess land use alternatives. The following ITAM programs are being implemented at MMR:

- Firebreak maintenance, including drainage and erosion control repair;
- Culvert maintenance, embankment repair, and hydroseeding of drainage swales;
- Installation of energy dissipaters in swales, sedimentation and detention basins, and erosion control blankets; and
- Archaeological site capping, which includes the use of sandbags to protect sites, and installation of concertina fencing.

28. 25th ID(L) and USAG-HI Revitalization Program

This compilation of projects includes construction of 2 two-million-gallon (7,570,824-liter) water tanks to ensure continued sanitary and reliable water service. The current tanks exhibit considerable corrosion at the roof areas. The new tank project includes a booster pump station and emergency generators. Also under this project is construction of an additional facility for the Central Identification Laboratory Hawai`i. Currently, the organization is housed in overcrowded and inadequate facilities, causing operations to be inefficient. The project will include a DNA lab and administrative space for command and support staff and search and recovery teams.

29. Implementation of the Integrated Natural Resources Management Plan (INRMP)

This project outlines mandatory and optional natural resource stabilization and recovery methods for endangered, rare, and threatened species and communities on Army installations on Oahu. Interagency

consultation was initiated with USFWS, and public coordination efforts were made in compliance with the Sikes Act. The programs guaranteed funding are those that involve Endangered Species Act Section 7 consultation, some watershed and pest management programs, and some conservation and community outreach programs.

30. Implementation of the Integrated Cultural Resource Management Plan (ICRMP)
This project outlines stabilization and preservation strategies for protecting cultural and historical resources on US Army installations on Oahu. Interagency consultation was initiated with the Hawai`i State Historic Preservation Office.

31. Implementation of Proposed Range and Training Land Program Development Plan Actions
This project involves the Army implementing a planning document for managing range facilities and training areas based on its training doctrine and resource guidance. This program identifies potential training shortfalls and includes a development plan for ranges to meet training needs for current forces.

32. Drum Road Upgrade
The proposal is to align, widen, and harden approximately 24 miles of the dirt and gravel road that runs from the end of the paved road at HMR to the end of the paved road at KTA. Work would include widening the road to 24 feet and providing three-foot compacted gravel shoulders on both sides, realigning dangerous blind curves, regrading to correct steep slopes, providing drainage improvements, and installing guardrails at drop-offs and storm drainage structures and lines to preclude excessive amounts of stormwater runoff from sheet-flowing over the road and endangering traffic. Site work includes clearing, grubbing, grading, and stockpiling material for embankments and installing telecommunications conduits alongside the upgraded roadway. The projects are funded through 2005-2006. This project is required for mission requirements of the 25th ID. The final EA was approved in June 2005 (Hargis 2005).

33. Construct Army Reserve Center Training Facility, FS Flats (Construct a 200 member training facility)
Construct a new Army Reserve Center training building for 200 personnel with small storage building and 5300 square yard parking lot. The proposed site is the parade field between the existing Army Reserve buildings 1550 and 1557, with the parking lot between Takata Road and building 1556, with a total site size of about 1.5 acres.

34. Air Force Housing Privatization Program
The housing program is being conducted in two equal phases. The first phase, awarded in February 1, 2005, involved half of Hickam Air Force Base's military family housing units. Under Phase I, the Air Force conveyed 1,356 homes and leased 238 acres of land to Actus Lend Lease, LLC. Actus will be in charge of the design, construction, and operation of the housing development and associated infrastructure for 50 years.

35. Air Force C-17 use at Hickam Air Force Base
The USAF proposed to base eight C-17 aircraft at HAFB and to see the departure of four C-130 aircraft from HAFB. The proposed action would include aircraft beddown and operations at Hickam AFB, the construction of C-17 aircraft support facilities at Hickam AFB, personnel requirements to support the C-17 aircraft beddown, aircrew training requirements at existing facilities, and the possible construction of a new assault runway or use of existing runways. An EA was prepared and the FONSI was completed for the C-17 aircraft beddown on December 12, 2003.

36. Growth and Realignment of the Army
Installations in Hawai`i capable of supporting growth and realignment as part of the Proposed Action are Schofield Barracks Military Reservation (SBMR) and Fort Shafter. Units proposed as part of the growth and realignment to support operations in the Pacific could be stationed at these locations and conduct administrative functions and Garrison operations (office functions, vehicle and equipment maintenance, Soldier recreation and living quarters etc.) from these locations. Training may be conducted at a number of other training areas in Hawai`i, including Dillingham Military Reservation (DMR), Kahuku Training Area (KTA), Kawailoa Training Area (KLOA), and Wheeler Army Airfield (WAAF) on Oahu. On the Island of

Hawai`i, units may train at Pohakuloa Training Area (PTA), which includes the West PTA, and may use Bradshaw Army Airfield (BAAF).

37. USARPAC Transformation to Warfighting Headquarters
Increase in personnel associated with the restructuring of USARPAC to a modular force structure, including temporary and permanent facilities construction, primarily at Fort Shafter

38. 25th Infantry Division Transformation to Modular Force Structure
Increase in personnel associated with restructuring of the 25th ID headquarters elements, 3rd Brigade and Aviation Brigade to a modular force structure. The Army published their Final EIS for Transformation to a Stryker Brigade Combat Team in May 2004.

39. Future Combat Systems Fielding
Incorporate technology improvements throughout the Army and Future Combat Systems improvements through a phased development and fielding process to introduce new technologies as they develop.

40. Stationing of the 2/25th SBCT in Hawai`i
As part of Army Transformation and Modularity, the Army prepared an EIS on its proposal to permanently station the 2/25th Stryker Brigade Combat Team (SBCT) in Hawaii (ROD published March 2008). The Army fielded new and modernized vehicles, weapons systems, and equipment for Stryker forces. The Army also acquired two areas for training, and three easements would be acquired for military vehicle trails.

41. Joint training with National Guard units (including Guam), USAF, USMC
Joint warfighter and interoperability training.

42. Growth of the Marine Corps Base Hawaii and use of USAG-HI facilities
Hawaii's Marine Corps presence will grow, with a projected thousands more troops coming to Oahu as a result of the relocation of Marines from Okinawa and a "grow-the-force" initiative to increase the size of the Corps. About 7,000 Marines are based at Kaneohe Bay.

43. Regional SATCOM Support Center
Construct a regional satellite communication (SATCOM) support center of about 7,000 square feet with small utility pad, at Wright Avenue, near building 201. This center currently operates in a wooden WWII temporary structure which is scheduled for demolition.

44. Privatization of Army Lodging, TAMC
The US Army is proposing the full privatization of family housing at the following seven installations in Oahu: SBMR, HMR, WAAF, Aliamanu Military Reservation, Fort Shafter, Tripler Army Medical Center, and the former Coast Guard housing at Red Hill. This initiative is a program for the Army to turn over approximately 8,000 units of housing on Oahu to a private developer or consortium of developers for ownership and operation for a 50-year period. The land beneath these homes will be leased to the developer for the same term. This program is meant to eliminate inadequate housing and improve neighborhoods and communities. A developer (Actus Lend Lease) was selected in Aug 2003 to prepare the Community Development Management Plan (CDMP), which will be central to the design and implementation of the RCI Program. The Draft CDMP was submitted to HQ Army in February 2004 for review. Pursuant to the subsequent approval by Congress, projected for May 2004, the conveyance of the improvements and lease of these residential lands is scheduled for October 2004. The Final RCI EA and Draft FNSI were released in February 2004.

45. Construct a Post Traumatic Stress Disorder Residential Rehabilitation Program Facility, TAMC (Construct a new 13,000 SF facility to consolidate the current outpatient and inpatient services)
Construct a new 13,600 SF facility to consolidate the current outpatient and inpatient services for the Tripler Army Medical Center Post Traumatic Stress Disorder Residential Rehabilitation Program. The services are currently provided within the TAMC main hospital. This new proposed facility would be constructed at TAMC at Krukowski Road, across from the Gymnasium and below the fire station.

46. Armored Security Vehicle
Approximately 58 HMMWVs would be replaced with Armored Security Vehicles, which provide greater personnel protection, primarily for MP units stationed in Hawaii. The Army is currently preparing a Programmatic EA that will address fielding and stationing of the ASV across the Army.

47. Construction of Navy facility at NCTAMS/Kunia Tunnel
Beginning in 2006, design work will start for a 115,500-square-foot three-story facility at the Naval Computer and Telecommunications Area Master Station. On its completion, the Navy will vacate the underground National Security Agency's Regional Security Operations Center in the Kunia Tunnel near SBMR. The 235,000-square-foot underground facility and an additional 95 acres will be returned to the Army for future use.

E.3 Non-Military Projects on the Island of Oahu

48. Residential Development at Koa Ridge between Pearl City and Mililani
An urban development on 763 acres that includes 3,000-4,500 homes with infrastructure.

49. Central Oahu Sustainable Communities Plan
This report serves as a vision for Central Oahu. The 25-year development plan for Central Oahu takes into account sustainability, open space, transit corridors, parks, and natural and cultural resources. Elements essential to the community building plan include the revitalization of Waipahu and Wahiawa town centers, economic development for these communities, the urban community boundary and open/green space network of parks and other areas.

50. North-South Road
Construct a new four-lane boulevard seaward from a future H-1 interchange to near `Ewa Villages.

51. Farrington Highway Improvement
The State of Hawai`i is constructing safety and operation improvements to Farrington Highway, including sidewalks, signalized pedestrian crosswalk or bridges, and continuous left-turn fences. The State of Hawai`i is planning to replace two timber bridges in the vicinity of Mākaha Beach Park.

52. Renton Road Improvements (Ewa Town)
This project goal is to widen Renton road from two to four lanes within `Ewa Villages to improve sub-regional mobility. At this point the project is in its preliminary stages, focusing on research and study. Renton Road connects Fort Weaver Road to Kapolei Parkway and then extends to connect with Roosevelt Road to the west. As a Kapolei Parkway connector street, Renton Road improvements must ensure that the road meets roadway standards for a major thoroughfare.

53. Residential Development – up to 900 new homes at Ocean Point
A development on 143 acres of 901 single-family and multifamily homes, with a community facility and parks.

54. Kapolei Parkway
Construct a new four-lane boulevard (six lanes, if needed) Railroad tracks to Renton then Renton to the North-South Road.

55. Waianae Sustainable Communities Plan
A 20-year land use plan for the Waianae planning area. This report is a planning vision for the Wai`anae planning area, which is to be maintained as a relatively stable region in which public programs focus on supporting existing populations. The plan's vision statement and supporting provisions for the 20-year planning period are oriented to maintaining and enhancing the region's ability to sustain its unique character, current population, growing families, rural lifestyle, and economic livelihood, all of which contribute to the region's vitality and future potential (City and County of Honolulu 2000).

The plan's principal land use policies are preserving open space, coastal lands, mountain forest land, streams and stream floodplains, historic and cultural resources, and agricultural lands; encouraging commercial and light industrial businesses that serve the community; establishing a phase program to develop commercial centers and gathering places; developing public parks; prohibiting development of golf courses; and recognizing the importance of continued military use of lands within the district (City and County of Honolulu 2000).

56. Waianae Coast Emergency Alternate Route

The DTS will develop a second through-road (for emergencies only) inland of Farrington Highway from Mākaha to Nānākuli, by constructing new road links between sections of public or private road.

57. Kamehameha Hwy, Replacement of South Kahana Stream Bridge

The State of Hawai`i Department of Transportation is proposing to replace the existing South Kahana Stream Bridge with a replacement bridge, and to shift the east approach of the replacement bridge to the north (maka'i) to improve the approach curve. The replacement bridge will be designed to meet current AASHTO and FHWA standards. A temporary bypass road and bridge will be installed on the south (mauka) side to serve traffic throughout the construction period. The replacement bridge is virtually a mauka side of the highway to construct the temporary bypass road and bridge.

The existing bridge is 92 feet long and 24 feet wide. The replacement bridge will be about 120 feet long, 43 feet wide, with two 12-foot wide travel lanes and 8-foot wide shoulders on each side to allow pedestrian and bicycle travel and will use drilled shafts for the piers and abutments. Realignment of the east approach (Kahalu'u side) in the makai direction will require construction of a retaining wall within a small portion of the stream. Realignment of the east approach will result in "taking" of about 5,300+ square feet of Kahana Valley State Park land for highway purposes. Coordination is in the preliminary stages between the State DOT, Highways Division and the Department of Land and Natural Resources (DLNR) regarding the affected lands. The Trout Farm Road intersection will be adjusted to meet the new highway alignment.

Traffic delays could occur during the construction period. The stream channel will be widened 12 feet beneath the new bridge. Construction for drilled shafts and piers will re-suspend sediment. Silt curtains around the in-stream work and along the stream banks will contain the sediment to the extent possible. Archaeological and water quality monitoring will be conducted during the construction period.

58. 2121 Kuhio Avenue Condominium/Timeshare Development

The applicant proposes to develop the vacant mauka (north) portion of a 2.66-acre lot (three parcels) at 2121 Kuhio Avenue and 2100 Kalakaua Avenue in Waikiki that includes the existing 2100 Kalakaua Avenue retail commercial development (a three story, 110,000- square-foot commercial structure that will remain.) The applicant will file an application for rezoning of the property from Resort Commercial Precinct to a Resort Mixed Use Precinct. The applicant will also be filing a Waikiki Special District Permit application for the project.

Development plans include construction of either a condominium, timeshare or a combination condominium/hotel tower, with a low-rise restaurant/retail complex supporting either development. The condominium or timeshare development would offer approximately 220 units over two levels of underground parking within the current height limit of 300 feet. The condominium/hotel development would consist of approximately 260 units (140 hotel and 120 condominium units) over two levels of underground parking within the current height limit of 300 feet. The applicant is also considering a third level of underground parking.

59. Oahu Arts Center

The Oahu Arts Center is a non-profit organization comprised of members of the community, from Mililani to the North Shore, formed to oversee the development and construction of a community arts facility in Mililani Mauka on the island of Oahu. Originally conceived as a Mililani Vision Team project (formerly known as the Arts Education Center) in response to the lack of arts education facilities in central Oahu,

Oahu Arts Center proposes to provide access to the arts for residents of all ages, celebrate community spirit, and foster creative and positive alternatives for the region's youth. The organization's essential mission is to promote arts as an integral part of community and family life and to serve the populations of Mililani, Wahiawa, the North Shore and Waipahu.

The proposed Oahu Arts Center facility is located within a 9-acre commercially zoned parcel in Mililani Mauka bounded by Meheula Parkway, Lehiwa Drive and Kua'oa Street. The project site itself is owned by Castle and Cooke Homes Hawai`i, Inc. and consists of 3 acres adjacent to the Mililani Mauka Community Park and neighboring Mililani Mauka Elementary School. The facility will be comprised of a two-story arts education building, an 873-seat auditorium, an outdoor courtyard, and a one-level underground parking structure below the auditorium.

60. Hawai`i Superferry

The Hawai`i Superferry is a Hawai`i-based transportation company providing daily passenger and drive-on / drive-off vehicle fast ferry service between Honolulu Harbor on the island of Oahu and Kahului Harbor on Maui. In August 2007, a temporary restraining order was issued barring the Superferry from accessing Kahului Harbor (causing Maui service to be suspended and subsequently suspending services to Kaua'i) based on concerns that a ferry of this size could, traveling at speeds of about 40 mph (64 km/h), strike and kill whales during its voyages, and also the concern that the Superferry could inadvertently transport invasive species onto the island. Superferry service was suspended in October 2007 until the state could complete an environmental impact assessment (Honolulu Star-Bulletin, 2007), however this ruling was overturned and the Superferry now continues to operate while an environmental impact statement is being prepared. Other concerns regarding the impact of the Superferry include increased road traffic and drug trafficking.

61. Turtle Bay Resort improvements

Turtle Bay resort is proposing to expand and renovate its hotel and resort in Kahuku. On September 29, 2006 the city Planning Department granted tentative approval of Kuilima Resort Co.'s Turtle Bay Resort expansion which will add 3,500 hotel and condominium units to an open rural area stretching from Kawela Bay to Kahuku Point. An environmental impact statement was completed for this project in 1986, leading to an approval for expansion, however the project was never realized. Kuilima Resort Company continues to resist calls to supplement this 1985 environmental impact statement and are also resists following State Historic Preservation Division recommendations for additional cultural studies.

62. Light Rail Transit project and Nimitz "Flyover" Project

The $2.6 billion light-rail project will stretch from Kapolei to Iwilei along an elevated line on a 22-mile route that will primarily follow Farrington Highway, then Kamehameha and finally Nimitz highways. It is projected to take about four years to update previous environmental impact studies on the project and another 10 years to complete construction. The design is still to be determined, but light-rail systems generally are powered by electricity and use fewer cars than traditional train systems. The state also plans to build the $200 million Nimitz "flyover," an elevated two-lane highway that would run along the median of Nimitz Highway above the new contraflow lane. It would stretch from the Keehi Interchange near the airport to Pacific Street in Iwilei. The two lanes of traffic would head into town in the morning and then out of town in the afternoon. Updating the environmental studies on the flyover will take two years, while construction is expected to be completed in 2009. Plans call for the light-rail system to eventually connect to the flyover, which will then be converted into the rail system.
The rail system is then expected to link with the city's first phase of bus rapid transit, which will begin in Iwilei (Starbulletin, Accessed online July 11, 2008[1])

63. Honolulu High-Capacity Transit Corridor Project

The purpose of the Honolulu High-Capacity Transit Corridor Project is to provide high-capacity, high-speed transit in the highly congested east-west transportation corridor between Kapolei and the University of Hawai'I at Manoa, as specified in the 2030 O'ahu Regional Transportation Plan (ORTP). The

[1] http://starbulletin.com/2003/10/28/news/story2.html

project is intended to provide faster, more reliable public transportation services in the corridor than those currently operating in mixed-flow traffic, to provide basic mobility in areas of the corridor where people of limited income live, and to serve rapidly developing areas of the corridor. The project would also provide an alternative to private automobile travel and improve transit linkages within the corridor. Implementation of the project, in conjunction with other improvements included in the ORTP, would moderate anticipated traffic congestion in the corridor. The project also supports the goals of the O'ahu General Plan and the ORTP by serving areas designated for urban growth.

E.4 Military Projects on the Island of Hawai`i

64. Kawaihae Deep Draft Harbor

The USACE and HDOT, Harbor Divisions, are proposing to modify the Kawaihae Harbor. The federally constructed harbor project consists of an entrance channel, the harbor basin, and a "rubblemound" breakwater. The harbor provides maritime access for commerce on the western side of the island of Hawai`i. Growing demand for cargo to support the rapidly expanding economy and state plans to pursue a larger share of the North American passenger cruise market will also increase pressure on the current harbor. There were numerous operating inefficiencies at the harbor. Wave surges would enter the harbor and damage vessels and piers and cause cargo-handling delays. The southwest part of the harbor is the primary port for military equipment, supplies, and personnel destined for PTA. The harbor was first completed in 1962 and was enlarged in 1973. Project completion date is 2008.

65. PTA Implementation Plan

This document was prepared to guide conservation efforts of the Army's Natural Resource Program at PTA as required by the December 2003 Biological Opinion (BO). There are threatened and endangered plant species and endangered bird species, Palila critical habitat, and 1 mammal species that are addressed in the Pohakuloa Implementation Plan (PIP). In 2003, the Army initiated formal consultation under section 7 of the Endangered Species Act (16U.S.C. 1531 et seq.) with the USFWS to determine if routine military training and Transformation of the 2nd Brigade, 25th Infantry Division (now the 2/25th SBCT) would jeopardize the continued existence of federally listed species on PTA. The consultation used an action area (area potentially affected by military training) that duplicates the legally defined boundaries of PTA, including the Keamuku Parcel. In December 2003, the USFWS issued a BO concluding that routine military training and Transformation related activities and the conservation measures identified by the Army in its Biological Assessment would not jeopardize the continued existence of the threatened and endangered species found within the action area or adversely modify designated critical habitat. The conclusion of no jeopardy was based on certain restrictions to military training, implementation of the PTA Integrated Wildland Fire Management Plan (IWFMP), implementation of management actions identified in the BA for the federally listed species that occur there, and preparation and implementation of the PIP.

66. Growth and Realignment of the Army

In order to further Army Transformation, meet the increased national security and defense requirements of the 21st century, maintain training and operational readiness levels of the force, and preserve a high quality of life for U.S. Army Soldiers and Families, the Army has identified the need to increase its overall size while continuing to restructure its forces in accordance with modular Transformation decisions. This increase in the numbers and configurations of units will enhance operational readiness by allowing Soldiers more time to train and maintain their equipment, and will provide Soldiers and Families more time together at home station while providing the nation with greater capability to respond to increased national defense and security challenges.

The Active Army needs to grow from its current authorization of 42 BCTs up to a total possible end strength of 48 BCTs, resulting in the growth of the Army by up to 24,000 Soldiers to establish new BCTs. The growth and realignment of forces will include the addition of 8,200 National Guard Soldiers and 1,000 Army Reserve Soldiers. The Army's resulting end strength will total 547,400 Soldiers.

67. USARPAC Transformation to Warfighting Headquarters

USARPAC proposes to restructure itself from primarily administrative headquarters units into a war-fighting headquarters with rapidly deployable subordinate commands that are primarily located at Fort Shafter, Hawai`i beginning in late 2006 and continuing through approximately late 2008. Associated with the proposed restructuring would be an additional 1,650 Soldiers, approximately 450 additional military training vehicles, and a corresponding number of weapons with the additional troops. The proposed action includes constructing a Command and Control Center to support the dynamic command and control requirements of the Asia-Pacific Theater, a barracks, two temporary motor pool facilities, and associated utilities upgrades.

68. 25th Infantry Division Transformation to Modular Force Structure
The Army Headquarters (HQDA) designated the 2nd Brigade of the 25th Infantry Division (Light) (25th ID[L]) in Hawai`i and five other units across the US as part of the interim phase of Transformation. These units would be converted to SBCT.

69. Vehicle Maintenance Shop, 307th ITSB
Development of an interim motor pool space on Fort Shafter Main Post and Flats. The 307th ITSB would utilize existing motor pool facilities at SBMR.

70. Future Combat Systems Fielding
Incorporate technology improvements throughout the Army and Future Combat Systems improvements through a phased development and fielding process to introduce new technologies as they develop.

71. Range Modernization Projects at PTA
A BAX is planned for construction at PTA. The BAX is a critical range that consists of a range area that is approximately 2,100 acres in size. In addition, construction of range maintenance and ammunition storage facilities at PTA would be required to house targetry, equipment, and ammunition.

A CALFEX capable range would be constructed in the footprint of the BAX at PTA to support up to company-level collective live-fire training events. This range would be approximately 4,500 meters long and 2,000 meters wide. Its standard design would be adjusted to meet training requirements of the range given the terrain to support the standard range design.

Maneuver training for larger units at the battalion and brigade levels would be anticipated to occur at the larger maneuver training areas of PTA. The frequency of battalion-level maneuver events is anticipated to increase 6 to 8 events annually to support the maneuver training requirements of the 2/25th. The frequency of maneuver training rotations at PTA would increase by approximately 33 percent for battalions and would not increase the number of required BCT training rotations. The increase in frequency of use of PTA is anticipated to increase by 10 to 15 percent with the stationing of the 2/25th SBCT in Hawaii.

72. Joint training exercises with National Guard and allied forces
Joint and combined arms simulation training

73. Training by US Marine Corps Grow the Army Soldiers
This project concerns the live-fire and maneuver training increase that would occur in Hawai`i as a result of realignment of thousands of Marines from Okinawa. The current plan is to relocate the 3rd Marine Division headquarters from Okinawa to Hawaii with company and division headquarters, an armory, training facilities, motor transport maintenance, electronics and communications maintenance, and supply. Schofield Barracks and Fort Shafter each may receive 1,000 or more soldiers in coming years as part of a reorganization of forces and increase in the size of the Army. Some training may occur on Army land to include PTA. Exercises may include joint and combined arms training. Construction of an artillery battery complex is also planned, to include a heavy gun shop, automotive shop, armory storage, company command post and general storage. (Marine Times, April 10, 2008.)

74. Construct Mock Airfield, PTA

This project involves the construction of a mock airfield and targets within the southern portion of the PTA impact area. Intended use is for precision aircraft bombing

E.5 Non-Military Projects on the Island of Hawai`i

75. Saddle Road Realignment
This is a long-term, ongoing highway construction project to improve Saddle Road between the Hilo side and Kona side of the island of Hawai`i. Necessary improvements include road modifications and reconstruction consisting of grading, drainage, hot asphalted concrete pavement, and superpave asphalt concrete pavement. Approximately 50 miles (80 kilometers) of road in total will be modernized to meet American Association State Highway and Transportation Officials standards, about 26 miles has been modernized thus far. Constructed in 1942, Saddle Road does not meet design standards for roadways. It is the only road serving PTA and is subject to serious traffic congestion when military convoys are transporting ammunition or troops for training. Saddle Road improvements will also provide a faster route from Hilo to Kona and back for the large number of island hotel workers who commute everyday. It is also the only road serving Mauna Kea astronomical observatory complex, Waiki'i Ranch, Kilohana Girl Scout Camp, Mauna Kea State Recreation Area, and major hunting areas. The initial segment of construction will realign the portion of the Saddle Road that passes through PTA to a location north of the base.

76. Kawaihae/Waimea Road
Hawai`i County Public Works Department is investigating traffic mitigation measures along Kawaihae Road from Waimea Park to Merriman's. The intent is to use the existing road corridor and, after minor paving and other improvements, to re-mark the roads with through lanes and turning pockets.

77. New Highway
The FHWA has proposed constructing an improved 14-mile (23-kilometer) stretch of upgraded highway between the central and west Hawai`i town of Waimea to Kawaihae Harbor near the district of South Kohala. A notice of intent to prepare an EIS for the
proposed project was issued in 2002.

78. UXO Cleanup
DoD began investigating and cleaning up UXO on lands formerly used by the US Navy and Marines under the auspices of the Defense Environmental Restoration Program, Formerly Used Defense Sites (DERP/FUDS). Starting in 1943, the Navy and the Marines acquired State of Hawai`i and private lands (Parker Ranch) through license agreements and used them for artillery and naval gun firing ranges, live-fire exercises, troop maneuvers, and weapons practice. Ordnance recently used or identified within the entire former maneuver area includes shells, rockets, grenades, mortars, cannons, and small arms. While use of most of the area for training and weapons practice ended in 1946 and 1953, the Pu'u Pa'a Maneuver Area is still used occasionally as an active US military training area. The Pu'u Pa'a area is leased to the DoD by Parker Ranch. Current use of the former maneuver land on the Parker Ranch property is mainly cattle ranching and grazing and, in the areas near Waimea and Waiaka Village, residential, commercial, and industrial. UXO continues to be found in the former maneuver area, and preliminary investigations show that approximately 48,000 acres (19,440 hectares) could hold ordnance and explosives waste hazards. Units from SBMR have disposed of UXO, and the Corps of Engineers prepared the "Engineering Evaluation/Cost Analysis, Phase II" (1992) document discussing possible investigation and cleanup alternatives.

79. Former Waikoloa Maneuver Area and Nansay Sites
Beginning in 2002, the Army Corps of Engineers has been clearing unexploded ordnance from the 123,000-acre former Waikoloa maneuver area used by US Navy and Marines as an artillery and naval gun firing range, troop maneuvers, and weapons practice.

80. PanSTARRS Project

The Panoramic Survey Telescope & Rapid Response System project is being carried out in coordination with the University of Hawaii Institute for Astronomy. The first phase of this project, PS1, has been built on the site of the south dome of the old LURE observatory on Haleakala, Maui as test for the full, future PS4 telescope. The favored location for PS4 is the site of the University of Hawaii 2.2-meter telescope on Mauna Kea. The preparation notice for an Environmental Impact Statement for this site was released in January 2007 and the EIS is currently being prepared by the architectural company Group70.

81. Outrigger Telescopes Project

NASA proposed to fund the construction, installation, and operation of six outrigger telescopes in the W. M. Keck Observatory at the Mauna Kea summit area. Construction of four telescopes was planned for 2004 and the remaining two in 2007. The FEIS for this project was completed in February 2005 and NASA's Record of Decision to go ahead with construction at this site was released in August 2005, however construction has not yet begun.

E.6 Military Projects around South-Central Alaska and Cook Island Inlet

82. Cantonment Area Projects at Fort Richardson
The past projects include the completion of a Rapid Deployment Facility, Ammunition Supply Point, and Whole Barracks Renewal project:

83. Rapid Deployment Facility (completed)
The Rapid Deployment Facility is located in the cantonment area of Ft. Richardson as a facility for conducting consolidated pre-deployment functions. The project was to renovate an existing warehouse (Bldg. 806) to consolidate the alert holding area and the contingency pallet processing/storage operations.

84. Ammunition Supply Point Upgrade (completed)
An ammunition supply point (ASP) upgrade project was scheduled for both Ft. Richardson and Ft Wainwright in 2003. The Ft. Richardson and Wainwright projects were to upgrade their facility's ability to process approximately 150 short tons of munitions from the ammunition depot to be uploaded onto 600-700 tactical vehicles in preparation for strategic air deployment.

85. Whole Barracks Renewal (completed)
The whole barracks renewal project replaces aging substandard living and community facilities and provides housing and associated support facilities for the unaccompanied personnel assigned to USAG Alaska. At Ft. Wainwright, the project consisted of constructing one three-story 144-PN building, one soldier community building, and two medium sized two-story battalion headquarters. At Ft. Richardson, the project consisted of demolition of five buildings and construction of one barracks building, one dining facility, three "large-sized" company operations facilities, five "medium-sized" company operations facilities, upgraded utility infrastructure, and other site improvements.

86. Stationing of the Airborne Brigade Combat Team (ABCT) at FRA
USAG Alaska plans to convert the Airborne Task Force that was located at Fort Richardson to an Airborne BCT. This action involved the stationing of approximately 2,400 additional personnel at Fort Richardson and the additional construction of new facilities to support the stationing increase. Additional new structures included brigade, battalion, and company headquarters facilities; classroom; storage complex; Soldiers' barracks; vehicle maintenance shop; dining facility; heavy drop rigging facility; medical clinic; and an airborne sustainment and operations complex. Airborne unit training activities will increase at Fort Richardson, Fort Wainwright (including Tanana Flats Training Area and Yukon Training Area), and Donnelly Training Area.

87. Mission Operations on Urbanized Terrain (MOUT) (Completed)
The MOUT facility is a live-fire facility that provides venues for training in urban/suburban operations. The ranges include an Urban Assault Course (UAC), Shoot House and a Breach Facility (located in the small arms complex at Ft. Wainwright. At Ft. Richardson, the modified MOUT is located on north post while the infantry squad battle course, UAC, Shoot House, and Breach Facility are located on south post.

88. Multi-purpose Training Range (completed)
The MPTR is a live-fire range on the north post of FRA. The MPTR provides crew qualification for direct fire small arms weapons and allows dismounted platoons to conduct fire and maneuver exercises.

89. U.S. Air Force (Elmendorf AFB)
Elmendorf AFB covers approximately 13,130 acres to the west of FRA and north of Anchorage. More than half of the area at the site is undeveloped, including approximately 1,416 acres of wetlands, lakes, and ponds. The remaining area supports airfield operations, base-operations, housing, and recreational facilities.

90. Year-round training at Eagle River Flats (in progress)
The proposed action would allow units to train year round at Fort Richardson and receive necessary weapons proficiency training. The ERF Impact Area is the only impact area on Fort Richardson which

can be used for live-fire artillery and mortar training. The Army has utilized ERF for weapons training since the 1940s and a wide range of direct and indirect fire weapons have been used at this site, including mortars, howitzers, missiles, rockets, and small arms. Currently, ERF can only be used for live-fire weapons training during winter months when wetland sediments are frozen, which requires Fort Richardson units to travel to Fort Wainwright and Donnelly Training Area to complete training requirements during the summer. Firing restrictions were imposed in 1991 with the discovery that white phosphorus was the cause of waterfowl mortality. This action is being analyzed under a separate NEPA document and that no ROD has been issued to date.

Environmental conditions have significantly improved at ERF since 1991, and the Army is proposing to reassess potential impacts at ERF from year-round use. U.S. Army Alaska proposes to remove existing winter only live-fire restrictions and return to year round weapons training in order to fulfill current training needs at Fort Richardson. Both direct and indirect fire weapons would be used. Use of white phosphorus containing munitions in ERF would still be banned under the proposed action.

91. Fort Richardson Fencing Project
U.S. Army Garrison Alaska (USAG-AK) proposes to install fencing along portions of the Fort Richardson military installation boundary and cantonment area. The proposed installation fencing would delineate the Fort Richardson boundary to alert the public that it is entering military training land; deter both vehicle and pedestrian trespass and reduce other illegal activities; reduce the cantonment area's vulnerability to unauthorized vehicular and pedestrian intrusion and protect resources necessary for National Defense; and would allow soldiers to train to standard safely and efficiently by reducing the number of military guards required to be posted along training area boundaries during training events. Emissions generated by construction equipment would also be temporary and insignificant. Fort Richardson's adaptive natural resource management techniques and individual project restoration plans serve to monitor and mitigate loss of vegetation and allow for necessary changes to training activities to prevent significant habitat loss. The fencing project could result in a slight loss of unimpeded fish passage along the edge of anadromous waterways on Fort Richardson during severe flooding events. The fencing project could also result in the loss of approximately 1,052 linear feet of undisturbed riparian vegetation along the banks of the waterways. This distance represents 0.3 % of the approximately 390,400 linear feet of anadromous streambank located on Fort Richardson. the preferred alternative for fence placement will not significantly impede the seasonal movement of small, medium or large animals within Fort Richardson.

E.7 Military Projects in Interior Alaska

92. Installation Boundary Fence Project (completed)
USAG-AK installed fencing along and near portions of the Fort Wainwright military installation's Main Post boundary. The fencing was installed to delineate the Fort Wainwright boundary to alert the public to the boundary of the military training land, deter both vehicle and pedestrian trespass and reduce other illegal activities. The fence also reduces the cantonment area's vulnerability to unauthorized vehicular and pedestrian intrusion, protects resources necessary for National Defense, and allows soldiers to train to standard safely and efficiency by reducing the number of military guards required to be posted along training area boundaries during training events. The majority of this project has been completed however FWA's border along the Chena remains fence-less. Fort Wainwright's adaptive natural resource management techniques and individual project restoration plans serve to monitor and mitigate loss of vegetation and allow for necessary changes to training activities to prevent significant habitat loss. The fencing project may have had a slight impact to fisheries along the Chena River during severe flooding events because the fence will be along the floodplain. Because of mitigations, the fencing project may have also resulted in minimal loss of undisturbed riparian vegetation along the banks of the Chena River. Any impact to other streams would be negligible. A chain link fence around

the perimeter of the cantonment area would have impeded movement of large and medium mammals. Overall the cumulative impact of the fence to wildlife was be minor.

93. Cantonment Construction at Fort Wainwright
These involved USARK mission-essential projects and other structures in support of Transformation:

Mission Support Training Facility
Digital training facility linking live, virtual, and constructive training environments and providing support (individual and collective) to training events.

Library/MOS/Education Center
Battalion classrooms, Military Occupational Specialty study section, and main library functions on FWA.

Barracks Complex
As a part of the Barracks renewal program, the garrison constructed one three-story building, one Soldiers community building, and two medium sized headquarters buildings.

Ammunition Supply Point Upgrade
This project provided a facility for conducting pre-deployment functions such as preparation for rapid strategic air deployment.

Alert Holding and Pallet Facilities
Completed in 2003, these projects provided a facility for conducting pre-deployment functions to include vehicle processing functions.

94. Sniper Range (completed)
The sniper field fire range project was an upgrade of an existing range in the Small Arms Complex of Ft. Wainwright for day and night sniper training, as well as advanced rifle marksmanship training.

95. Stationing of the Stryker Brigade Combat Team (SBCT) at FWA (Completed)
The project was to convert the 172nd Separate Infantry Brigade to the 1/25th SBCT. This transformation resulted in modifications to the facility's base support infrastructure, training support, Soldiers, and equipment configuration.

96. Range Upgrade and Expansion at FWA (on-going)
This is a live-fire facility that provides venues for the training and practice of tactics and techniques for urban/suburban operations under simulated combat conditions. This includes an urban assault course, which is not yet completed, a shoot house, and breach facility in the small arms complex at FWA.

97. Collective Training Range at DTA (completed)
USAG Alaska constructed and is operating a Battle Area Complex (BAX) and a Combined Arms Collective Training facility (CACTF). The BAX and CACTF support training involving a wide range of training exercises for up to 1,000 personnel and 165 combat vehicles per training event. The BAX supports the use of live ammunition ranging from individual Soldier weapons (5.56mm) up to 105mm inert rounds fired from the Stryker Mobile Gun System or smaller caliber direct-fire weapons. It is designed to support company-sized (200 Soldiers) mounted and dismounted live fire operations on a fully automated, collective live-fire range. The BAX is primarily designed for offensive operations using vehicles in support. The BAX is designed to accommodate the Stryker, HMMWVs, and other tactical vehicles. Training tempo is envisioned to be 238 to 106 days per year. The CACTF training involves the use of blank ammunition (no ball or tracer), Short Range Training Ammunition, lasers and simulations (paint ball-like ammunition). The CACTF is deigned to support battalion-sized operations (800 Soldiers) force-on-force training. The BAX requires approximately 3,500 acres and the CACTF requires 1,100 acres. A combined surface area of 25,000 acres is required for surface danger zones.

98. Cold Regions Test Center Automotive Test Complex at DTA (completed)

The CRTC Mobility Test Complex opened in August 2004. The two-lane, 3.2-mile oval track offers the ability to perform all manner of automotive testing both in Alaska's extreme cold winter environment and temperate summer months. The facility offers a 4,800 sq. ft. storage facility, fully heated and equipped with data connectivity. The 4,500 sq. ft. administrative facility provides two private offices, a conference room, and open bay workstations for up to 16 personnel.

99. Space and Missile Defense System (completed)
Construction of the 400-acre Fort Greely site began in June 2002. The installation includes the six missile silos; a readiness-control building, which incorporates both the site's command-and-control center and the main facility for the site's security force; an entry-control point; missile storage and assembly buildings; electrical substations; and various communications facilities.

100. U.S. Air Force (Eielson AFB) aircraft stationing actions (completed)
Eielson AFB is located on 19,789 acres approximately 22 miles southeast of Fairbanks. The base hosts the 354th Fight Wing with a number of supporting units. Prior to the re-stationing, the base had a population of 7,213 including 2,992 active duty military, 562 Alaska Air National Guardsmen, 659 civilians, and 3,000 family members. The realignment at Eielson Air Force Base involved the distribution of eighteen A-10 Thunderbolt aircraft from the 354th Fighter Wing to the 917th Wing at Barksdale Air Force Base, LA; and aircraft to a new active-duty unit at Moody Air Force Base, GA; and to backup inventory. The Air National Guard Tanker unit and rescue alert detachment will remain as tenants on Eielson Air Force Base. EAFB remains open to continue operating the base for the USAF/Joint/Combined exercises. The Air Force expanded training activity by incorporating Eielson into their Red Flag Training missions.

101. ITAM Projects
USAG Alaska 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 USAG Alaska'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. USAG Alaska's management plan institutes standard operating procedures and best management practices for 23 Ft. Richardson projects, 37 Ft. Wainwright, 35 Donnelly Training Area projects and other non-specific ITAM affiliated resource management projects.

102. FWA Housing Projects
Fort Wainwright proposes to transfer responsibility for providing housing and ancillary supporting facilities to a limited liability company. Fort Wainwright would convey via lease all on-post military family housing units and selected ancillary supporting facilities and would grant a 50-year ground lease for the land on which the housing and facilities are located to Development Partner. Fort Wainwright also would lease additional areas for Development Partner's use to construct new housing and operate ancillary supporting facilities. The Army believes it to be beneficial to maximize the on-post population of Soldiers and their families; improving sub-standard family housing encourages military families to remain on-post

The purpose of the proposed action is to improve Army family housing and ancillary supporting facilities at Fort Wainwright. The proposed action is needed to provide affordable quality housing and ancillary supporting facilities to Soldiers and their families by replacing or improving existing 24 family housing units, bringing them up to current Army standards. Work is expected to be complete by Dec. 31, 2009.

103. Aviation Task Force Construction (proposed)
The proposed increase and reorganization will allow the Army to transition to a force that is capable of providing a broad range of integrated aviation training experience to the forces of USAG Alaska and more aviation capabilities when the unit deploys to support operational missions abroad. Existing aviation units would potentially be reorganized and stationed at Fort Wainwright, Fort Richardson or other military installations to support the training of aviation assets on U.S. Army training lands in Alaska. The reorganized unit would be capable of providing first line air transport, air reconnaissance, and close air support. The new aviation unit would be built around the existing USAG Alaska aviation fleet of 30 medium and heavy lift transport helicopters, and USAG Alaska's 640 aviation personnel.

The proposed aviation unit, an Aviation Task Force or Combat Aviation Brigade (CAB), would potentially consist of up to 62 medium and heavy lift helicopters, 30 combat scout helicopter, 24 attack helicopters, and between 1,200 to 2,850 personnel. This proposed stationing and training of increased aviation assets involves construction of new facilities, execution of day-to-day support operations, and routine joint military training at nearby training lands and ranges.

104. Proposed Addition of OH-58D Kiowa Warrior Helicopters

Proposed stationing of OH-58D helicopters in Alaska. The primary mission of the helicopter is in the scout attack role. The helicopter can be optionally equipped to carry out transport and utility roles using equipment kits installed externally on existing hard points. A cargo carrying hook is rated to carry loads up to 2,000lb.

105. Range Operations Center

Construction of a range operations center to assist with oversight of range maintenance, direct and indirect fire courses, and wildfire management operations. The site project was to occur on a two acre parcel.

106. C-17 Landing Strip

Construction of a landing strip to accommodate larger C-17 Globemaster aircraft in support of increased tempo and deployment requirements. The project would occur on a 35 acre plot and is slotted for the 2006 to 2010 timeframe. The C-17 is capable of rapid strategic delivery of troops and all types of cargo to main operating bases or directly to forward bases in the deployment area. The aircraft can perform tactical airlift and airdrop missions and can also transport litters and ambulatory patients during aeromedical evacuations when required. The inherent flexibility and performance of the C-17 force improve the ability of the total airlift system to fulfill the worldwide air mobility requirements of the United States.

107. Direct Fire Range

In 2006, a direct fire range was constructed at DTA on a one acre plot. No further information is available on this project.

108. USAF Training

Eielson AFB, Alaska, is located about 25 miles southeast of Fairbanks in the interior of Alaska, and is the home to the 354th Fighter Wing, assigned to the 11th Air Force in the major command of the Pacific Air Forces. The 354th FW supports operations, maintenance, mission support and medical functions of the Pacific, and is host to 10 tenant units, to include Alaska's Air National Guard 168th Air Refueling Wing.

Elmendorf Air Force Base, adjacent to the city of Anchorage, is the largest Air Force installation in Alaska and home of the Headquarters, Alaskan Command (ALCOM), Alaskan NORAD Region (ANR), Eleventh Air Force (11th AF) and the 3rd Wing. Aircraft training there includes the F-22 Raptor (air-to-air and air-to-ground missions), F-15 Eagle (air defense and maneuverability training), E-3 Sentry (Airborne warning and control system).

109. Pacific Alaska Range Complex

In 2001, the Air Force awarded an eight-year contract for operations, maintenance, sustainment, and technical support of the Pacific Alaska Range Complex (PARC) at Eielson and Elmendorf Air Force Bases in Alaska. The PARC consists of Military Operating Areas, Military Training Routes, impact and tactical ranges, and operating sites at Eielson and Elmendorf. The PARC mission is to provide highly realistic and effective training for combat aircrew, ground crew, and command staff, focusing on war fighting skills. Capabilities include real-time air-to-air, air-to-ground, and ground-to-air mission capture, monitoring, and playback for aircrew visual feedback and performance self-evaluation. A key function supported with PARC - COPE Thunder - is the Pacific Air Force's premier exercise.

110. DTA East Mobility and Maneuver Enhancement Projects

The purpose of these projects is to enhance the existing comprehensive training facility at DTA East to meet the needs of a growing and changing Army and allow for sustainable use. The proposed enhancements would improve existing training facilities by creating increased opportunities for paratroopers to conduct additional formational tactics and by providing sustainable trails and bivouac areas for unit training. The Proposed Action involves three enhancements: *Donnelly Drop Zone Expansion.* Expansion of the existing 434-acre ground surface area drop zone to 2,474 acres. This expansion would meet the physical requirements for a mass tactical parachute drop delivered by a formation of three C-17 aircraft flying side-by-side. *DTA East Trail Network Upgrade.* Upgrades (including widening, hardening, and repairing) of approximately 100 miles of existing networked trails and firebreaks within DTA East and approximately 36 miles of 33-Mile Loop Road. An all-season crossing of Jarvis Creek would also be established. This upgrade would provide sustainable trail use and east-west connectivity for training maneuverability within DTA East. *Hardened Bivouac.* Establish a hardened bivouac site. This site would allow for a sustainable and designated area for Soldiers to bivouac.

111. DTA West Winter Trail Improvement
Improvement of the winter trail in support of training at DTA West.

112. RCI
Family housing at Fort Wainwright is being privatized for FWA, and eventually FRA, for the next 50 years in order to provide affordable, quality housing and ancillary supporting facilities to Soldiers and their Families. Goals of the RCI initiative also include improvement of appearance of housing while meeting environmental stewardship responsibilities, provide neighborhoods and playgrounds, and maintain positive relations with the communities surrounding FWA. The Army believes it to be beneficial to maximize the on-post population of Soldiers and their families; improving sub-standard family housing encourages military families to remain on-post. At Fort Wainwright, an on-post military community is desirable because of a number of factors including proximity to on-post facilities, such as schools, the public exchange (PX), commissary, and recreational facilities, and shorter commute times for Soldiers in an arctic environment.

113. Utilities Privatization
The federal government has privatized all utility systems on Fort Wainwright, Fort Richardson, and Fort Greely (DTA). The awarding contract was signed on 27 September 2007, and a Notice to proceed was issued to Doyon Utilities on 1 November 2007. Full implementation will occur on 15 August 2008. As a result, 12 separate systems will be privatized and transferred to private ownership under a 50 year license to operate the systems. Land does not transfer under the privatization program.

E.8 Non-Military Projects Located in South-Central Alaska and Interior Alaska

114. Community Development at Fairbanks North Star Borough, City of North Pole, and City of Delta Junction
Continued expansion projects due to population growth in the Fairbanks North Star Borough (FNSB). The FNSB has an estimated 38,598 housing units, and approximately 798 new housing units have been built each year since the year 2000. The city of Fairbanks, in which lies Fort Wainwright's main post, has invested in roads and highways to support base operations. The Alaska Railroad Corporation is constructing a rail line by-pass around base to remove trains from the central core of the base and airfield, however rail re-alignment is currently indefinitely on hold; along with that a new rail yard and cantonment area is under construction. The state of Alaska has invested in new highways to support movement of military vehicles between the various training ranges and the base. In 2006 a joint effort with Fort Wainwright, Eielson Air Force Base, City of North Pole, City of Fairbanks, and the Fairbanks North Star Borough resulted in the completion of a comprehensive Joint Land Use Study (JLUS) that currently serves as a tool to coordinate community growth without affecting the operational utility of both bases. In 2006 the JLUS established compatible use zones and air safety zones around both Fort Wainwright and Eielson AFB, and also assessed land use and noise contours around both bases to identify areas where non-military construction should not occur due to noise created by military activities. The FNSB planning

deparment is in the process of creating the Tanana Valley Watershed Riparian Management Plan to address riparian impacts of increased community development.

115. Alaska Railroad Expansion

The Alaska Railroad Corporation proposes the Alaska Railroad Expansion project, to build a new rail line in the area between North Pole and Delta Junction. The project will involve construction of approximately 80 miles of new rail line which will connect the Eielson Branch line and the Chena River Overflow Structure and extend to Delta Junction and serve freight and possibly passenger needs. Currently, sufficient engineering and analysis requirements are being met to support the development of an Environmental Impact Statement (EIS) as required by the National Environmental Policy Act (NEPA). This work includes identifying and analyzing feasible alignment alternatives, completing engineering design on alternatives selected for review in the EIS, and estimating anticipated construction costs. The Notice of Intent for the expansion project was published in November 2005, and a draft of the EIS for this project is expected in 2008.

116. ARRC Fort Wainwright Realignment Project

The Alaska Railroad Corporation (ARRC) is working to improve and realign approximately five (5) miles of railroad track that runs through Fort Wainwright. This project was originally part of the larger Eielson Branch Rail Realignment Project but was individualized at the end of 2006, when ARRC requested permission from the Federal Transit Administration (FTA) and Federal Railroad Administration (FRA) to pursue an Environmental Assessment of Fort Wainwright Rail Realignment on its own.

117. Tanana River Bridge

The State of Alaska Department of Transportation and Public Facilities, the Alaska Division of the Federal Highway Administration and the Alaska Railroad Corporation are working toward replacing Tanana River Bridge, located at Milepost 1303.3 of the Alaska Highway. This project also involves realigning approximately one mile of highway, relocating the boat ramp/parking area and constructing a new wayside with interpretive displays near the east abutment of the existing bridge. The Tanana River Bridge is one of only five bridges built during World War II that are still in use on the Alaska portion of the Alaska Highway . The bridge was built in 1943 during construction of the Alaska Highway by the U.S. military during World War II. The Tanana River Bridge #505 is a 946-foot, 3-span steel cantilever through-truss bridge with a 172-foot suspended truss span. The preferred location of the replacement bridge is approximately 225 feet downstream from the existing bridge. The bridge design would improve horizontal and vertical geometry of the westbound approach and improve safety for the traveling public.

118. Bureau of Land Management (BLM) Alaska Fire Service Campus Upgrades

Wildland fire management in Alaska requires multi-agency cooperation. Fire management is a joint effort by the USAG Alaska and the BLM, Alaska Fire Service. The agencies have developed two inter-service support agreements, which establish the Alaska Fire Service's responsibility for all fire detection and suppression on installation lands (Alaska Fire Service and USAG Alaska 1995a,b). In exchange, the Army provides the Alaskan Fire Service with the use of certain buildings, utilities, land, training services, air support and other support services. No further project information is available at this time.

119. Natural Gas Pipeline

Upgrades to the natural gas pipeline that follows the same corridor as the Trans-Alaska Pipeline. The natural gas pipeline does not yet exist and its proposed route is not fully identified nor permitted. In fact, there may be two pipelines constructed, one through the Alaska Gas Inductment Act(AGIA) and one constructed independently through the natural gas producers. There is some contention over a producer-owned ownership as this could lead to access and discrimination issues.

120. Richardson Highway Upgrade

The Alaska Department of Transportation and Public Facilities (ADOT/PF), in cooperation with the Alaska Division of the Federal Highway Administration, is proposing to improve access, upgrade and extend frontage roads, and develop a new intersection along the Richardson Highway between Mileposts 354 and 357 between Fairbanks and North Pole. The Alaska DOT/PF is also proposing a new truck weigh station to be constructed at Milepost 357.

121. Richardson and Alaska Highways

Upgrade of the Richardson and Alaska highways to include lane expansion and the addition of turning and passing lanes at approximately 20 locations to begin in 2008. Highway reconstruction projects will focus on the segments of the corridor with the poorest foundations and the greatest pavement and road surface distress. Shoulder widening, realignments, and replacement of failing culverts and other drainage structures will also be addressed. Passing lanes, truck pullouts and rest areas will reduce traffic backups and lessen unsafe passing.

122. Delta Agricultural Project

In August 1978, the state initiated Delta Agricultural Project I, a 60,000-acre demonstration agricultural project. Delta Agricultural Project II, an additional land release of 15 parcels totaling 25,000 acres, took place in early 1982. Success of the Delta Agricultural Projects has been highly variable.

123. Multiple use land management under the Tanana Valley Management Plan

The 2001 Tanana Valley Management Plan provides guidelines, regulations and management recommendations for the following land uses: fish and wildlife habitat, grazing land, private land, public access land, recreational land, riparian and instream flow management, subsurface water resource management, timber and forest lands, trails, transportation areas and general water resources.

124. Subsistence on public lands

Regional populations with recognized subsistence interests on USAG Alaska lands include the Native Village of Eklutna, Nenana, Healy Lake, Delta Junction, Big Delta, Dry Creek, Dot Lake, Cantwell, Minto, Tanana, McKinley Village and Fort Yukon. Subsistence most often involves the take or harvest of food resources from public lands. This occurs in the form of hunting, fishing, and trapping as well as the harvesting of nongame resources such as plants and berries. Season, harvest limits, methods and means, and customary and traditional use determinations related to the taking of wildlife on federal public lands for subsistence uses it regulated by the Federal Subsistence Board. As required by the Alaska National Interest Lands Conservation Act to grant preference for subsistence uses of fish and wildlife resources on public lands in Alaska, the Federal Register publishes these guidelines in the Subsistence Management Regulations for Public Lands.

125. Recreation on public and private lands

The Alaska Department of Fish and Game (ADF&G), under the direction of the Alaska Board of Fisheries, manages sport, commercial, personal use, and State subsistence harvest on all lands and waters throughout Alaska. Within the military mission priority, USAG Alaska strives to allow public access to military lands, providing both civilians and military personnel with recreational and educational opportunities. Public use is limited on some areas of Army lands in Alaska. Some areas may be permanently closed to public access due to specific military activities associated with that area. USAG Alaska has defined five primary categories of use areas on its lands. These categories are Open Use, Modified Use, Limited Use, and Off-Limits areas.

126. Knik Arm Bridge

The purpose of the Proposed Action is to enhance access between the Municipality of Anchorage (Anchorage) and the Matanuska-Susitna Borough (Mat-Su) through an efficient and economically viable crossing of Knik Arm, including adequate connections to the existing roadway network and other transportation projects that have committed funding. This project is phase constructed as travel demand would warrant and would be anticipated to generally be an initial two-lane facility with expansion to a four-lane facility by the design year 2030. This project is sponsored by the Department of Transportation/Public Facilities of Alaska and the public corporation the Knik Arm Bridge and Toll Authority (KABTA) and will be carried out in coordination between these this agency, DOT-PF and the Federal Highway Administration. KABTA was created by the Alaska Legislature in 2003 and has received preliminary planning funds through Congressional appropriation and construction and maintenance costs are designed to be financed through KABTA's power to sell bonds and charge user fees.

APPENDIX F: MIGRATORY BIRDS AND BIRD SPECIES OF CONCERN (HAWAII AND ALASKA)

The Migratory Bird Treaty Act (MBTA) (16 U.S.C. 703) prohibits the taking, killing, or possessing of migratory birds unless permitted by regulations promulgated by the Secretary of the Interior. Section 315 of the 2003 National Defense Authorization Act provided that the Secretary of the Interior prescribe regulations to exempt the Armed Forces for the incidental taking of migratory birds during military readiness activities. However, the provisions of 50 CFR Part 21 prevents an installation to take migratory birds indiscriminately during readiness activities. This regulation further requires installations consider the protection of migratory birds when planning and executing military readiness activities. Readiness activities have been defined as activities that are related specifically to the active training of Soldiers.

In accordance with the "Migratory Bird Rule," all birds must be taken into consideration regardless of their status. The 2001 Army Policy on Migratory Bird Treaty Act requires intentional takes of migratory birds as a result of construction will require the installation to apply for and obtain a special purpose permit, depredation permit, or other regulatory authorization from the US Fish and Wildlife Service.

The list of the species of concern for Alaska and Hawaii was derived from the Department of Defense Partners in Flight (PIF) website. The species of greatest concern includes affected migratory birds and have been listed because of their ability to affect military operations. Any decreases in the numbers of any of the listed populations resulting or perceived to result from Army operations could impact training. Installations should identify and carry out management actions that benefit these species.

As stated above, the species of concern is a subset of the over-arching population of migratory bird species. Birds included are based on bird conservation regions for Alaska and Hawaii. The list of DoD PIF bird species of concern includes several categories including Alaskan and Hawaiian birds of conservation concern, Partners in Flight high overall priority species, Shorebird Conservation Plan species of high concern, North American Waterfowl Management Plan birds of highest concern, federal threatened and endangered species list, and the North American Waterbird Conservation Plan species of high concern.

Alaska

The following list are the bird species of concern:

American Golden-Plover	Northern Pintail	White-fronted Goose
Arctic Warbler	Redhead	Surf Scoter
Hudsonian Godwit	Ring-necked Duck	Snow Goose
Peregrine Falcon	Trumpeter Swan	Tundra Swan
Rock Sandpiper	Blue Grouse	Barrow's Goldeneye
Short-billed Dowitcher	California Quail	Bufflehead
Surfbird	Rock Ptarmigan	Canvasback
Whimbrel	Spruce Grouse	Green-winged Teal
American Wigeon	Willow Ptarmigan	Harlequin Duck
Canvasback	Aleutian Tern	Northern Shoveler
Greater Scaup	Arctic Tern	White-winged Scoter
Greater White-fronted Goose	Marbled Murrelet	Black Scoter
Harlequin Duck	Pelagic Cormorant	Blue-winged Teal
Lesser Scaup	Bonaparte's Gull	Canada Goose
Mallard	Cassin's Auklet	Common Eider
Greater Scaup	King Eider	Long-tailed Duck/Oldsquaw
Redhead	Red-headed Merganser	Black Turnstone
Black-backed Woodpecker	Blackpoll Warbler	Gyrfalcon
Hammond's Flycatcher	Northern Hawk Owl	Smith's Longspur
Surfbird	Trumpeter Swan	Alder Flycatcher
Boreal Owl	Gray-checked Thrush	Gray-crowned Rosy-Finch
Northern Goshawk	Northern Shrike	Olive-sided Flycatcher
Pine Grosbeak	Short-eared Owl	Solitary Sandpiper
Spotted Towhee	Swainson's Thrush	Three-toed Woodpecker
Varied Thrush	Bank Swallow	Boreal Chickadee
Dark-eyed Junco	Gray Jay	Lesser Yellowlegs
Northern Waterthrush	Short-billed Dowitcher	Spotted Sandpiper
White-crowned Sparrow	White-winged Crossbill	Wilson's Warbler
Bat-tailed Godwit	Solitary Sandpiper	Upland Sandpiper
Common Snipe	Greater Yellowlegs	Killdeer
Least Sandpiper	Red-necked Phalarope	Rock Sandpiper
Wandering Tattler	Steller's Eider	

In addition to the species of concern the following migratory birds could be expected on Army installations in Alaska:

Red-throated Loon	Pacific Loon	Common Loon
Horned Grebe	Red-Necked Grebe	Brant
Gadwall	Eurasian Wigeon	Bufflehead
Common Goldeneye	Osprey	Bald Eagle
Northern Harrier	Sharp-skinned Hawk	Red-tailed Hawk
Golden Eagle	American Kestrel	Merlin
Pacific Golden-Plover	White-tailed Ptarmigan	Sandhill Crane
Black-bellied Plover	Semipalmated Plover	Ruddy Turnstone
Western Sandpiper	Least Sandpiper	Baird's Sandpiper
Pectoral Sandpiper	Dunlin	Long-billed Dowitcher
Wilson's Phalarope	Mew Gull	Herring Gull
Thayer's Gull	Glaucous-winged Gull	Caspian Tern
Rock Dove	Great-horned Owl	Great Gray Owl
Northern Saw-whet Owl	Belted Kingfisher	Downy Woodpecker
Hairy Woodpecker	Black-backed Woodpecker	Northern Flicker
Western Wood-Pewee	Alder Flycatcher	Say's Phoebe
Steller's Jay	Black-billed Magpie	Northwestern Crow
Common Raven	Horned Lark	Tree Swallow
Violet-green Swallow	Bank Swallow	Cliff Swallow
Black-capped Chickadee	Red-breasted Nuthatch	Brown Creeper
Winter Wren	American Dipper	Golden-crowned Kinglet
Ruby-crowned Kinglet	Northern Wheatear	Towsend's Solitaire
Hermit Thrush	American Robin	American Pipit
Bohemian Waxwing	Orange-crowned Warbler	Yellow Warbler
Yellow-rumped Warbler	Townsend's Warbler	American Tree Sparrow
Savannah Sparrow	Fox Sparrow	Song Sparrow
Lincoln's Sparrow	Golden-crowned Sparrow	Lapland Longspur
Red-winged Blackbird	Rusty Blackbird	Gray-crowned Rosy-finch
Red Crossbill	Common Redpoll	Pine Siskin

Hawaii

Species of Concern:

PTA Native Bird Species List

Common Name	Hawaiian Name	Status
Hawaiian Goose	Nene	Endangered
Hawaiian Hawk	Io	Endangered
Akiapolaau	Akiapolaau	Endangered
Palila	Palila	Endangered
Dark-rumped Petrel	Uau	Endangered
Hawaiian Short-eared Owl	Pueo	
Elepaio	Elepaio	
Amakihi	Amakihi	
Apapane	Apapane	
Omao	Omao	
Pacific Golden Plover	Kolea	
Iiwi	Iiwi	

PTA Introduced Game Bird Species List

Common Name
Chukar
California Quail
Rock Dove
Japanese Quail
Erckell's Francolin
Black Francolin
Grey Francolin
Barred (Zebra) Dove
Gambel's Quail
Kalij Pheasant
Wild Turkey
Ring-Necked Pheasant
Sandgrouse
Spotted (Lace-Necked) Dove
Mourning Dove

PTA Introduced Nongame Bird Species List

Common Name
Common Myna
Skylark
Northern Cardinal
House Finch
Melodious Laughing-Thrush
Red-billed Leiothrix
Warbling Silverbill
Nutmeg Mannikin
Northern Mockingbird
House Sparrow
Yellow-Fronted Canary
Barn Owl
Japanese White-Eye

Migratory Species of Concern on Hawaii

Common Name
Band-rumped Storm-Petrel
Black-footed Albatross
Black-necked Stilt
Bristle-thighed Curlew
Christmas Shearwater
Hawaiian Coot
Hawaiian Duck
Hawaiian Goose
Hawaiian Petrel
Laysan Duck
Layson Albatross
Newell's Townsend's Shearwater
Pacific Golden-Plover

APPENDIX G: SENSITIVE SPECIES IN HAWAII AND ALASKA

Alaska

Species of Concern and Sensitive Species on Fort Wainwright, Alaska

Scientific Name	Common Name
Species of Concern	
Catharus minimus	Gray-cheeked thrush
Contopus cooperi	Olive-sided flycatcher
Dendroica striata	Blackpoll warbler
Dendroica townsendii	Townsend's warbler
Falco peregrinus anatum	American Peregrine Falcon
Sensitive Species	
Cygnus buccinator	Trumpeter swan
Pandion haliaetus carolinensis	American osprey

Rare Plant Species of Concern and Sensitive Species at Fort Wainwright, Alaska

Taxon
Alisma triviale
Artemisia laciniata
Carex crawfordii
Ceratophyllum demersum
Cicuta bulbifera
Cryptogramma stelleri
Dodecatheon pulchellum ssp. Pauciflorum
Lycopus uniflorus
Oxytropis tananensis
Rorippa curvisiliqua
Rosa woodsii
Syntheris borealis

Species of Concern and Sensitive Species on Fort Richardson, Alaska

Scientific Name	Common Name
Species of Concern	
Accipter gentilis laingi	Northern goshawk (southwest population)
Catharus minimus	Gray-cheeked thrush
Contopus cooperi	Olive-sided flycatcher
Delphinapterus leucas	Beluga whale (Cook Inlet Population)
Dendroica striata	Blackpoll warbler
Dendroica townsendii	Townsend's warbler
Falco pereginus anatum	American Peregrine Falcon
Phoca vitulina	Harbor Seal
Ursus arctos horribilis	Brown Bear (Kenai Peninsula Population)
Sensitive Species	
Cygnus buccinator	Trumpeter swan
Pandion haliaetus carolinensis	American osprey

Rare Plant Species of Concern and Sensitive Species at Fort Richardson, Alaska

Taxon
Anemone multifidia var. saxicola
Aphragmus eschscholtxianus
Atripex gmillini
Carex deweyana
Douglasia alaskana
Draba ruaxena
Drabastenopetala
Elocharis kamtschatica
Elocharis quinquefolia
Eriophorum viridi-carinatum
Glyceria striata
Hammarbya paludosa
Malaxis monophylla
Myriophyllum verticillatum
Najas flexilis

Hawaii

Rare Plant Species of Concern and Sensitive Species on Oahu

Scientific Name	Common Name
Bobea sandwicensis	`Ahakea
Bobea timonioides	`Ahakea
Botrychium subbifoliatum	`Ahakea
Capparis sandwichiana	Makou
Capparis sandwichiana	Pua pilo
Cyanea lancelota spp. calycina	Maiapilo, pua pilo
Cyanea lanceolata spp. calycina	`Oha, haha, `ohawai
Cyanea membranacea	`Oha, haha, `ohawai
Cyrtandra waiolani	`Oha, haha, `ohawai
Dissochondrus biflorus	Ha`iwale, kanawao, ke`oke`o
Doodia lyonii	
Dubautia sherffiana	Na`ena`e
Eurya sandwicensis	Na`ena`e
Eurya sandwicensis	Anini
Exocarpos gaudichaudii	Anini
Exocarpos gaudichaudii	Heau
Hedyotis elatior	Heau
Hedyotis fluviatilis	
Hibiscus kokio	
Hibiscus kokio spp. kokio	Koki`o `ula`ula
Joinvillea ascendens spp. ascendens	Koki`o `ula`ula
Joinvillea ascendens spp. ascendens	`Ohe
Korthalsella degeneri	`Ohe
Labordia kaalae	Hulumoa, kaumahana
Labordia kaalae	Kamakahala
Lepidium bidentatum var. o-waihiense	Kamakahala
Lindsaea repens	`Anaunau, naunau, kunana
Lindsaea repens var. macraeana	
Lipochaeta remyi	
Lipochaeta tenuis	Nehe
Lobelia hypoleuca	Nehe
Lobelia hypoleuca	`Opelu, mo`owahie
Lobelia yuccoides	`Opelu, mo`owahie
Lycopodium nutans	Panaunau
Melicope christophersenii	Wawae`iole
Melicope cinerea	Alani
Melicope hiikaei	Alani
Melicope makahae	Alani
Melicope sandwicensis	Alani

Myrsine fosbergii	Alani
Neraudia melastomifolia	Kolea
Neraudia melastomifolia	Ma`aloa, ma`oloa, `oloa
Nesoluma polynesicum	Ma`aloa, ma`oloa, `oloa
Nesoluma polynesicum	Keahi
Nothocestrum latifolium	Keahi
Nothocestrum latifolium	`Aiea
Panicum beecheyi	`Aiea
Panicum beecheyi	
Platydesma cornuta var. cornuta	
Platydesma cornuta var. cornuta	Pilo kea
Platydesma cornuta var. decurrens	
Platydesma cornuta var. decurrens	Pilo kea
Pleomele forbesii	Pilo kea
Pleomele forbesii	Halapepe
Psychotria hexandra spp. oahuensis	Halapepe
Pteralyxia macrocarpa	Kopiko, `opiko
Pteralyxia macrocarpa	Kaulu
Schiedea ligustrina	Kaulu
Schiedea ligustrina	
Schiedea mannii	
Schiedea pubescens var. purpurascens	
Sicyos sp. 1	
Stenogyne sherffii	`Anunu, kupala
Thelypteris boydiae	
Zanthoxylum oahuense	Hea`e, a`e

Species of Concern and Sensitive Species on Oahu

Scientific Name	Common Name
Snails	
Amastra cylindrica	Amastrid land snail
Amastra micans	Amastrid land snail
Amastra rubens	Amastrid land snail
Amastra spirizona	Amastrid land snail
Auriculella ambusta	Achatinellid land snail
Auriculella new sp. aff. castanea	Achatinellid land snail
Auriculella perpusilla	Achatinellid land snail
Auriculella pulchra	Achatinellid land snail
Auriculella spp. aff. Castanea	Achatinellid land snail
Auriculella spp. aff. Perpusilla	Achatinellid land snail
Auriculella tenella	Achatinellid land snail
Cookeconcha spp.	Endodontid land snail
Laminella sanguinea	Amastrid land snail
Leptachatina sp.	Amastrid land snail
Leptachatina sp. (Oahu)	Amastrid land snail
Partulina dubia	Achatinellid land snail
Pleuropoma sandwichiensis	Helicinid land snail
Birds	
Asio flammeus sandwichensis	Pueo, short-eared owl
Chasiempis sandwichensis ibidis	Oahu `Elepaio
Himatione sanguinea sanguinea	Apapane
Loxops coccineus wolstenholmii	`Akepeu`ie, Oahu `Akepa
Paroreomyza maculata	`Alauahio, Oahu Creeper
Vestiaria coccinea	`I`iwi
Damselflies	
Megalagrion oahuensis	Oahu Megalagrion Damselfly
Mammals	
Lasiurus cinereus semotus	Hawaiian hoary bat
Wasps	
Hylaeus unica	Unique yellow-faced bee

Rare Plant Species of Concern and Sensitive Species at Pohakuloa Training Area

Scientific Name	Common Name
Chamaesyce olowaluana	`Akoko, kokomaiei, Maui milk tree
Cystopteris douglasii	None
Dubautia arborea	None
Eragrostis deflexa	Bent love grass
Expcarpos gaudichaudii	Heau, whisk broom sandalwood
Festuca hawaiiensis	Hawaiian fescue
Melicope hawaiiensis	Alani
Schiedea hawaiiensis	None
Teramolopium consanguineum ssp. Leptophyllum var. leptophyllum	Narrow leaf pamakani
Tetramolopium undescribed species	Tooth leaf pamakani

Species of Concern and Sensitive Species at Pohakuloa Training Area

Scientific Name	Common Name
Euconulus (Nesoconulus) sp. Cf. gaetanoi	Snail
Helicoverpa confuse	Hawaiian helicoverpa moth
Leptachatina ssp. (5 species)	Snail
Leptachatina lepida	Amastrid land snail
Nesopupa (infranesopupa) subcentralis	Snail
Nesovitrea hawaiiensis	Snail
Philonesia sp.	Snail
Rhyncogonus giffardi	Giffard's rhyncogonus weevil
Striatura (pesudohyalina) sp. Cf. Meniscus	Snail
Striatura sp	Snail
Succinea konaensis	Snail
Vitrina tenella	Snail

APPENDIX H: WAIKI'I RANCH DEPLETED URANIUM STUDY

WAIKI`I · RANCH

HOMEOWNERS' ASSOCIATION

DEPLETED URANIUM REPORT

In 2005, a civilian contractor discovered spent depleted uranium (DU) munitions at the Schofield Barracks firing range on Oahu. Subsequent surveys by the Army, also found spent DU munitions at Pohakuloa Training Area (PTA) on the "Big Island" of Hawaii. The DU munitions had been fired in the 1960's.

The Army is required to remove the fragments of DU under the supervision of the Nuclear Regulatory Commission (NRC). The Army has done a survey of the entire firing range, and isolated those areas where DU fragments have been found. They have also implemented an air monitoring program, with several stations located around the borders of PTA.

Depleted uranium is the leftover uranium after the fuel and weapons grade isotopes of the metal are removed during the refinement process. It is 40% less radioactive than the naturally occurring metal, and emits low energy alpha particles. DU is very heavy and dense (more than lead), and is used for projectile type weapons and other industrial uses where an extremely dense and heavy metal is needed. In its solid form, it is not considered dangerous, as the low energy alpha particles will not penetrate skin. If it is vaporized or reduced to small particles and ingested into the body, the alpha particles can do tissue damage over time. Since it is a heavy metal, it is persistent in the body when ingested (much like lead).

Waiki'i Ranch is the closest civilian community to PTA. The prevailing surface wind blows directly towards the Ranch from the areas where the DU fragments are located, some 8-10 miles away. The immediate two questions that concern us are:

1. Have particles of DU become airborne due to weapons impact in the area of the DU fragments?

2. Have particles of DU traveled downwind to our community, and have we ingested those particles?

We asked the Army to put one of the air monitoring stations on the Ranch. We also asked them to implement a joint access and joint custody arrangement when collecting the dust samples from the filters. Our reason for this request was to insure a high level of integrity of the process. The Army did not respond to our request.

At this point, our Board of Directors asked me to do research and determine options to find out if Waiki'i residents had been, or are being exposed to DU.

The first step was to find an independent laboratory that has the technology and equipment to detect and measure very small amounts of DU in a sample. The laboratory that has the best reputation and experience level (in our opinion) is the NERC Isotope Geosciences Laboratory, located in England. I made contact with Professor Randall Parrish at the lab, and we discussed methods for determining our exposure level (if any).

The method agreed upon as being valid was to find a building exposed to the prevailing wind, and take dust samples from a rain sheltered area of the building. We selected our polo pavilion, which is an open sided building exposed to the wind from PTA. The interior beams of the building have never been washed, and have a 20 year accumulation of airborne dust.

The Ranch Manager, Walter Puhi, and I jointly collected a sample of dust from the building, and split the sample into two portions. I sent one portion to the Geosciences Laboratory, and Mr. Puhi retained the second sample in his custody in case there is ever any future question as to methodology or integrity of the tests.

The test, which has the capability of detecting even the most minute amounts of DU indicates that any DU in the sample is at the very lowest level of detection possible with present day equipment. Hawaii rock (and dust) contains a minute trace of naturally occurring uranium. The DU level of 1/100 the level of naturally occurring uranium in the sample indicates only a trace within a trace. The level of DU in the dust sample is so low as to be statistically insignificant. Please see the details in the laboratory report.

From this we can conclude that we have not been exposed to DU. Since Waiki'i Ranch is the closest community to the source, it also is unlikely that any other inhabited areas of the Big Island have been exposed.

David L. Bigelow

David L. Bigelow July 10, 2008

Waiki'i Ranch Depleted Uranium Project Manager

Waiki'i Ranch Homeowners' Association

Report on Uranium Isotope Analysis

For the attention of:
David Bigelow

8 July 2008

I apologise for any delay, but I am pleased to now provide you with a uranium isotope analysis and concentration of the sample you submitted.

Conclusion in lay terms

The analysis of dust submitted contains a maximum of 1% Depleted Uranium as a proportion of the total uranium in the sample. The uranium in the dust is less than 1 part per million, a value that is typical for rocks that would occur in Hawaii. The uranium contained in the dust sample is overwhelmingly or entirely dominated by this natural uranium component. Any DU, if present at all, is in fact less radioactive than the natural uranium in the sample by virtue of its being 'depleted' in the more radioactive isotopes 234U and 235U. As such the radioactivity of the sample is virtually dominated by natural background radioactivity, and any additional component if present adds a negligible additional amount to this. In fact the normal variation in amount of background radioactivity in rocks is far larger than the maximum additional component, if any, of DU in the sample.

Technical aspects of the analysis

For your dust sample, the 4M HNO3 leach dissolved all but the silicate portion of your samples and the ratio of $^{238}U/^{235}U$ was 138.92 with an uncertainty on the measurement of 1.01. The normal value is 137.88. Your measurement with its uncertainty band can be argued to be sufficiently close to the natural value as to conclude that it contains no DU. On the other hand it is slightly elevated and given the isotopic composition of depleted uranium munitions, a value of 138.9 is also consistent with 1% of the uranium in the dust being DU and the rest being natural. When DU makes a contribution to uranium, it also contributes the rare isotope 236U. A 1% DU contribution would result in a 236U/238U value of ~3.0 x 10-7. The value of this quantity we measured in your sample was 5 x 10-7 but with an uncertainty of 5 x 10-7, in other words this measurement is just at our detection limit. While both measurements can be regarded as failing to prove the presence of DU they are also consistent with a 1% DU contribution to the dust uranium which is effectively the lowest contribution we can measure. The concentration of uranium in the dissolved dust material is 0.68 parts per million, which is quite normal for volcanic rocks like those that are common in Hawaii.

Should you have any further questions, please do not hesitate to contact me.

The methodology of the test is similar to that described in the publications entitled :

Parrish, R. R., Arneson, J.Brewer, T., Chenery, S., Lloyd, N., Carpenter, D. 2008. Depleted uranium contamination by inhalation exposure and its detection after >25 years: implications for health assessment. Science of the Total Environment, Science of the Total Environment v. 390, 58-68; doi:10.1016/j.scitotenv.2007.09.044. and

Parrish, RR, Thirlwall, M, Pickford, C, Horstwood, MSA, Gerdes, A., Anderson, J., and Coggan, D., 2006, Determination of 238U/235U, 236U/238U and uranium concentration in urine using SF-ICP-MS and MC-ICP-MS: An interlaboratory comparison. Health Physics v.90 (2), p. 127-138.

Or you can read of the procedure by visiting the method of Laboratory 'B' of the following website: http://www.duob.org.uk/laboratory.htm

Sincerely,

Professor Randall Parrish
NERC Isotope Geosciences Laboratory
British Geological Survey
rrp@nigl.nerc.ac.uk

APPENDIX I: SUSTAINABLE RANGE PROGRAM INSTALLATION TRAINING PRIORITIZATION TIERS

Tier 1		Tier 2	
1	IRWIN	16	SHELBY
2	POLK	17	KOREA
3	BRAGG	18	MCCOY
4	LEWIS/YTC	19	LEONARD WOOD
5	HOOD	20	PICKETT
6	BENNING	21	SILL
7	BLISS	22	ATTERBURY
8	DRUM	23	BLANDING
9	CAMPBELL	24	KNOX
10	STEWART & HAAF	25	RIPLEY
11	CARSON/PC	26	RUCKER
12	USARHAW	27	CHAFFEE
13	WAINWRIGHT	28	AP HILL
14	USAREUR	29	INDIANTOWN GAP
15	RILEY	30	GOWEN FIELD (ORCHARD TA)
	-	31	GRAYLING
	-	32	RICHARDSON
	-	33	BULLIS (SAM HOUSTON)
	-	34	DIX
	-	35	HUNTER LIGGETT (Incl. Parks)
	-	36	JACKSON