

Programmatic Environmental Assessment for Army 2020 Force Structure Realignment

Chapter 4 Affected Environment and Environmental Consequences

Section 4.8 Fort Hood, Texas

Section 4.9 Fort Irwin, California

Section 4.10 Joint Base Elmendorf-Richardson, Alaska

Section 4.11 Joint Base Langley-Eustis, Virginia

Section 4.12 Joint Base Lewis-McChord, Washington

Section 4.13 Fort Knox, Kentucky

Section 4.14 Fort Lee, Virginia

Section 4.15 Fort Leonard Wood, Missouri

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4.8 FORT HOOD, TEXAS

4.8.1 Introduction

Fort Hood, located in Central Texas, is approximately 218,400 total acres and has approximately 132,300 acres of maneuver area suited for mechanized armor and dismounted military training. Fort Hood is located outside of Killeen, Texas. It is halfway between Austin and Waco, about 60 miles from each, within the State of Texas (Figure 4.8-1). It is in Bell County, with some portions of the base in Coryell County. Traditionally Fort Hood has supported training for two armored divisions.

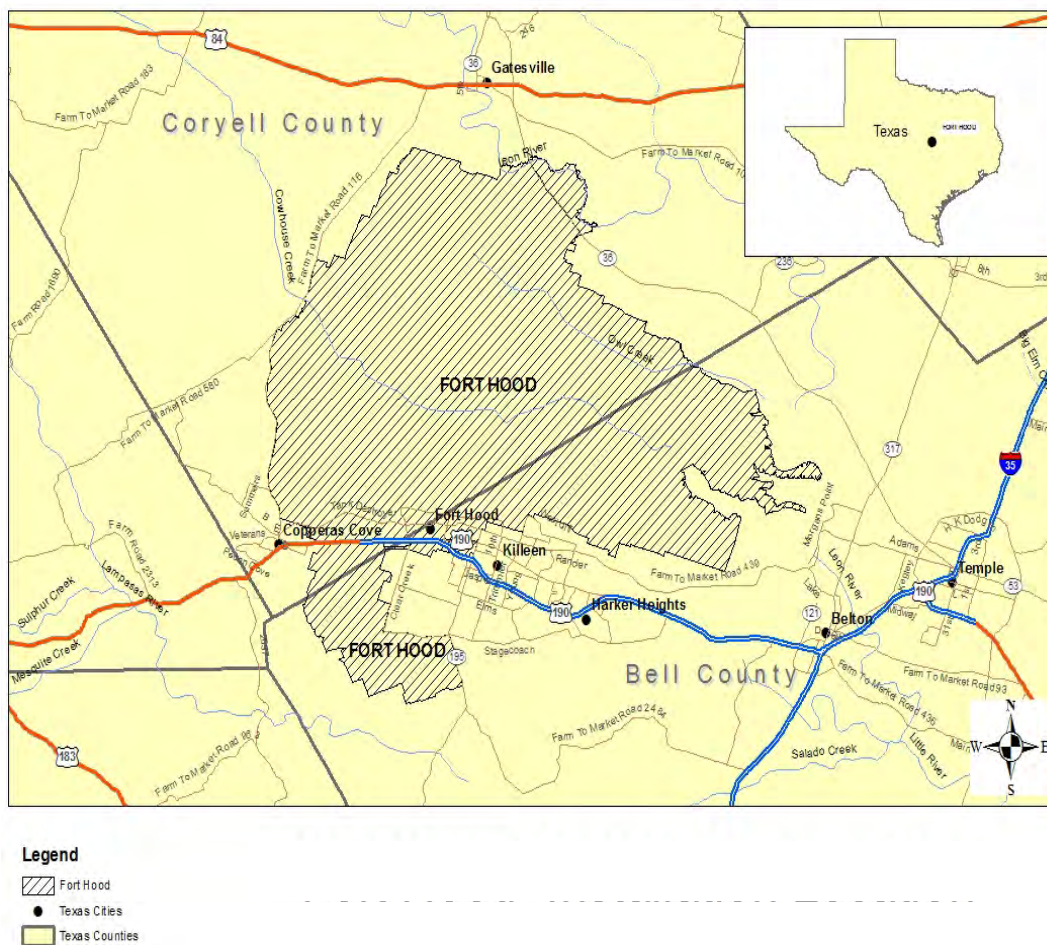


Figure 4.8-1. Fort Hood

Fort Hood is also the location of III Corps Headquarters and its primary subordinate units include the 2/3/4th BCTs of the 1st Cavalry Division, the 1st Air Cavalry Brigade, the 13th Sustainment Command, and other supporting units. Fort Hood has a well-developed training range infrastructure that supports Abrams Tank, Bradley Fighting Vehicle, Apache Helicopter live-fire training, and numerous small arms ranges.

4.8.1.1 Valued Environmental Components

For alternatives the Army is considering as part of Army 2020 force structure realignments, Fort Hood does not anticipate any significant adverse environmental impacts as a result of the implementation of Alternative 1 (Force reduction of up to 8,000 Soldiers and Army Civilians) or

Alternative 2 (an installation gain of up to 3,000 Soldiers). As a result of Alternative 1; however, significant socioeconomic impacts to employment and regional population are predicted. Table 4.8-1 summarizes the anticipated impacts to VECs for each alternative.

Table 4.8-1. Fort Hood Valued Environmental Components Impact Ratings

Valued Environmental Component	No Action Alternative	Alternative 1: Force Reduction of up to 8,000	Alternative 2: Growth of up to 3,000
Air Quality	Minor	Beneficial	Minor
Airspace	Negligible	Negligible	Negligible
Cultural Resources	Negligible	Minor	Minor
Noise	Negligible	Negligible	Minor
Soil Erosion	Minor	Beneficial	Minor
Biological Resources	Minor	Beneficial	Minor
Wetlands	Negligible	Negligible	Negligible
Water Resources	Minor	Beneficial	Minor
Facilities	Negligible	Minor	Minor
Socioeconomics	Minor	Significant	Beneficial
Energy Demand and Generation	Negligible	Beneficial	Minor
Land Use Conflict and Compatibility	Negligible	Negligible	Negligible
Hazardous Materials and Hazardous Waste	Negligible	Negligible	Negligible
Traffic and Transportation	Negligible	Beneficial	Minor

4.8.1.2 Valued Environmental Components Dismissed from Detailed Analysis

For the VECs discussed in this section below, no more than a beneficial or negligible impact would be anticipated. Therefore, these VECs are not being carried forward for detailed analysis, as no potential for significant impacts exists.

- **Airspace.** Fort Hood SUA is divided into airspace use subdivisions. Airspace is managed by the FAA through the Houston Air Traffic Control.
 - **R-6302A** encompasses most of the Fort Hood training areas including the live-fire and impact areas and extends to 30,000 feet above MSL.
 - **Area R-6302B** governs the Southeastern side of the Fort Hood training areas and provides airspace for Fort Hood use to 11,000 feet above MSL.
 - **Area R-6302C and R6302D** covers the Southwestern and Northwestern side of the training areas and extend to 30,000 feet above MSL.

- **R-6302E** begins at 30,000 feet MSL and encompasses the same geographical area as R-6302A. It extends to 45,000 feet MSL.

All of the Fort Hood Ranges and the impact areas to include Permanent Dudded Area 94 are contained within R-6302A, which is continually active. Aircraft and associated activities are only allowed within the narrow range area that has already been scheduled. No one is allowed in this area without an EOD escort because of the danger of un-exploded ordnance.

Fort Hood has four Army-operated airfields on-site. Robert Gray Army Airfield is located at West Fort Hood, and Hood Army Airfield is located at the eastern edge of the main cantonment area. Hood Army Airfield is used primarily for helicopters. Longhorn and Shorthorn are located at North Fort Hood and support training and deployment of Army Reserve and National Guard Soldiers. Fort Hood is currently in the process of expanding its SUA, MOA to include 10,000 feet MSL to 17,000 feet MSL, which will greatly improve the capacity to train fixed-wing aircraft as well as UAS.

The No Action Alternative would not produce any conflicts with the existing overlying restricted airspace. Impacts of this alternative would be negligible. Impacts as a result of the implementation of Alternative 1 would be negligible. The use of airspace would not change significantly with the loss of ground units as a result of this alternative. Aviation and UAS would continue to require airspace to support training. Alternative 1 would result in a marginally lower utilization rate of existing SUA airspace as some units with UAS may be inactivated and no longer require use of the existing SUA, which would result in a minor beneficial impact. There would be an anticipated negligible impact to airspace as a result of the implementation of Alternative 2. The use of airspace would not change significantly and additional airspace would not be required; however, scheduling, activation, and utilization of existing SUA would increase slightly if additional UASs were stationed at Fort Hood. The increased operations could cause some minor impacts to air traffic flow within the National Airspace System around Fort Hood. BCT activities would have to be scheduled to coordinate with existing mission activities, to include UAS operations, and ordnance and other large caliber munitions firing that requires the use of airspace over ranges and impact areas. Any training operations requiring increased use of airspace associated with an increase of up to 3,000 Soldiers would continue to be managed through scheduling and balancing training requirements with airspace availability. The impacts to airspace, as a result of either Proposed Action alternatives, would be very minor and would not impact airspace negatively.

- **Wetlands.** Waters of the U.S., including wetlands, exist across the installation. These resources range from small emergent wetlands associated with ephemeral streams to large forested wetland complexes adjacent to perennial channels. Currently, efforts are underway to delineate all water features, both jurisdictional and non-jurisdictional, on the installation as project sites are identified and as funding allows. Training activities currently avoid wetlands to the greatest extent possible.

There would be negligible impact on the installation wetlands as a result of the implementation of any alternative being considered since construction of new ranges is not anticipated as part of the alternatives. Minor impacts would result from maneuver training activities, however, these impacts are not anticipated to be different than those that already occur in the training areas on Fort Hood under any of the alternatives considered.

- **Land Use Conflicts and Compatibility.** Land use at Fort Hood is designated as cantonment, maneuver, live fire, and airfields. The cantonment areas are like small cities with industrial, administrative, retail, and housing. Maneuver and live-fire training

1 areas support combat training activities. Additionally, cattle-grazing is permitted (through
2 5-year leases) throughout the training areas. Airfields are located adjacent to the
3 cantonment areas and house both fixed and rotary wing assets and support facilities.
4 Fort Hood also has Belton Lake Outdoor Recreation Area. Over 88 percent of the land
5 (more than 191,000 acres) is used for maneuver and live-fire training. No changes in
6 land use, or compatibility are anticipated as a result of the Proposed Action or
7 alternatives. Since no changes in land use or compatibility are anticipated as a result of
8 the Proposed Action or alternatives, the impacts are classified as negligible.

- 9 • **Hazardous Materials and Hazardous Waste.** Specific environmental statutes and
10 regulations govern hazardous material and hazardous waste management activities at
11 Fort Hood. For the purpose of this analysis, the terms hazardous waste, hazardous
12 materials, and toxic substances include those substances defined as hazardous by
13 CERCLA, RCRA, or TSCA. In general, they include substances that, because of their
14 quantity, concentration, or physical, chemical, or toxic characteristics, might present
15 substantial danger to public health or welfare of the environment if released.

16 Hazardous materials are managed in accordance with AR 200-1, Environmental
17 Protection and Enhancement (December, 2007), Chapters 9 and 10, for the purpose of
18 minimizing hazards to public health and damage to the environment. Fort Hood policy
19 is to manage hazardous substances, hazardous material, and hazardous waste in an
20 environmentally acceptable manner. Fort Hood has developed and implemented a
21 Hazardous Material Management Program (HMMP) which focuses on establishing
22 installation level centralized management and visibility of materials containing reportable
23 chemicals or having safety considerations. The concept of centralized management is
24 to manage the materials “from cradle to grave” and reduce hazardous waste generation.
25 Fort Hood’s HMMP is designed as part of an initiative to track the life cycle of all
26 hazardous material from procurement to ultimate disposition and minimize use of
27 hazardous material through pollution prevention actions.

28 Fort Hood’s SPCC Plan and Installation Response Plan address the prevention of
29 unintentional pollutant discharges from the bulk storage and handling of petroleum
30 products and other hazardous materials. The plans detail the specific storage locations,
31 the amount of material at potential spill sites throughout Fort Hood, as well as those spill
32 prevention actions and countermeasures that would be implemented in the event of a
33 spill. All hazardous materials used on post must be accompanied by a material safety
34 data sheet (MSDS) that details the hazards associated with each specific substance.
35 Contractors working on post must comply with the Fort Hood HMMP and obtain approval
36 for all hazardous materials brought on post. Material containing PCBs, asbestos, and
37 lead may not be introduced on military installations. Construction activities would require
38 substances such as fuel and paint, and normal building operations would require the use
39 of cleaning chemicals. The generation of any hazardous waste would be treated as
40 described above, and any solvents used would be recycled and reused.

41 No effects would be anticipated on toxic substance usage, as military policy restricts the
42 use of such materials on installations. A consumption report of all products and
43 associated MSDSs used in construction of the facilities associated with this project
44 would be submitted to DPW Environmental Division’s Hazardous Material and Air Quality
45 program managers for tracking and emissions calculation purposes. Long-term minor
46 adverse effects would be anticipated from the limited amounts of hazardous material
47 used should there be any construction associated with the Proposed Action or
48 alternatives. Negligible impacts would be anticipated as a result of implementing any of
49 the alternatives. The reduction of up to 8,000 Soldiers would likely also have a
50 negligible impact on hazardous materials and hazardous waste generation or

procedures for how it is treated on the installation. Under Alternative 1, there would be a negligible reduction in quantity of hazardous waste produced, simply because the overall number of units, users, and occupants would be decreased. The increase of up to 3,000 Soldiers would result in a minimal or very low impact with regard to the introduction of more hazardous materials. The impact on the generation, waste, and disposal of classified hazardous waste on the installation would also have a negligible overall impact for all alternatives considered in the PEA. Generation of any hazardous waste would be treated as described above, and any solvents used would be recycled and reused. A consumption report of all products and associated MSDSs used in construction of the facilities associated with this project shall be submitted to DPW Environmental Division's Hazardous Material and Air Quality program managers for tracking and emissions calculation purposes. No impacts would be anticipated on toxic substance usage, as military policy restricts the use of such materials on installations. Under all alternatives, hazardous materials and waste would continue to be managed in accordance with Fort Hood HMMP procedures.

Fort Hood anticipates that the implementation of any of the alternatives would result in negligible impacts for those VECs discussed above. The following provides a discussion of the VECs requiring a more detailed analysis, as they are anticipated to have the potential of a higher level of impact as a result of the implementation of the Proposed Action alternatives.

4.8.2 Air Quality

4.8.2.1 Affected Environment

Fort Hood is located in Bell and Coryell counties, which is within the Austin-Waco Intrastate AQCR (40 CFR 81.175). Ambient air quality for the Austin-Waco Intrastate AQCR is classified as in attainment for all criteria pollutants. Unclassifiable areas are those that have not had ambient air monitoring and are assumed to be in attainment with NAAQS.

Fort Hood is a major source of criteria pollutants and a synthetic minor source of HAPs. As such it is required to obtain a Title V air operating permit. Air quality monitoring is conducted outside the installation at the local airport, Skylark Field to determine attainment status, specifically for O₃. Fort Hood emissions are included in the monitoring data as a result of the close proximity of the installation to the monitoring site. To meet regulatory requirements in the Killeen-Temple-Fort Hood Metropolitan Statistical Areas (MSA), the Texas Commission on Environmental Quality (TCEQ) will deploy a second O₃ monitor at a new site in the Temple area. The TCEQ is working on locating this new site, with deployment planned for early 2013. This requirement comes from the 2012 Annual Ambient Air Monitoring Network Review. In 2010, the TCEQ submitted waiver requests for the source-oriented lead monitoring required at the Red River Army Depot near Texarkana, the U.S. Army Fort Hood facility near Killeen, and the Oxbow Calcining facility in Port Arthur. These waivers were subsequently approved by EPA Region 6. The TCEQ has reviewed these sites as part of this year's network review and determined that they continue to meet eligibility requirements. In 2015, the TCEQ will reapply for these waivers as required by the federal rules.

4.8.2.2 Environmental Consequences

No Action Alternative

Although there would continue to be minor short- and long-term fugitive dust impacts from training, these impacts would not exceed threshold levels. Permit conditions would continue to be monitored and met, but no changes to emission sources are anticipated, other than those

mandated by maintenance, replacement, or elimination of sources as they age or are removed from service.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

There would be an anticipated minor beneficial impact to regional air quality from reduced stationary and mobile emission sources. There would be less combustion and generation of NAAQS air pollutants and HAPs associated with military training. In addition, there would be less fugitive dust generated from fewer training events.

Alternative 2: Installation gain of up to 3,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

There would be an anticipated minor (low) impact on air quality in the airsheds surrounding Fort Hood as a result of the implementation of Alternative 2. There would be an anticipated increase in air emissions from both mobile and stationary sources that would be generated to support additional Soldiers and their Families. Though Fort Hood can anticipate increased emissions from military vehicles and generators used to support training events, as well as an increase in fugitive dust, the increase of 3,000 Soldiers would have less than significant impacts to regional air quality. It is anticipated Fort Hood would not exceed the emissions limits of its Title V permit or to create any changes in attainment status. Activities that generate air emissions would not qualitatively change though they could be anticipated to increase marginally to support additional Soldiers.

4.8.3 Cultural Resources

4.8.3.1 Affected Environment

Cultural resources are defined by the NHPA as prehistoric and historic sites, structures, districts, or any other physical evidence of human activity considered important to a culture, a subculture, or a community for scientific, traditional, religious, or any other reason. Depending on the condition and historic use, such resources may provide insight into living conditions in previous civilizations and/or may retain cultural and religious significance to modern groups.

Approximately 98 percent of the training and cantonment areas and 70 percent of the live-fire area have been surveyed for archeological resources (Fort Hood, 2007a). Buildings that are 50 years old or older, or are approaching 50 years of age, could be considered eligible as a cultural resource.

4.8.3.2 Environmental Consequences

No Action Alternative

Impacts to cultural resources from the No Action Alternative would be negligible. Activities with the potential to affect cultural resources are monitored and regulated when anticipated through a variety of preventative and minimization measures.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

Minor impacts are anticipated as a result of the implementation of Alternative 1 at Fort Hood. Removal of temporary facilities would have a very low potential for adverse effects to historic buildings and/or archeological resources. Removal of outdated infrastructure as part of the FRP has limited potential to affect historic structures. Fort Hood has consulted with the SHPO and obtained concurrence for demolition for all but two of its properties as part of the FRP. SHPO consultation would occur prior to any demolition activity that could potentially impact a historic structure or potentially eligible cultural resource. The implementation of Alternative 1 would not be anticipated to affect these two properties.

Alternative 2: Installation gain of up to 3,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignment

Alternative 2 is anticipated to have a minor impact to cultural resources. Measures are in place to accommodate training to prevent adverse impacts to cultural resources. The types of training conducted by the additional Soldiers would not change, though some training areas on Fort Hood might be used with more frequency or intensity compared with current baseline conditions. Fort Hood would continue to follow its cultural resource management procedures and processes discussed in the ICRMP in order to protect cultural resources. Fort Hood restricts training activities around significant cultural sites. It is, therefore, unlikely that there would be adverse impacts to cultural resources from mounted vehicular training or from off-road or foot traffic, as this type of training is only conducted in select training areas. The increase of range usage would potentially increase the use of bivouac areas that are adjacent to ranges which could lead to an increased loss of some cultural resources through small-scale ground disturbance activities.

4.8.4 Noise

4.8.4.1 Affected Environment

The Noise Control Act of 1972 (Public Law 92-574) directs federal agencies to comply with applicable federal, state, interstate, and local noise control regulations. Sound quality criteria disseminated by the EPA, the U.S. Department of Housing and Urban Development, and the DoD have identified noise levels to protect public health and welfare with an adequate margin of safety. Noise levels below 65 dB are normally considered acceptable in suitable living environments.

Responses to noise vary, depending on the type and characteristics of the noise, the anticipated level of noise, the distance between the noise source and the receptor, the receptor's sensitivity, and the time of day.

Noise generated from small arms weapons fire, large caliber systems, and artillery is effectively contained on installation lands and maneuver areas at Fort Hood and does not pose compatibility issues with off-post residential communities. Noise associated with training is experienced at off-post location but a majority of NZ II activities do not extend off post and NZ III is fully contained within the installation. Maneuver and training noise is not currently a major issue raised by local communities. No noise-sensitive receptor populations are located near the proposed training areas, where an increase in noise due to training would be anticipated.

4.8.4.2 Environmental Consequences

No Action Alternative

Negligible impacts from noise are anticipated under the No Action Alternative. The acoustic environment of Fort Hood would continue to be affected by military training activities, such as small- and large-caliber weapons gunnery, artillery, and aircraft over flight. Other activities, such as ground maneuver training and exercises resulting in noise created by personnel and vehicles, would continue to contribute noise on Fort Hood, to the same levels and intensity as historically experienced. Noise impacts within the cantonment and living areas would remain very low.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

Impacts from noise are anticipated to be negligible and slightly beneficial. Existing ranges would still be utilized for firing the same types of weapons systems and conducting the same types of training. As a result of Alternative 1, however, Fort Hood would experience an

1 anticipated reduction in the frequency of noise generating training events. Fort Hood's
2 remaining BCTs would continue to conduct maneuver and live-fire training in the field; however,
3 the number of weapons qualifications and maneuver training events could be anticipated to
4 decrease in proportion with the number of Soldiers stationed at the installation. Noise impacts
5 would likely remain comparable to current conditions, though less frequent. A reduction of
6 8,000 Soldiers would have no impact on the weaponry being utilized on existing ranges and
7 would not be anticipated to change current noise contours or change the risk potential for noise
8 complaints. The current frequency and activities of aviation training activities, a contributor of
9 noise at the installation, would not be anticipated to change, as aviation units would not be
10 impacted by these decisions.

11 **Alternative 2: Installation gain of up to 3,000 Combat/Combat Support Soldiers resulting** 12 **from Brigade Combat Team Restructuring and Unit Realignment**

13 There would be a minor impact on the installation and surrounding communities by the re-
14 stationing of up to 3,000 Combat/Combat Support Soldiers. No change in noise contours would
15 occur. Given that there are no new types of activities that would occur as a result of stationing of
16 these Soldiers, just an increase in the types of existing noise generating activities, only minor
17 impacts would occur as a result of implementing this alternative.

18 **4.8.5 Soil Erosion**

19 **4.8.5.1 Affected Environment**

20 **Geology.** The strata underlying Fort Hood, with the exception of the recent alluvium and river
21 terrace deposits, are consolidated sedimentary rocks of Cretaceous age and belong to the
22 Comanche Series. The erosion of these Cretaceous rocks over the past 70 million years and
23 the deposition of unconsolidated materials along the major streams have produced the present
24 landscape of Fort Hood (USACE, 1987). The major rock layers beneath Fort Hood are the Glen
25 Rose formation, Paluxy Sand, Walnut Clay, Comanche Peak formation, Edwards Limestone-
26 Kiamichi Clay complex, Denton Clay-Fort Worth Limestone, and Duck Creek Limestone
27 complex. The major floodplains are filled with alluvium and river terrace deposits.

28 The Balcones Fault Zone passes immediately east of the installation, running north to
29 southwest. Erosion of this land over time has created the irregular, steep sloping terrain on the
30 installation (USACE, 1987).

31 When maneuver actions intersect natural drainage patterns, destabilization occurs resulting in
32 an increase in erosion. Surface water is affected as the soil is transported in the runoff during
33 rainfall events resulting in sedimentation.

34 Through the implementation of BMPs during construction and training detailed in the
35 installation's INRMP, loss rates have decreased from approximately 33 tons per acre per year to
36 4.4 tons per acre per year in the heaviest maneuver training areas. This decrease has been
37 achieved through the development of gully plugs, low-water crossing structures, sedimentation
38 collection ponds, ripping, mulch application, and re-vegetation.

39 Soil types on the installation were determined using the USDA, Natural Resources Conservation
40 Service, and Bell County and Coryell County Soil Surveys (USDA, 1977 and 1985,
41 respectively). Soil types found on Fort Hood and a brief description of them can be found in
42 Table 4.8-2.

1

Table 4.8-2. Fort Hood Soil Associations

Map Symbol	Mapping Unit	Description
AIC	Altoga silty clay	Deep, gently sloping to strongly sloping, clayey soils on foot slopes below limestone hills and ridges. The soil is well drained, with moderate permeability, and medium runoff. The soil is well suited as a pasture.
Bo	Bosque clay loam	Deep, nearly level soil on floodplains along major streams. The soil is well drained, with moderate permeability and slow runoff. It is well suited as a pasture.
BRE	Brackett association	Gently sloping to strongly sloping and rolling, calcareous, loamy soils. Soils forming in loamy material underlain by soft limestone. Well drained, moderately slow permeability, rapid runoff.
BtC2	Brackett-Topsey association	Deep loamy soils on undulating uplands. The soil is well drained, with moderately slow permeability, and medium runoff. The erosion hazard is moderate for Brackett soils and severe for Topsey soils. This association is moderately suited for pasture.
CoB2	Cisco fine sandy loam	Deep, gently sloping soil on convex slopes of uplands. The soil is well drained, with moderate permeability and medium runoff. It is moderately suited as pasture.
DPB	Denton association	Deep or moderately deep, occurring mostly on Fort Hood. Soil areas are in saddles between hills and foot slopes. Underlain by limestone and interbedded marl. Well drained, slow permeability, medium to rapid runoff.
DrC	Doss-Real complex	Shallow, loamy soils on side slopes that have a benched appearance because of horizontal limestone outcrops. They are well drained, with moderately slow permeability, and medium to rapid runoff. Erosion potential is moderate.
EvB	Evant silty clay	Shallow, gently sloping soil on plane to convex uplands. It is well drained, with slow permeability and slow runoff.
Fr	Frio silty clay	Deep, nearly level clayey soil on floodplains of major streams. Flooded every 3 to 10 years for a duration of less than one day. The soil is well drained, with slow permeability and slow runoff.
KrB	Krum silty clay	Deep, nearly level to gently sloping and undulating calcareous soils. Mostly on the foot slopes of the higher limestone hills and in narrow valleys that are drainage ways from the hill country. Most occur on Fort Hood. Well suited to crops. Well drained, moderately slow permeability, slow to rapid runoff.
LeB	Lewisville clay loam	Deep, gently sloping soil on major stream terraces. The soil is well drained with moderate permeability and medium runoff. It is well suited for pasture.
MuB	Minwells-Urban land complex	Deep and gently sloping soils on terraces of the Leon River. The soil is well drained, with slow permeability and medium runoff.
NuC	Nuff very stony silty clay loam	Deep, gently sloping soil on the sides of low ridges and stream divides. The soil is well drained with slow permeability and medium runoff.

Table 4.8-2. Fort Hood Soil Associations (continued)

Map Symbol	Mapping Unit	Description
ReF	Real-Rock outcrop complex	Shallow, moderately steep to steep soils with areas of rock outcrop on side slopes of uplands, located on hill slopes or bluffs overlooking rivers or streams. Real soil is well drained, with moderate permeability and very rapid runoff. The complex is not suited for pasture.
SaB	San Saba clay	Moderately deep, nearly level to gently sloping, calcareous, clayey soils in low areas on limestone uplands. The soil is moderately well drained, with very slow to rapid permeability (depending on soil moisture), and slow to medium runoff. Well suited as pasture.
SIB	Slidell silty clay	Deep, gently sloping soil in valley fill areas along drainage ways. The soil is well drained, with very slow permeability and slow to medium runoff. Well suited as pasture.
TpC	Topsey-Pidcoke association	Deep and shallow loamy soils on undulating uplands. Topsey soil is well drained, with moderately slow permeability and medium runoff. Pidcoke is well drained, with moderately slow permeability and medium runoff.

4.8.5.2 Environmental Consequences

No Action Alternative

Minor adverse impacts are anticipated under the No Action Alternative. Fort Hood would continue mechanized training, to include impacts to soils from removal of or damage to vegetation, digging activities, ground disturbance from vehicles, and ammunition or explosives used in training events. The installation's ITAM program conducts monitoring, rehabilitation, and maintenance and repair on areas of high use such as drop zones, artillery firing positions, observation points, and ranges.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

Impacts from soil erosion are anticipated to be negligible and potentially beneficial under this alternative. Alternative 1 includes the reduction of no longer needed facilities that could result in adverse impacts from demolition and temporary exposure of bare soils to rain and water and wind erosion. These impacts, however, would be short term in duration. Overall, there would be beneficial long-term impacts from reduced training and more opportunities for land rehabilitation and natural rest and recovery of the landscape. There would be less soil erosion and sedimentation attributable to training activities.

Alternative 2: Installation gain of up to 3,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

There would be minor impacts to soil resources at Fort Hood resulting from the implementation of Alternative 2 and the associated increase in the frequency of unit maneuver and live-fire training events. Exposed soils would become more susceptible to erosion, and soil productivity (i.e., the capacity of the soil to produce vegetative biomass) may decline in disturbed areas. With the potential addition of up to 3,000 more Soldiers, more vehicles would impact Fort Hood's training areas. More vegetation would be denuded from the training areas by vehicular traffic and more bare soils would be exposed to water and wind erosion. A greater amount of sedimentation would be anticipated to occur in the regional surface waters. Fort Hood's ITAM program would continue to monitor training lands for disturbance, and would plan and

implement rehabilitation and erosion control measures in areas of high use. Management procedures outlined in the installation's INRMP would also assist with soil conservation.

4.8.6 Biological Resources (Vegetation, Wildlife, Threatened and Endangered Species)

4.8.6.1 Affected Environment

Threatened and Endangered Species. All federal agencies are required to implement protection programs for threatened and endangered species and to further the purposes of the ESA [16 U.S.C. 1532 et. seq.] of 1973, as amended. In accordance with AR 200-1, Fort Hood has prepared an ESMP (Fort Hood, 2007b) which provides comprehensive guidelines for maintaining and enhancing populations and habitats of federally-listed and candidate species on Fort Hood while maintaining mission readiness consistent with Army and federal environmental regulations. A list of threatened, endangered, or other species of concern at Fort Hood is provided in Table 4.8-3.

Table 4.8-3. Protected, Candidate, and Species of Concern and their Occurrence on Fort Hood

Common Name	Scientific Name	Federal Status	State Status
Amphibians			
Jollyville Plateau	<i>Eurycea tonkawae</i>	Candidate	N/A
Salado Springs Salamander	<i>Eurycea chisholmensis</i>	Candidate	N/A
Birds			
American Peregrine Falcon	<i>Falco peregrinus anatum</i>	N/A	Threatened
Bald Eagle	<i>Haliaeetus leucocephalus</i>	Delisted/Monitored	Threatened
Black-capped Vireo	<i>Vireo atricapilla</i>	Endangered	Endangered
Golden Cheeked Warbler	<i>Dendroica chrysoparia</i>	Endangered	Endangered
Interior Least Tern	<i>Sterna antillarum</i>	N/A	Endangered
Peregrine Falcon	<i>Falco peregrinus</i>	N/A	Threatened
Sprague's Pippit	<i>Anthus spragueii</i>	Candidate	N/A
Whooping Crane	<i>Grus Americana</i>	Endangered	Endangered
Mammals			
Red Wolf	<i>Canis rufus</i>	N/A	Endangered
Cave Myotis	<i>Myotis velifer</i>	N/A	Species of Concern
Fish			
Smalleye Shiner	<i>Notropis buccula</i>	Candidate	N/A
Mollusks			
False Spike Mussel	<i>Quadrula mitchelli</i>	N/A	Threatened
Smooth Pimpleback	<i>Quadrula houstonensis</i>	N/A	Threatened
Texas Fawnsfoot	<i>Truncilla macrodon</i>	N/A	Threatened
Reptiles			
Texas Horned Lizard	<i>Phrynosoma cornutum</i>	N/A	Threatened

Source: USFWS, 2011; TPWD 2009
N/A = Not Listed in Bell County

Three federally-listed species are found on or near Fort Hood. The golden-cheeked warbler nests on Fort Hood from March through July. The black-capped vireo nests on Fort Hood from March through August. Whooping cranes are rare migrants that are seldom observed passing through Fort Hood. However, five observations of whooping cranes on the installation were documented in December 1986 and three whooping cranes were documented on the installation in March 2010. They may fly over the installation during spring and fall migration and stop over at aquatic habitat on the installation and at Belton Lake (USFWS, 2005). The bald eagle, which is now de-listed, winters regularly on Belton Lake and the shoreline along the eastern border of Fort Hood. Eagles arrive during mid- to late-October, and depart generally around the end of March. Fort Hood restricts activities near roost sites when bald eagles are known to be in the area (USFWS, 2005).

The golden-cheeked warbler nests in mixed oak juniper woodland, preferring older stands with tall, old (approximately 40 years and older) trees and closed canopies (USFWS, 1992). Based on recent monitoring efforts, the golden-cheeked warbler population size on Fort Hood increased substantially over the past 10 years (Anders, 2001). Threats to the species include habitat destruction by urban development, brush clearing, oak wilt, range wildfires, and nest parasitism from brown-headed cowbirds (*Molothrus ater*).

The black-capped vireo nests in shrubby re-growth resulting from various disturbances, including wildfire or mechanical removal of woody vegetation. Good nesting habitat for black-capped vireo's includes a wide diversity of hardwoods in a patchy, low-growing configuration with open, grassy spaces between patches of woody vegetation. The black-capped vireo is threatened by cowbird parasitism, habitat loss from browsing animals (cows, goats, deer, and exotics), fire suppression, and urban development.

Texas Parks and Wildlife Department listed the Texas horned lizard as threatened in 1977 (Handbook of Texas Online). The lizard is one of three horned lizard species in Texas and was historically distributed across most of the state except far eastern areas (Price & Morse 1990). It is predominantly found in the Dallas and Fort Worth metroplex area. Central Texas, specifically the Edwards Plateau ecoregion, where portions of Fort Hood are, has been documented as having a decline of the species. It is unknown why the species began to decrease in numbers, but urbanization and the prevalence of red imported fire ants (*Solenopsis invicta*) may be associated with the lizard decline (Donaldson, Price & Morse, 1994).

In December 2009, Texas Parks and Wildlife Department listed 15 species of mussels as threatened. One of these species, the smooth Pimpleback, is known to occur on or near Fort Hood. They dwell in the reach of Leon River that bounds North Fort Hood, north of SH 36 (Fort Hood, 2012).

Migratory Birds. The MBTA protects all species covered under four treaties the U.S. signed with Canada (1916), Mexico (1936), Japan (1972) and the Russian Federation (1976). This includes all native birds in the U.S., except those non-migratory species such as quail and turkey that are managed as game by the states. A 1988 amendment to the Fish and Wildlife Conservation Act mandates the USFWS to identify species, subspecies, and populations of migratory non-game birds that without additional conservation actions are likely to become candidates for listing under the ESA of 1973. Many species of migratory birds inhabit Fort Hood.

Migratory birds as defined by the MBTA means any bird, whatever its origin and whether or not raised in captivity that belongs to a species listed in CFR 50 Section 10.13. Migratory birds by definition also include any mutation or a hybrid of any species named in the 50 CFR and also includes all parts, nests, or eggs of any such bird, and "any product, whether or not

manufactured, which consists, or is composed in whole or part, of any such bird or any part, nest, or egg thereof" (50 CFR § 10.13).

Under provisions of the MBTA, no one may attempt to take, capture, or kill, pursue, hunt, capture, kill, possess, sell, purchase, barter, offer for sale, import, export, or transport any migratory bird, or their parts, including feathers, nests, or eggs—except under the terms of a valid permit issued in accordance with federal regulations as spelled out in 50 CFR §13.21.

Use of Fort Hood and its training areas fall under the exempted category of "military readiness activities", based on the Take of Migratory Birds by the Armed Forces Rule, final rule 28 February 2007 (Federal Register volume 70, pages 8931-8950). In passing the Authorization Act, Congress determined that allowing incidental take of migratory birds as a result of military readiness activities is consistent with the MBTA and the treaties. Construction and maintenance of facilities do not fall under the exemption; however, range and training land maintenance are military readiness activities that are exempt. The U.S. Army Environmental Command issued interim guidance for the unintentional take of migratory birds for actions other than military readiness in July 2008. The guidance states that an installation's INRMP is required to address migratory bird management and conservation and should include management practices to avoid or minimize adverse impacts on migratory birds to the greatest extent practical. Further, the INRMP needs to focus on and sufficiently address those activities that cannot be delayed until after the nesting season. Fort Hood complies with this guidance.

Bats. Seven bat species are known to inhabit Fort Hood where they forage and drink along creeks, tributaries, and ponds. Some of the bats are listed as "Species of Concern" by the USFWS. Bats use naturally occurring roosts such as caves, rock shelters, crevices (rock and exfoliating bark), tree cavities, tree foliage, and bird nests to sleep during the day, raise young, and hibernate. "Forest bats" (species that roost in trees) are known to inhabit tree crevices, cavities, and canopies on Fort Hood, especially tree roosts which occur along watercourses.

Fish. The fish and wildlife populations in the project area are characteristic of those found on the Edwards Plateau and Lampasas Cut Plains regions. Thirty-two species of fish have been documented from the lakes, ponds, and streams on the installation. The common species are the red shiner (*Cyprinella lutrensis*), the blacktailed shiner (*Notropis venustus*), and the bullhead minnow (*Pimephales vigilax*), and various other species of the minnow (*Cyprinidae*) or sunfish (*Centrarchidae*) families (USACE, 1999). Comprehensive lists of fish, birds, and cave-dwelling species found on the installation are available in the appendices of the INRMP; which can be obtained by contacting the DPW Natural Resources Management Office at (254)287-2885.

Wildlife. The various habitat types in the project area provide for wildlife communities characteristic of the Edwards Plateau, Blackland Prairie, and the Cross Timbers ecoregions. Species observed on Fort Hood are listed in Table 4.8-4.

Table 4.8-4. Species Observed on Fort Hood, Texas

Common Name	Scientific Name
Birds	
Cardinal	<i>Cardinalis cardinalis</i>
Mourning dove	<i>Zenaida macroura</i>
Carolina chickadee	<i>Poecile carolinensis</i>
Mockingbird	<i>Mimus polyglottos</i>
Turkey vulture	<i>Cathartes aura</i>
Wild turkey	<i>Meleagris gallopavo</i>

1

Table 4.8-4. Species Observed on Fort Hood, Texas (Continued)

Common Name	Scientific Name
Mammals	
White-tailed deer	<i>Odocoileus virginianus</i>
Black-tailed jackrabbit	<i>Lepus californicus</i>
Cottontail rabbit	<i>Sylvilagus</i> sp.
Raccoon	<i>Procyon lotor</i>
Deer mouse	<i>Peromyscus maniculatus</i>
Hispid cotton tat	<i>Sigmodon hispidus</i>
Eastern wood tat	<i>Neotoma floridana</i>
Reptiles and Amphibians	
Blanchard's cricket frog ¹	<i>Acris crepitans blanchardi</i>
Bullfrog ¹	<i>Rana catesbeiana</i>
Texas greater earless lizard ²	<i>Cophosaurus texanus</i>
Collared lizard ²	<i>Crotaphytus collaris</i>
Western diamondback rattlesnake ²	<i>Crotalus atrox</i>
Western narrow-mouthed toad ²	<i>Gastrophryne olivacea</i>
Texas spiny lizard ³	<i>Sceloporus olivaceus</i>
Short-lined skink ³	<i>Eumeces tetragrammus brevilineatus</i>
Rio Grande leopard frog ³	<i>Rana berlandieri</i>
Texas patchnose snake ³	<i>Salvadora grahamiae lineata</i>

¹Representative of eastern U.S. Communities.

²Representative of western U.S. Communities.

³Representative of southern U.S. Communities.

2 **Vegetation.** The combination of soils, topography, climate, and human activities has produced
3 a diverse mix of grassland and woodland vegetative communities or habitats within the
4 installation. Fort Hood is in the southernmost extension of the Cross Timbers and Prairies Eco-
5 region and the northeastern reaches of the Edwards Plateau Eco-region. Woodlands in the
6 area are closely representative of Edwards Plateau vegetative associations. Three types of
7 forest and shrub communities are found on Fort Hood including coniferous (evergreen),
8 deciduous (sheds leaves in fall), and mixed forests and shrub communities. The coniferous
9 woodlands on the installation are dominated by Ashe juniper (*Juniperus ashei*). Deciduous
10 forests and shrubs are generally found in lowlands and protected slopes; they are relatively
11 uncommon on the installation.

12 **4.8.6.2 Environmental Consequences**

13 **No Action Alternative**

14 Minor adverse impacts would occur at Fort Hood under the No Action Alternative. Fort Hood
15 would continue to adhere to its existing resource management plans and to minimize further
16 and monitor any potential effects. Units are briefed prior to each training event regarding
17 sensitive areas on post, such as protected species habitat, and what is and is not allowed within
18 certain areas at certain times of year to limit species impacts. The implementation of
19 management measures consistent with the Fort Hood INRMP would minimize any such
20 impacts. Implementation of minimization measures detailed in the Fort Hood INRMP would also
21 minimize degradation of vegetation and grasslands. The impacts to vegetation, as a result of

both alternatives, therefore, would be long term due to training, but minor because they are no different than the current activities that already take place on Fort Hood. There is a large population of fish, bats, and other wildlife on Fort Hood. Displacement of wildlife from training does occur; however, wildlife populations are habituated to training noise and disturbance and typically move to other suitable habitat when training events occur.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

Minor beneficial impacts to biological resources as a result of implementation of Alternative 1 are anticipated. Scheduling conflicts for training area access to conduct natural resource monitoring and management activities would be reduced with a projected decrease in the amount of training being conducted. Proactive conservation management practices, such as those outlined in the INRMP, would be more easily accomplished with reduced mission throughput. The frequency of disturbance of wildlife from training would decrease as a result of this alternative.

Alternative 2: Installation gain of up to 3,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

Minor adverse impacts are anticipated as a result of the implementation of Alternative 2. The increase in the number of Soldiers is less than 10 percent above the current level. While this moderate force augmentation would increase traffic in the training lands and ranges, it would not cause significant degradation or destruction of threatened and endangered species or rare species habitats. Fort Hood proactively manages its conservation programs within the installation's training areas. Access is essential to conduct management actions (prescribed burning, etc.) and to conduct monitoring in order to demonstrate that populations of threatened and endangered species are stable or increasing. Fort Hood would continue to work with range operations to schedule endangered species monitoring and habitat management. No scheduling conflicts are anticipated. The implementation of management measures consistent with the Fort Hood INRMP would minimize any such impacts. Implementation of minimization measures detailed in the Fort Hood INRMP would also minimize degradation of vegetation and grasslands. Therefore, the impacts to vegetation as a result of both alternatives would be long term due to training, but minor because they are no different than the current activities that already take place on Fort Hood. Displacement of some wildlife could occur with the increase of 3,000 Soldiers; however, displaced wildlife would move to another favorable living environment. Wildlife populations on Fort Hood have adapted to live fire, maneuver, and other training on the ranges, and are not anticipated to react adversely to additional training.

Streams and creeks are located within the proposed project area, and fish would be temporarily displaced as a result of the repair of the associated low water crossing. The construction; however, would not impede the flow of water across the creek so impacts are short term and minor.

4.8.7 Water Resources

4.8.7.1 Affected Environment

Surface Water. Fort Hood is located in the Brazos River Basin. Surface water consists of numerous small to moderate-sized streams, which generally flow in a southeasterly direction. It has approximately 200 miles of named intermittent and perennial streams with numerous additional tributaries of those features. Fort Hood also contains more than 200 water impoundments that equal approximately 692 surface-acres. Most of these are used for flood control, sediment retention, wildlife and livestock water, and fish habitat. A few of the impoundments serve as either wash racks or closed loop storage ponds. Additionally, Fort

Hood shares 43 miles of shoreline with Belton Lake. Belton Lake is owned and operated by the USACE for flood control, water supply, and recreation.

Most of Fort Hood lies within the Leon River watershed. The watershed has a drainage area of 3,533 square miles and covers parts of Eastland, Comanche, Mills, Hamilton, Coryell, and Bell counties. The Leon River is formed by the confluence of its north, middle and south forks in Eastland County. The waterway flows about 185 miles southeast, eventually joining the Lampasas River to form the Little River. The Leon River and Cowhouse Creek form the two arms of Belton Lake, and Owl Creek flows directly into the Leon River arm. Tributaries of Nolan Creek, including North Nolan Creek and tributaries of South Nolan Creek, flow southeast and leave the installation. Nolan Creek enters the Leon River below Belton Lake. The southern half of West Fort Hood lies within the Lampasas River watershed. Reese Creek and its tributaries flow south toward the Lampasas River. Stormwater flows are also important to the management of surface water. The flows can introduce sediments and other contaminants into lakes, rivers, and streams. Multiple areas of impervious surfaces can overwhelm water bodies within the drainage.

Water quality data on Fort Hood streams indicates that large portions of the training areas are subject to sheet and gully erosion. One of the most substantial impacts to surface water resources is from siltation caused by runoff. Areas disturbed by construction of ranges as well as vehicle traffic including training maneuvers and directly crossing creek beds are major contributors to erosion and runoff.

Soil erosion on the installation has resulted in decreased water quality and increased sedimentation in portions of Belton Lake as well as smaller water bodies and tributaries, including the Leon River on the installation (USACE, 1999). The Blackland Research and Extension Center Water Science Laboratory in Temple, Texas, monitors sediment and other water quality parameters at 13 locations across Fort Hood. Soil erosion management actions performed in accordance with the Fort Hood INRMP would help to control the sedimentation loads associated with the Proposed Action and alternatives.

Waters of the U.S. Waters of the U.S. also exist on the installation. These resources range from small emergent wetlands associated with ephemeral streams to large, forested wetland complexes adjacent to perennial channels.

Training, for the most part, is not a regulated activity under Section 404 of the CWA. Since no construction of new ranges is being considered, there would be minimal, if any, impacts under Section 404 of the CWA. If any construction is proposed, potential impacts would be evaluated for compliance with Section 404 and proper permitting obtained, if necessary. Appropriate consultation and compensatory mitigation measures would also be implemented if required by issued permit.

Water Supply. Fort Hood has water rights to 12,000 acre-feet of water in Belton Lake. The installation purchases treated drinking water from Bell County Water Control & Improvement District No. 1 for South Fort Hood and West Fort Hood. North Fort Hood's drinking water is purchased from the Gatesville Regional Water Supply. Belton Lake is the primary water supply for Fort Hood and many of the surrounding communities, while Stillhouse Hollow Lake serves as a water supply for other nearby areas.

Wastewater. Fort Hood has one TPDES wastewater permit. This covers the sewage treatment plant at the Belton Lake Outdoor Recreation Center. This plant is very small and treats only the wastewater from the restroom facilities at the camping areas. There are no other wastewater treatment facilities on Fort Hood. All wastewater flows through the sanitary sewer and is treated by Bell County on the two southern cantonments, and the City of Gatesville at North Fort Hood.

Sanitary sewer overflows have been noted as a potential source of contamination of water resources on Fort Hood. There are records of occasional sanitary sewer overflows across the installation, with a greater number occurring in or near Clear Creek and South Nolan Creek. These systems are now completely privatized, and improvement projects have been implemented that reduce the number and volume of spills that occur.

Stormwater. Although precipitation amounts can vary greatly from year to year, Fort Hood averages almost 34 inches of rainfall per year with most occurring during the months of May, June, and October. Currently, Fort Hood has a TPDES general permit to discharge stormwater from covered industrial activities. Fort Hood also has coverage as a regulated operator under a MS4. Fort Hood maintains a spill response team that is notified and any spills are contained before reaching the storm drain system. Therefore, there is a low risk to stormwater resources as a result of these minimization methods.

4.8.7.2 Environmental Consequences

No Action Alternative

The No Action Alternative would have minor adverse effects to water resources. No change from existing conditions would occur and all construction, operation, and maintenance projects already under way have obtained the TPDES permit and other applicable permits and are operating in adherence to their guidance. Training activities would continue, both on ranges and training lands, with adverse impacts mitigated via the ITAM land rehabilitation program.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

Minor beneficial impacts are anticipated as a result of the implementation of Alternative 1. A loss of up to 8,000 Soldiers and Army civilians would reduce traffic in Fort Hood's training areas, decreasing the chance of potential surface water impacts and fuel spills. The demand for potable water would also be diminished, and implementation of Alternative 1 would create additional wastewater treatment capacity for other uses at the installation. A decrease in troops by 8,000 would decrease drinking water demand and wastewater generation.

Alternative 2: Installation gain of up to 3,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignment

The addition of up to 3,000 Soldiers would be anticipated to have a minor impact on the installation's watershed, water demand, and associated treatment systems. The addition would only slightly increase water demand for consumption. Vehicle washing associated with the increased training is accomplished by using several closed loop wash racks.

4.8.8 Facilities

4.8.8.1 Affected Environment

Fort Hood Military Reservation encompasses over 218,000 acres. The installation is comprised of three cantonment areas, two instrumented airfields, and many maneuver and live-fire training areas. The cantonment areas are primarily for urban uses and are designated the main cantonment area, West Fort Hood, and North Fort Hood. The main cantonment area and Hood Army Airfield are located at the southern edge of the training area and adjacent to Killeen, Texas. West Fort Hood is located south of U.S. Highway 190, near the City of Copperas Cove, Texas, and includes the Robert Gray Army Airfield and Killeen-Fort Hood Regional Airport. North Fort Hood, located near Gatesville, Texas, is the primary site for Army Reserve and National Guard training, equipment service, and storage (U.S. Army, 2004).

4.8.8.2 Environmental Consequences

No Action Alternative

Impacts to facilities would be negligible under the No Action Alternative. Fort Hood's current facility shortfalls have been prioritized and are seeking or have received Army funding. The installation would continue to use its existing facilities and cantonment areas as they are currently being used and maintained.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

Minor impacts are anticipated as a result of the implementation of Alternative 1. An increase in the Financial Readiness Program and facilities demolition at Fort Hood would occur under this alternative. Older, less efficient facilities nearing the end of their life-cycle would be demolished when no longer needed to support Soldiers or their Families to save the Army on maintenance and energy requirements. Facility usage and availability for the remaining population would not be affected. The reduction of Soldiers would allow Fort Hood to re-purpose some facilities for new uses and dispose of many of its re-locatable buildings and temporary structures currently being used to support installation administrative functions.

Alternative 2: Installation gain of up to 3,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

There would be minor impacts to facilities under Alternative 2. Increased Soldier strength of 3,000 would be reflected through increased usage throughout the cantonment area. Increased activities within the training and range areas would be anticipated to cause long-term facility impacts due to increased human presence. The Real Property Master Plan would require modifications to allow for implementation of Alternative 2. Some additional construction of facilities would be needed to support new Soldiers stationed at Fort Hood. Some of these facilities would include a battalion headquarters facility, company operations facility, motor pool, and barracks. The increase would lead to the retention of some re-locatable facilities until permanent facilities are built.

4.8.9 Socioeconomics

4.8.9.1 Affected Environment

The ROI consists of Fort Hood and Bell, Coryell, McLennan, and Falls counties. Fort Hood's population and workforce has long been an essential element of the local and regional demography and economy.

Population and Demographics. The Fort Hood population is measured in three different ways. The daily working population is 47,204, and consists of full-time Soldiers and Army civilian employees working on post. The population that lives on Fort Hood consists of 17,254 Soldiers and 18,570 dependents, for a total on-post resident population of 36,094. Finally, the portion of the ROI population related to Fort Hood is 75,438 and consists of Soldiers, civilian employees, and their dependents living off post.

The ROI county population is approximately 640,000. Compared to 2000, the 2010 population increased in Bell, Coryell, and McLennan counties, and decreased in Falls County (Table 4.8-5). The racial and ethnic composition of the ROI is presented in Table 4.8-6.

Table 4.8-5. Population and Demographics

Region of Influence Counties	Population 2010	Population Change 2000-2010 (Percent)
Bell	310,000	+ 30.4
Coryell	75,000	+ 0.5
McLennan	235,000	+ 10.0
Falls	18,000	- 3.8

Table 4.8-6. Racial and Ethnic Composition

State and Region of Influence Counties	Caucasian (Percent)	African American (Percent)	Native American (Percent)	Hispanic (Percent)	Asian (Percent)	Multiracial (Percent)	Other (Percent)
Texas	45	11	4	38	0	1	0
Bell	51	20	0	22	3	3	1
Coryell	62	15	1	16	2	3	1
McLennan	59	14	0	24	1	1	1
Falls	53	25	0	21	0	1	0

Employment, Income, and Housing. Compared to 2000, the 2009 employment (private nonfarm) increased in the State of Texas and Bell, Coryell, and McLennan counties, and decreased in Falls County (Table 4.8-7). Employment, median home value and household income, and poverty levels are presented in Table 4.8-7.

Table 4.8-7. Employment, Housing, and Income

State and Region of Influence Counties	2009 Total Nonfarm Employment (Employees)	Employment Change 2000-2009 (Percent)	Median Home Value 2005-2009 (Dollars)	Median Household Income 2009 (Dollars)	Population Below Poverty Level 2009 (Percent)
Texas	8,925,096	+ 11.20	118,900	48,286	17.10
Bell	81,198	+ 7.90	109,100	45,796	15.30
Coryell	10,553	+ 39.70	88,800	42,853	16.40
McLennan	94,548	+ 4.30	97,200	38,963	22.80
Falls	1,785	- 28.10	60,300	31,585	23.20

Fort Hood has extensive housing on post for Families and single Soldiers. Fort Hood has over 6,000 homes in 13 housing areas, many of which have recently been renovated as part of privatization. In addition to these homes, Fort Hood provides single Soldiers with barracks space for accommodations. Existing homes on post include single-family and multi-family homes, from two to five bedrooms. A large percentage of Fort Hood Soldiers also opt to live in private rental housing or own homes in the communities surrounding Fort Hood.

Schools. Killeen Independent School District serves the communities of Killeen, Fort Hood, Harker Heights, and Nolanville. The student enrollment for the 2011-2012 school year was

41,172. There were 23,200 students in elementary schools, 8,453 middle school, and 9,519 high school students (KISD District Improvement Plan, 2011). Ethnic breakdown for the district is provided as follows: 33.4 percent African American, 26.1 percent Hispanic, 29.6 percent White, 4.2 percent Asian/Pacific Islander, and 0.9 percent Native America.

Approximately 50 percent of students enrolled were military Family members. The district employs about 6,100 staff members, making it the second largest employer in the ROI (<https://www.killeenisd.org/frontPageV2/>).

The Copperas Cove Independent School District serves the community of Copperas Cove. The student population for the 2010-2011 school year was 8,324 students (<http://www.ccisd.com>). Exact population by school is unknown; however, it is estimated that approximately 40 percent of the student population are military Family members. However, ethnic breakdown for the district is provided as follows: 21.3 percent African American, 19.5 percent Hispanic, 49.9 percent White, 2.8 percent Asian/Pacific Islander, and 0.7 percent Native American. Further information on the student population notes that 40.7 percent of students are considered 'At-Risk' and 48.3 percent of students are classified as "Economically Disadvantaged" (<http://www.ccisd.com>). The district employs approximately 1,300 staff (<http://www.ccisd.com>).

Public Safety, Fire and Emergency Services. The Fort Hood Directorate of Emergency Services handles the day to day police operations on the installation. They do this with a combination of Active Duty military police and civilians contractors. In January 2011, the ratio per day was 33 Soldiers and 28 civilians on patrol across the installation. The Fort Hood Fire Department responds to emergencies involving structures, facilities, transportation equipment, hazardous materials (along with DPW Environmental Spill Response Team), and directs fire prevention activities. However, partnerships with the surrounding cities and counties are in place to provide assistance should either party need it to respond to an emergency.

The City of Killeen opened a brand new, state-of-the-art police headquarters facility in May 2011. The City of Harker Heights also opened a state-of-the-art facility in April 2007. The local police and fire departments provide fire, police, and emergency services in the area. The surrounding cities, as well as, Bell and Coryell counties provide the fire and emergency services through a combination of city assets and numerous volunteer fire departments.

Medical Services. Fort Hood's on-post medical services are administered by the Carl R Darnall Army Medical Center, as well as several on-post clinics. The clinics serve Active Duty, Family members, and retirees throughout the community. Currently under construction at Fort Hood is a new state-of-the-art medical center that will have all the services provided in a regional medical center. Fort Hood also has a Warrior in Transition Brigade, and brand new supporting facilities to accommodate them. Further, the community supported medical centers include Metroplex Hospital, Scott and White Hospital and clinics, Kings Daughters Hospital and supporting clinics, and a brand new 123 bed hospital owned by Seton enterprises. Medical support provided by the facilities usually accepts Tricare in support of Active Duty military, Family members and retirees. However, they also accept insurance that is normally provided to civilian workers and contractors as well. There is currently both on- and off-post urgent care available.

Family Support Services. Fort Hood's Child, Youth, and School Services is a division of DFMWR. It provides facilities and care for children ages 6 weeks to 5 years; School Age Care for first through fifth graders, and a middle school and teen program, as well as sports, apprenticeships, and instructional classes for children of Active Duty military, DoD civilian, DoD contractor personnel, and retirees (MS/T programs; otherwise based on space availability). In FY 2011, Parent Central Services registered 11,458 households and enrolled 17,593 child or youth programs. There were 24,016 military connected children attending public school in the

Greater Central Texas area. The breakdown of the remaining enrollment was: 407 DoD civilian; 96 DoD contractors; 373 retired military, and 27 private sector civilian Families (working in on-post agencies, e.g., Credit Union, schools). Enrollment, as of December 2011, was 7,025 Families and 11,679 children.

Recreation Facilities. Fort Hood offers its community of Soldiers, Airmen, retirees, DoD employees, and Families several different avenues for recreational entertainment. The military community is encouraged to become active in an Arts and Crafts facility, bingo, two skate parks, an auto crafts shop, eight outdoor swimming pools, an indoor swimming pool, a 48-lane bowling center with automatic scoring displayed on 42-inch flat screen monitors, a 27-hole golf course, an RV travel camp, an outdoor recreation equipment checkout center, nine physical fitness centers spread throughout the post, an ATV course, a paintball course, archery and skeet shooting ranges, swimming, camping, horseback riding, mountain biking and fishing opportunities at Belton Lake Outdoor Recreation Area, intramural and youth sports teams, and a Sportsmen's Center, which is where patrons may purchase hunting and fishing licenses.

4.8.9.2 Environmental Consequences

No Action Alternative

There would be no change or minor impacts anticipated under the No Action Alternative. Under the No Action Alternative, Fort Hood would continue providing a positive economic impact to the surrounding community. No additional impacts to housing, public, and social services, public schools, public safety, or recreational activities are anticipated.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

Economic Impacts. Alternative 1 would result in the loss of up to 8,000 military employee (uniformed Soldier and Army civilian employee) positions, each with an average annual income of \$41,830. In addition, this alternative would affect an estimated 4,464 spouses and 7,680 dependent children, for a total estimated potential impact to 12,144 dependents. The total population of military employees and their dependents directly affected by Alternative 1 is projected to be 20,144 military employees and their dependents.

Based on the EIFS analysis, there would be significant socioeconomic impacts for employment and population in the ROI for this alternative. There would be no significant impacts for sales volume or income. The range of values that would represent a significant economic impact in accordance with the EIFS model is presented in Table 4.8-8. Table 4.8-9 presents the projected economic impacts to the region for Alternative 1 as assessed by the Army's EIFS model.

Table 4.8-8. Economic Impact Forecast System and Rational Threshold Value Summary of Implementation of Alternative 1

Region of Influence Economic Impact Significance Thresholds	Sales Volume (Percent)	Income (Percent)	Employment (Percent)	Population (Percent)
Economic Growth Significance Value	9.48	6.84	4.01	4.57
Economic Contraction Significance Value	- 8.15	- 7.66	- 3.43	- 1.14
Forecast Value	- 3.10	- 2.90	- 4.49	- 3.15

Table 4.8-9. Economic Impact Forecast System: Summary of Projected Economic Impacts of Implementation of Alternative 1

Region of Influence Impact	Sales Volume	Income	Employment	Population
Total	- \$461,461,900	- \$394,378,200	- 8,903 (Direct) - 1,643 (Indirect) - 10,546 (Total)	- 20,144
Percent	- 3.10 (Annual Sales)	- 2.90	- 4.49	- 3.15

The total annual loss in sales volume from direct and indirect sales reductions in the ROI would represent an estimated -3.10 percent change from the current sales volume of \$14.88 billion within the ROI. It is estimated that state tax revenues would decrease by approximately \$28.81 million as a result of the loss in revenue from sales reductions. Some counties within the ROI supplement the state sales tax of 6.25 percent by varying percentages, and these additional local tax revenues would be lost at the county and local level. Regional income would decrease by 2.90 percent. While 8,000 direct Soldier and Army civilian positions would be lost within the ROI, EIFS estimates another 903 contract service jobs would be lost as a direct result of the implementation of Alternative 1, and an additional 1,643 job losses would indirectly occur from a reduction in demand for goods and services in the ROI. The total estimated reduction in demand for goods and services within the ROI is projected to lead to a loss of 10,546 non-farm jobs, or a -4.49 percent change in regional employment. The total number of employed non-farm positions in the ROI is estimated to be 235,288. A significant population reduction of 3.15 percent within the ROI would be anticipated as a result of this alternative. Of the approximately 640,000 people (including those residing on Fort Hood) that live within the ROI, 20,144 military employees and their dependents would no longer reside in the area following the implementation of Alternative 1. This would lead to a decrease in demand for housing, and increased housing availability in the region. This could lead to a slight reduction in median home values. It should be noted that this estimate of population reduction includes civilian and military employees and their dependents. This number likely overstates potential population impacts, as some of the people no longer employed by the military would continue to work and reside in the ROI, working in other economic sectors; however, this would in part be counterbalanced by the fact that some of the indirect impacts would include the relocation of local service providers and businesses to areas outside the ROI.

Table 4.8-10 shows the total projected economic impacts, based on the RECONS model, that would occur as a result of the implementation of Alternative 1.

Table 4.8-10. Regional Economic System: Summary of Projected Economic Impacts of Implementation of Alternative 1

Region of Influence Impact	Sales Volume	Income	Employment
Total	- \$365,808,847 (Local) - \$635,544,002 (State)	- \$406,640,553	- 9,037 (Direct) - 1,152 (Indirect) - 10,189 (Total)
Percent	- 2.45 (Total Regional)	- 2.99	- 4.33

The total annual loss in sales volume from direct and indirect sales reductions in the region represents an estimated -2.45 percent change in total regional sales volume according to the RECONS model, an impact that is approximately 0.65 percentage points less than projected by

EIFS; however, it is estimated that gross economic impacts at the state level would be greater. Extrapolating from sales volume numbers presented in the RECONS model, it is anticipated that state tax revenues would decrease by approximately \$39.72 million as a result of the loss in revenue from sales reductions, which would be \$10.91 million more in lost state sales tax revenue than projected by the EIFS model. Regional income is projected by RECONS to decrease by 2.99 percent, slightly more than the 2.90 percent reduction projected by EIFS. While 8,000 direct military and government Army civilian positions would be lost within the ROI, RECONS estimates another 1,037 direct contract and service jobs would be lost, and an additional 1,152 job losses would occur indirectly from reduction in demand for goods and services in the ROI as a result of force reduction. The total estimated reduction in demand for goods and services within the ROI is projected to lead to a loss of 10,189 jobs, or a -4.33 percent change in regional non-farm employment, which would be 0.17 percentage points less than the reduction in employment estimated by the EIFS model.

When assessing the results together, both models indicate that the economic impacts of the implementation of Alternative 1 would lead to a similar net reduction of economic activity within the ROI.

Schools. Alternative 1 would result in the loss of approximately \$1,500 to \$2,000 per student of federal funding for children no longer enrolled in the district for both the Kileen Independent School District and Copperas Cove Independent School District. There would be fewer resources available for the remaining students as a result of the loss the tax revenue and the federal funds. The school district may, therefore, lose its ability to employ the current number of staff and faculty within the ROI resulting in some secondary job losses. Class size may or may not increase depending on staffing and how the loss of students and Federal Impact Aid were to impact school districts. Some impacts to disadvantaged and low income students could occur as a result of both the decrease in the population and federal funding.

Public Safety. The reduction of up to 8,000 Soldiers and Army civilians would result in a net loss of population to the surrounding communities. Therefore, if Alternative 1 were implemented, reduced employment of existing police, fire, and emergency personnel would likely occur.

Medical Services. The reduction of troops along with their Family members and Army civilians could possibly reduce the medical services within the ROI. Secondary loss of employment in the medical service sector could occur and Army force reduction could make it difficult for area hospitals to recruit, train, and retain quality health care providers.

Family Support Services. The reduction of Soldiers and civilians would make wait times and waiting lists for on-post child care shorter. However, with the overall reduction, it is possible that some of the current program would need to be cut back, which would, in the long run, affect the installation's ability to provide the type of comprehensive child care, child youth services, and recreation opportunity currently available.

Environmental Justice. The African-American population of the ROI is higher than the state average, while the Hispanic population is lower. There would be no disproportionate adverse impact to children, economically disadvantaged populations, or minorities. Job loss due to implementing Alternative 1 would potentially impact all income and economic sectors throughout the ROI. Seen at the state level, the relatively higher African-American populations in the ROI could be seen as meaning that adverse impacts would have a disproportionate impact on those groups.

Alternative 2: Installation gain of up to 3,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignment

Economic Impacts. Alternative 2 would result in the increase of up to 3,000 Soldiers, each with an average annual income of \$41,830. In addition, this alternative would affect an estimated 1,674 spouses and 2,880 dependent children for a total estimated potential impact to 4,554 dependents. The total population of military employees and their dependents directly affected by Alternative 2 is projected to be 7,554 Soldiers and their dependents.

Based on the EIFS analysis, there would be no significant impacts associated with increased sales volume, income, population, or employment. The range of values that would represent a significant economic impact in accordance with the EIFS model are presented in Table 4.8-11. Table 4.8-12 presents the projected economic impacts to the region for Alternative 2 as assessed by the Army's EIFS model.

Table 4.8-11. Economic Impact Forecast System and Rational Threshold Value Summary of Implementation of Alternative 2

Region of Influence Economic Impact Significance Thresholds	Sales Volume (Percent)	Income (Percent)	Employment (Percent)	Population (Percent)
Economic Growth Significance Value	9.48	6.84	4.01	4.57
Economic Contraction Significance Value	-8.15	-7.66	-3.43	-1.14
Forecast Value	1.16	1.09	1.68	1.18

Table 4.8-12. Economic Impact Forecast System: Summary of Projected Economic Impacts of Implementation of Alternative 2

Region of Influence Impact	Sales Volume	Income	Employment	Population
Total	\$173,048,200	\$147,891,800	3,339 (Direct) 616 (Indirect) 3,955 (Total)	7,554
Percent	1.16 (Annual Sales)	1.09	1.68	1.18

The total annual gain in sales volume from sales increases in the ROI would represent an estimated 1.16 percent change in total sales volume from the current sales volume of \$14.88 billion within the ROI. It is estimated that state tax revenues would increase by approximately \$10.81 million as a result of the gain in revenue from sales increases. Some counties within the ROI supplement the state sales tax of 6.25 percent by varying percentages, and these additional local tax revenues would be gained at the county and local level. Regional income would increase by 1.09 percent. While 3,000 Soldiers would be gained within the ROI, EIFS estimates another 339 contract service jobs would be gained as a direct result of the Soldier increases, and an additional 616 jobs would be created indirectly from increases in demand for goods and services in the ROI. The total estimated increase in demand for goods and services within the ROI is projected to lead to a gain of 3,955 jobs, or a 1.68 percent increase in regional non-farm employment. The total number of employed non-farm positions in the ROI is estimated to be approximately 235,288. A population increase of 1.18 percent within the ROI would be anticipated as a result of this alternative. Of the approximately 640,000 people (including those residing on Fort Hood) that live within the ROI, 7,554 military employees and their dependents would be begin to reside in the area following the implementation of

Alternative 2. This would lead to an increase in demand for housing, and decreased housing availability in the region. This would lead to a slight increase in median home values. It should be noted that this estimate of population increase includes Civilian and military employees and their dependents.

Table 4.8-13 shows the total projected economic impacts, based on the RECONS model, that would be projected to occur as a result of the implementation of Alternative 2.

Table 4.8-13. Regional Economic System: Summary of Projected Economic Impacts of Implementation of Alternative 2

Region of Influence Impact	Sales Volume	Income	Employment
Total	\$137,178,317 (Local) \$238,329,001 (State)	\$152,490,207	3,389 (Direct) 432 (Indirect) 3,821 (Total)
Percent	0.92 (Total Regional)	1.12	1.62

The total annual gain in sales volume from direct and indirect sales increases in the region would represent an estimated 0.92 percent change in total regional sales volume according to the RECONS model, an impact that is 0.24 percentage points less than projected by EIFS; however, it is estimated that gross economic impacts at the state level would be greater. Extrapolating from sales volume numbers presented in the RECONS model, it is anticipated that state tax revenues would increase by approximately \$14.9 million as a result of the gain in revenue from sales reductions, which would be \$4.09 million more in additional state sales tax revenue than projected by the EIFS model. Regional income is projected by RECONS to increase by 1.12 percent, slightly more than the 1.09 percent increase projected by EIFS. While 3,000 Soldiers would be gained directly through the implementation of Alternative 2 within the ROI, RECONS estimates another 389 contract and service jobs would be gained, and an additional 432 jobs would be created indirectly from increases in demand for goods and services in the ROI as a result of force increase. The total estimated increase in demand for goods and services within the ROI is projected to lead to a gain of 3,821 jobs, or a 1.62 percent change in regional employment, which would be 0.08 percentage points less than project under the EIFS model.

When assessing the results together, both models indicate that the economic impacts of the implementation of Alternative 2 would lead to a similar net increase of economic activity within the ROI.

Schools. Alternative 2 would result in a net gain to the population. The impacts to schools in the ROI would be positive. In 2004, when the Army converted to the modular brigade system, an increase of 10,000 troops was analyzed. It was determined at that time that there would be no significant impact on the local schools; and since that time, the districts have added new schools as the population has increased. This alternative would be positive for both the schools and the local economy.

Public Safety. Alternative 2 would result in the increase of up to 3,000 Soldiers, with an actual increase in population of approximately 7,554 people. Local fire and police forces have already planned for the increasing population and the increase would be virtually transparent to these services. The cities and surrounding counties have already built adequate fire stations and have added necessary police services to serve both the cities and counties. Further, the influx of revenue to the area as a result of the population increase would contribute to further expanding these services and would likely have positive impact to high risk areas. These areas

are also typically low-income, and often minority groups live in the areas. The ability to provide more patrol due to increased revenue would actually increase the availability of services.

Medical Services. An increase of up to 3,000 Soldiers, civilians, and their Family members could cause minor, but temporary impacts. The new Regional Medical facility on Fort Hood is scheduled to open in 2015, which would alleviate any difficulties. An increase in the overall population of the area would make it more attractive to health care providers throughout the Nation and it would be easier for all the medical facilities to recruit, train, and retain providers, which would create an environment that facilitates world class health care.

Family Support Services. An overall increase in the number of Soldiers could make wait times and waiting lists longer. However, it would also create more jobs both on post as well as in the local communities. This stimulus for business for child care and recreation services would ultimately create more small business, and employee more workers. Some of the positions would affect low-income employees. The impact as a result of the development of new businesses would likely have a positive impact on low-income wage earners in the community.

Environmental Justice. Under Alternative 2, Fort Hood anticipates no disproportionate adverse impact to minorities, economically disadvantaged populations, or children. The impacts of the anticipated growth of Fort Hood would be felt throughout the ROI and across all populations.

4.8.10 Energy Demand and Generation

4.8.10.1 Affected Environment

Fort Hood's energy needs are currently met by a combination of natural gas and electric power, both of which are provided by private utilities.

Electricity. Electric power is supplied to Fort Hood by Texas Utilities Corporation at four existing substations. The usage of these three substations is presently 60 percent of capacity. Fort Hood used an average of 1.2 million British Thermal Units (MMBtu) of electricity over the past 3 years. Construction is complete on a new substation on the west side of the cantonment area that services West Fort Hood. Further, an expansion of the substation at North Fort Hood to increase the capacity and support facilities currently under construction is in progress. These four substations would provide an electric capacity of 248 MW average. Fort Hood's electricity capacity is sufficient to handle an infrastructure to support additional Soldiers for the next 20 years.

Natural Gas. Natural gas is provided by a private energy company and is distributed throughout the post via installation distribution lines running from three metered stations. Fort Hood has, over the past 3 years, consumed an average of 1.0 MMBtu of fossil fuels per year.

4.8.10.2 Environmental Consequences

No Action Alternative

The No Action Alternative would result in negligible energy demand and generation effects. Fort Hood's ranges and cantonment areas would continue to consume the same types and amounts of energy. Maintenance of existing utility systems would continue.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

Alternative 1 would have minor beneficial overall impacts to energy demand. There would be less of a requirement for energy and less on-post usage of energy. Fort Hood would be able to dispose of some relocatable and older, more energy-inefficient buildings. Fort Hood would

continue to search for innovative ways to conserve energy as result of the implementation of this alternative.

Alternative 2: Installation gain of up to 3,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

Growth of up to 3,000 Soldiers is anticipated to have a minor impact resulting from energy demand and generation. Fort Hood's existing energy infrastructure has sufficient excess capacity, diversity, and scalability to readily absorb growth in Soldier and associated dependents at this level.

4.8.11 Traffic and Transportation

4.8.11.1 Affected Environment

Fort Hood is located in Central Texas, about 45 miles south-southwest of Waco, Texas, and approximately 55 miles north of Austin, Texas. The ROI for traffic and transportation aspects of the Proposed Action include Fort Hood, and immediately surrounding area consisting of Bell and Coryell counties. Towns included with the ROI include Killeen, Copperas Cove, Harker Heights, Nolanville, and Temple. Major road routes in the area include I-35, and U.S. Highway 190. I-35 is a north-south interstate highway about 20 miles east of Fort Hood, accessed by U.S. Route 190.

4.8.11.2 Environmental Consequences

No Action Alternative

Negligible impacts are anticipated under the No Action Alternative. Currently, the Fort Hood transportation system adequately supports the needs of the Fort Hood community.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

Alternative 1 would have minor beneficial traffic impacts resulting from a reduction in force at Fort Hood. It is anticipated that traffic congestion would be diminished slightly and travel time would decrease through the installations main access points. The roads would continue to be maintained and LOS for on- and off-post commuters would improve marginally as traffic volume decreased.

Alternative 2: Installation gain of up to 3,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

Alternative 2 would have minor short and long-term impacts on traffic and transportation systems on the installation due to the presence of up to an additional 3,000 Soldiers and their Families. The increase in off-post traffic would have a minor impact on traffic in the community overall given that a large percentage of the unit's married population, and unmarried Soldiers in the grade of E-6 (Staff Sergeant) and higher, would likely reside in off-post housing distributed widely across the region. The increase in traffic would have a negligible impact on the overall traffic congestion in the neighboring communities. This increase in population would have a minor impact on the traffic volume on the installation, and could cause a minor decrease in LOS on some of the installation's arterial routes.

4.8.12 Cumulative Effects

The following is a list of major projects that are either recently completed, undergoing construction, or are planned for the near future. Although all of the projects may not specifically impact, or be impacted by, the Proposed Action, they are important to note due to their size or impact on Fort Hood.

- 1 • **Residential Communities Initiative Program.** In 2001, Fort Hood transferred
2 operational management of its on-post Family housing to a private sector developer.
3 The transaction has led to demolition, renovation, and construction to provide an end
4 state inventory of more than 6,430 Family housing units. This project, along with the
5 Proposed Action, increases the amount of construction and demolition debris deposited
6 into the landfill. Further, because most finger drainages in the area eventually empty
7 into Belton Lake, both projects would likely increase the amount of sedimentation that
8 enters the lake. Use of BMPs should decrease sedimentation and prevent
9 any hazardous materials from ending up in Belton Lake.
- 10 • **Privatization of Army Lodging.** The PAL program is a new initiative, started in 2006,
11 which will allow a private developer to lease land on the installation to construct
12 privatized, short-term and long-term lodging. Several areas have been identified by Fort
13 Hood Master Planning and PAL developers, and the leasing actions are underway. PAL
14 will increase construction, which will increase sedimentation, landfill debris, and possibly
15 hazardous materials. Waters of the U.S. and cultural resources should not be impacted
16 as a result of PAL, due to the use of delineations and existing installation data prior to
17 finalizations of construction plans.
- 18 • **Texas A&M University Campus.** Legislation in Congress authorized Fort Hood's
19 transfer of approximately 672 acres to the Texas A&M University System for
20 development of a campus to serve roughly 20,000 students. The essentially
21 undeveloped land in the southeastern portion of West Fort Hood, in Training Area 74, is
22 located around State Highway 195, southeast of Robert Gray Army Airfield. The transfer
23 will increase the population around Fort Hood, and likely add to the overall tax base in
24 both Bell and Coryell counties.
- 25 • **Tank Trail Maintenance.** Fort Hood has over 400 miles of tank trails. Range Control,
26 partnering with the Maintenance Division, has begun a tank trail maintenance program
27 on Fort Hood. The purpose of the program is to both repair damaged trails as well
28 as maintain trails in good condition. The tank trail maintenance program is anticipated to
29 promote Soldier safety and training ability while reducing the amount of sedimentation
30 and runoff due to poorly maintained trails.
- 31 • **10-Year Range Development Plan Projects.** Fort Hood proposes to construct or
32 modify 18 ranges and their associated supporting facilities within the restricted live-fire
33 area of Fort Hood, Texas. Under the Proposed Action, all 18 ranges would be
34 constructed or modified to fit the Army's emerging doctrinal training standards. Some
35 construction on these ranges has already begun. The newly upgraded and constructed
36 ranges would provide better training to all Soldiers on Fort Hood. The construction could
37 cause increased erosion and decreased water and air quality. Those impacts are
38 anticipated to be short term and insignificant, due to the fact that these impacts should
39 conclude with the conclusion of construction on the ranges.
- 40 • **Western Maneuver Corridor Maintenance.** Fort Hood proposes to conduct
41 widespread (approximately 67,000 acres) "woody species management" (in the form of
42 tree and brush removal, including some hardwoods) maintenance of the western
43 maneuver training corridor. Estimates for juniper and mesquite removal are 6,700 and
44 5,392 acres, respectively. The combined number is equal to 18 percent of the entire
45 western maneuver area that encompasses 67,000 acres. It is unknown how many or
46 what kind of hardwood vegetation removal would occur. The estimates for mesquite and
47 juniper represent the bulk of the vegetation that would be removed. Vegetation removal
48 would only be conducted to ensure the proper spacing (40 feet by 14 feet) between
49 clusters of trees and only in the established visible training lanes. The estimated

timeframe for implementation of the proposed project is approximately 10 years, and is subject to available funding.

- **North Fort Hood Development Plan.** Fort Hood is the installation of choice to support annual training and mobilizations for many of the National Guard and Army Reserve components. Because most mobilizations and demobilizations occur at North Fort Hood, plans are underway to improve the ability to maximize the effectiveness of the deployment process and training requirements. Current plans include the construction of an Operation Readiness Training Complex (Forward Operating Base) at North Fort Hood. One set will be completed each year beginning in FY 2007, for a total of six sets. Each set includes two barracks, one Non-Commissioned Officer and officers quarters, one battalion building, one company operations building, one maintenance facility, one dining facility, and four workshop buildings.

Additional facilities to be constructed at North Fort Hood include a fire station, a Troop Medical Clinic, a physical fitness center, new chapels, an AAFES shoppette, and an automatic rapid fire range.

The North Fort Hood Development Plan would change the infrastructure and use of North Fort Hood, as well as increase training capabilities and joint and combined training. Using BMPs would minimize the effects of heavy construction activities at both North Fort Hood and in the live-fire area.

- **Division West Aviation Assets.** In FY 2010, the Division West Army Reserve aviation assets were relocated to Fort Hood from Fort Sill, Oklahoma. During the same timeframe, the 4th Infantry Division aviation assets were relocated to Fort Carson, Colorado. Therefore, these new assets do not represent an increase in aircraft to the installation. Further, they are rotary wing assets and do not use any of the Proposed Action SUA, so there are no anticipated impacts are anticipated on the Proposed Action.

- **AAFES Post Exchange New Facility.** Fort Hood and AAFES propose to construct and operate a 244,000 square foot Post Exchange shopping facility on Fort Hood for use by authorized individuals. The shopping center would contain a main store, merchandise processing area, concessions, Medcom Satellite Pharmacy, a dental clinic, and a food court including nine food concepts: Burger King, Manchu Wok, Del Taco, Charley's, Starbucks, Baskin Robbins, Froots, Arby's, and Subway. Fort Hood would be responsible for conducting the demolition of an existing Defense Reutilization and Marketing Office (DRMO) Tire Barn facility and associated parking lot. Construction of the Proposed Action would entail relocation, to the new shopping center, of services currently offered in Building 330 (the dental clinic).

The proposed facilities would connect to existing utility services and communications systems and would provide for pavement, sidewalks, curbs, gutters, storm drainage, retention walls, and other site improvements, as necessary. AAFES anticipates that construction of the new shopping center would last approximately 17.5 months, and construction is anticipated to begin in May 2012. Once the new shopping center is operational, AAFES would transfer Buildings 50004 (the existing Post Exchange) back to Fort Hood for final disposition.

- **Robert Gray Army Airfield - Joint Use.** In August 2004, Fort Hood's Robert Gray Army Airfield entered into joint use service with the City of Killeen. Robert Gray Army Airfield joint use has increased fixed wing aircraft use and has subsequently increased Fort Hood's airspace traffic. Although this increase does not affect the fixed wing airspace use, it is important to note nonetheless. Robert Gray Army Airfield is further expanding parking lots and adding additional runway components and infrastructure.

The joint use section of Robert Gray Army Airfield; however, does not drain towards Belton Lake.

- **Robert Gray Army Airfield – Proposed Second Runway.** In August 2004, Fort Hood's Robert Gray Army Airfield entered into joint use service with the City of Killeen. Currently, a second 10,000 foot runway is proposed at the Robert Gray joint use facility. This project is in the early planning stages. It is important to note this project because it is anticipated to increase air traffic substantially. Since the project is in the early planning stages, the effects are unknown. Subsequent environmental documentation and analysis will occur as the project progresses.

- **Proposed Assault Landing Strip West Fort Hood.** Fort Hood is currently in the proposal process to construct an assault landing strip at West Fort Hood. The landing strip would provide Soldiers with a realistic scenario that would serve as a training exercise for the creation of landing strips in combat areas. Fort Hood provides the unique terrain and surroundings that are similar to many areas where combat operations currently occur. By building the assault strip at this location, Soldiers would be able to train to standard; therefore, increasing their ability to become combat ready. Subsequent proposed use of the landing strip is for UAS; however, that use has not yet been determined. Subsequent environmental documentation and analysis will be conducted as this project progresses.

The proposed assault landing strip is compatible with the surrounding communities. Current land use in the LUPZ is currently undeveloped or agricultural. Current land use in NZ II is primarily undeveloped or agricultural with scattered residences.

- **Unmanned Aerial Systems.** Fort Hood is currently planning for the arrival of the Predator, Reaper, and Gray Eagle UAS. These aircraft will not change use of the current Special Use MOA. Current land use and noise levels will not change as a result of these aircraft; therefore, negligible cumulative impacts are anticipated.
- **Proposed Texas Department of Transportation Widening of Highway 190.** Texas Department of Transportation is currently planning to widen U.S. Highway 190 from Spur 172 (slightly west of Clear Creek Road) to Farm to Market Road 2410. Construction is set to begin late spring or early summer of 2012. A slight increase in traffic delays is anticipated as a result of this project; however, the impact to traffic and transportation as a result of this project is anticipated to be short term and minor (TXDoT, 2011), ultimately improving the traffic and transportation for both Fort Hood and the City of Killeen.

In conjunction with the anticipated cumulative environmental effects listed for each project listed above, each project increases Fort Hood's capacity to perform its mission by providing for the infrastructure necessary for growth. Although there are plans for various construction activities, the use of BMPs and promotion of the programs aimed at reducing sedimentation create a balance to sustaining the environment on Fort Hood. The projects listed above, in conjunction with the Proposed Action, are not anticipated to have any significant effect on the environment. With regard to socioeconomics, significant cumulative regional impacts would be anticipated with regards to regional employment and population. With a reduction of military and civilian personnel, the regional economy may contract in a manner that disproportionately impacts low-income populations. The skilled and educated labor force of central Texas only accounts for about 20 percent of the population. Unskilled low-income earners represent 80 percent of the region's workers, and many of these positions support sales and service industry that support the military (Combs, 2012).

1 The implementation of Alternative 1 in conjunction with the widening of Highway 190 would be
2 anticipated to result in moderate beneficial cumulative impacts to traffic in the ROI. This project
3 would also lessen the minor impacts to traffic likely to be experienced as a result of Alternative
4 2, were Fort Hood to experience a net gain of up to 3,000 additional Soldiers.

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4.9 FORT IRWIN, CALIFORNIA & THE NATIONAL TRAINING CENTER

4.9.1 Introduction

Fort Irwin, located in south-central California, consists of approximately 640,000 acres of Army owned lands. A majority of these lands are maneuver area suited for mechanized armor and dismounted military training (Figure 4.9-1). In 1981, Fort Irwin was designated as the National Training Center (NTC), the Army's premier combat training center. Since this time, Fort Irwin has supported large-scale Brigade maneuver exercises along with other unit training exercises.

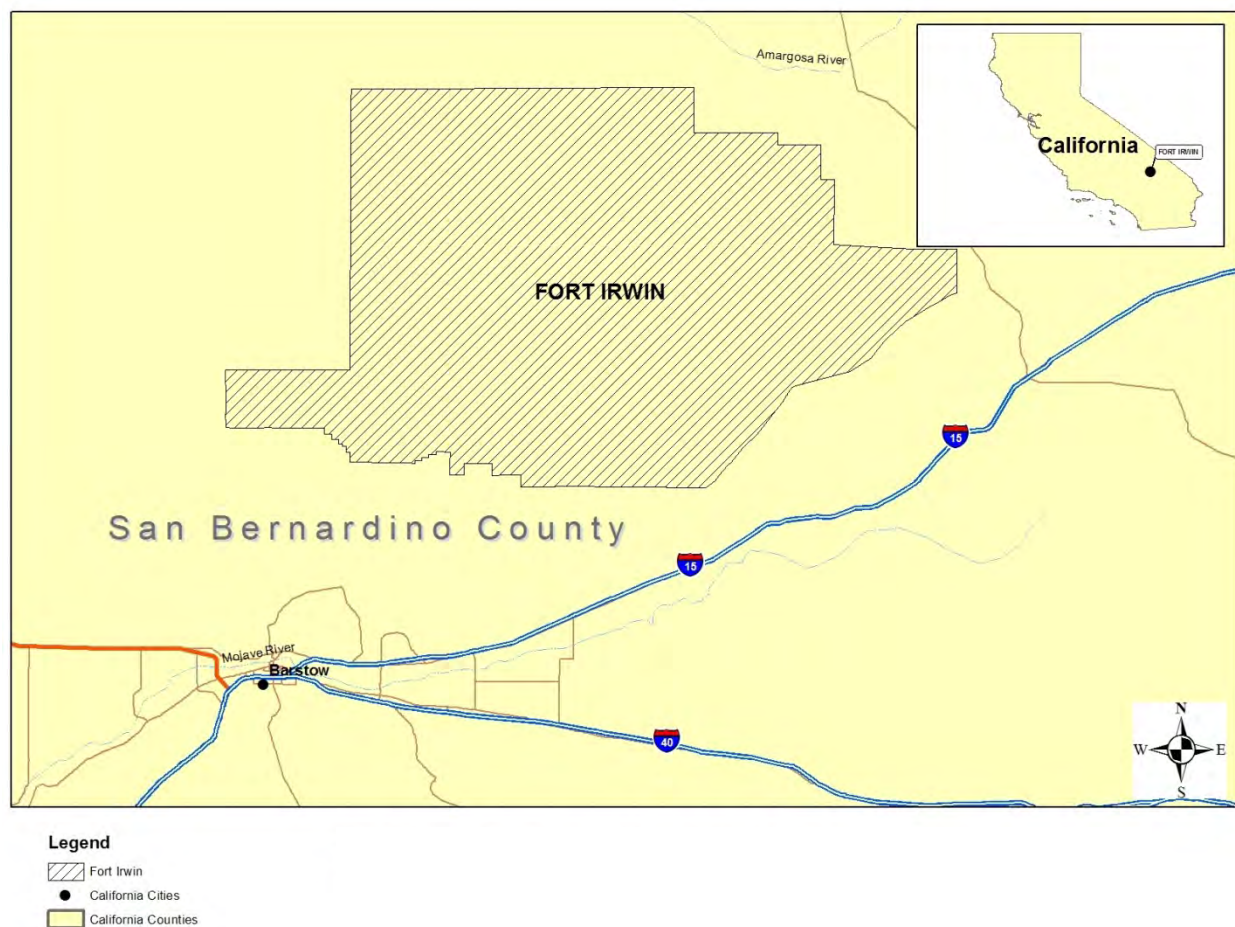


Figure 4.9-1. Fort Irwin

Fort Irwin's main unit is the 11th Armored Cavalry Regiment (ACR), which supports the NTC's primary mission of training Army units on a rotational basis. The 11th ACR acts as an opposing force to Army units training at the NTC during Army maneuver training exercises.

Fort Irwin provides an austere and rugged training environment that includes desert and mountainous terrain. Fort Irwin possesses range infrastructure to ensure that units can conduct live-fire weapons qualifications and CALFEX in designated areas. The primary purpose of the NTC is to provide the Army with a large force-on-force maneuver area to support the training readiness of units across the Army.

Fort Irwin is located approximately 37 miles northeast of Barstow, California in the High Mojave Desert midway between Las Vegas, Nevada and Los Angeles, California. The installation is

surrounded by desert hills and mountains. Natural vegetation is sparse and consists of mesquite, creosote, yucca, and other desert plants.

The entire reservation encompasses more than 1,100 square miles, comprised mostly of arid basins, dry lakebeds, ridges, and mountain ranges. The northern boundary of the training area is less than 2 miles from Death Valley National Monument. The San Bernardino and San Gabriel Mountains extend in an east-west path approximately 85 miles southwest of Bicycle Lake. The Sierra Nevada Mountains, oriented north to south, are to the west.

4.9.1.1 Valued Environmental Components

For alternatives the Army is considering as part of Army 2020 force structure realignments, Fort Irwin does not anticipate any significant adverse environmental or socioeconomic impacts as a result of the implementation of Alternative 1 (Force reduction of approximately 2,400 Soldiers and Army Civilians). Table 4.9-1 summarizes the anticipated impacts to VECs from the No Action Alternative and Alternative 1. As Fort Irwin is not currently the stationing site for one of the Army's Active Component BCTs, it is not being considered for a potential increase or gain in forces from BCT restructuring.

Table 4.9-1. Fort Irwin Valued Environmental Component Impact Ratings

Valued Environmental Component	No Action Alternative	Alternative 1: Force Reduction of up to 2,400
Air Quality	Minor	Beneficial
Airspace	Minor	Beneficial
Cultural Resources	Minor	Beneficial
Noise	Negligible	Negligible
Soil Erosion	Minor	Beneficial
Biological Resources	Minor	Beneficial
Wetlands	Negligible	Negligible
Water Resources	Less than Significant	Beneficial
Facilities	Minor	Minor
Socioeconomics	Minor	Less than Significant
Energy Demand and Generation	Negligible	Beneficial
Land Use Conflict and Compatibility	Minor	Minor
Hazardous Materials and Hazardous Waste	Minor	Minor
Traffic and Transportation	Minor	Beneficial

4.9.1.2 Valued Environmental Components Dismissed from Detailed Analysis

For the VECs discussed in this section below, no more than a beneficial or negligible impact would be anticipated. Therefore, these VECs are not being carried forward for detailed analysis, as no potential for significant impacts exists.

- **Wetlands.** Fort Irwin contains very few wetlands areas. Wetlands at the NTC and Fort Irwin are confined to 10 springs that are essential to the survival and well being of a number of wildlife species. These areas are marked and fenced as off-limits. NTC regulation 350-3 states that “No vehicle or foot traffic is authorized around springs or vegetation within the spring’s area” (Fort Irwin, 2006).

No adverse impacts to installation wetlands are anticipated under the No Action Alternative or the reduction of approximately 2,400 Soldiers and civilians at Fort Irwin. Training activities would be off-limits in and around designated wetlands areas. Wetland management as addressed in the installation INRMP which discusses management of the installations few wetlands areas.

- **Noise.** Fort Irwin is home to the NTC, where brigade-size units are able to train in simulated rigorous combat conditions using weapons simulators and live fire. The range areas support air-to-ground gunnery and firing, artillery, air maneuver, and ground maneuver, including armored vehicle training. Sensitive noise receptors, such as off-post civilian populations and communities, are relatively far removed from main engagement areas where noise impacts are generated. Some air maneuver does take place in NZs that extend off the installation boundary, but operations close to the periphery of the installation are generally minimal. Artillery and other large caliber fire take place in NZs that do not extend beyond the installation border. Frequent low frequency noise impacts are generated by aircraft and low-altitude rotary wing aircraft flights.

The area surrounding Fort Irwin is generally characterized as desert and mountainous terrain. The nearest noise-sensitive receptors within 10 miles of the installation include a 1,103 Family housing unit, a school, a religious facility, and a hospital. There are also 150 residents within 1-7 miles of the Fort Irwin. Sensitive wildlife that may be impacted by noise generated at Fort Irwin include ground squirrel, bats, raptors, the Desert Tortoise, and the Bighorn Sheep (Fort Irwin, 2005).

Under the No Action Alternative and Alternative 1, negligible adverse noise impacts to nearby residential areas and to wildlife are anticipated. The noise associated from a reduction would be only slightly lower than current noise levels resulting from a slight overall decrease in usage of small arms ranges and maneuver areas as a result of the implementation of Alternative 1. Any impacts to wildlife would be short term and would not be significant. The noise generated by small arms fire or artillery live fire does not travel off the installation and there are negligible impacts to nearby residential areas. Noise levels would not exceed current peak noise levels and may have only low long-term impacts to off-post residents. Noise contours would not change, and guidelines for noise mitigation procedures protecting biological receptors as defined in the installation’s INRMP or ESMP would be followed. The INRMP would be reviewed or updated to ensure current management procedures are followed. There are no significant impacts from noise currently at Fort Irwin and impacts from noise would decrease negligibly with the implementation of Alternative 1.

- **Utilities.** Utilities are generally connected across the cantonment area and along defined utility corridors. The ROI for this resource is the cantonment area of Fort Irwin and the various utility ROWs that connect Fort Irwin with the regional systems.

Electric power is provided by Southern California Edison and is distributed via overhead lines to Fort Irwin and the surrounding communities. While there is a transcontinental natural gas transmission pipeline that runs along its boundary, Fort Irwin itself does not utilize natural gas as a source of energy.

The No Action Alternative would result in negligible energy demand and generation effects. Fort Irwin ranges would continue to consume the same types and amounts of energy. Maintenance of existing utility systems would continue. Fort Irwin would continue to pursue energy efficiency initiatives and renewable energy goals and legislative mandates. Long-term beneficial impacts are anticipated from reduction of approximately 2,400 Soldiers and Army civilians at Fort Irwin. Alternative 1 would result in reduced energy demand that is comfortably within the capacity of the existing energy utility. There would be less of a requirement for energy and less on-post usage of energy. Fort Irwin would continue to search for innovative ways to conserve energy and reduce its overall demand, as a result of the implementation of Alternative 1.

Fort Irwin anticipates that the implementation of either of the alternatives would result in negligible impacts discussed above. The following provides a discussion of the VECs requiring a more detailed analysis, as they are anticipated to have the potential of a higher level of impact as a result of the implementation of the Proposed Action alternatives.

4.9.2 Air Quality

4.9.2.1 Affected Environment

The ROI is in the high desert, which includes Fort Irwin and the Los Angeles Air Basin. The ROI is in nonattainment for O₃, according to the state standards, as well as for the federal 1-hour standard below the Universal Transverse Mercator 90 gridline. The ROI is in attainment for both the state and federal CO standards, as well as for sulfates, and unclassified for hydrogen sulfide (H₂S) at the state and federal levels. The ROI is in nonattainment for both the state and federal PM₁₀ standards.

4.9.2.2 Environmental Consequences

No Action Alternative

A long-term minor adverse impact is anticipated to air quality from the maintenance of current troop strength. It is assumed that the resulting increases in air emissions are directly proportional to the population at the facility. In general, combustion and fugitive dust emissions would produce localized, short-term elevated air pollutant concentrations that would likely not result in any sustained impacts on regional air quality.

Alternative 1: Force Reduction (up to 2,400 Soldiers and Army Civilians)

A long-term beneficial impact to air quality is anticipated in the regional airshed as a result of implementing Alternative 1. Any construction related emissions from facilities demolition have the potential to produce localized, short-term elevated air pollutant concentrations, but these are not anticipated to have a major effect on regional air quality. Combustion emissions resulting from training from mobile sources would be projected to reduce marginally, though most of the emissions from large unit maneuver exercises at Fort Irwin would continue. Fugitive dust emissions would decrease slightly but would remain a localized issue. The installation would continue to take measures to address opacity issue if training activities are close enough to installation boundaries that visible fugitive dust emissions leave the installation boundary. Given the wide distribution of emissions, with a reduction in Soldier and Army civilian population it is not anticipated that regional air quality would be significantly affected. Minor long-term beneficial

impacts are anticipated to air quality stemming from a reduction air pollutant emissions from lower levels of training, POV traffic, and reduced usage of existing stationary air emissions sources. Emissions from heavy construction equipment and trucks conducting facilities demolition would include NO_x, PM₁₀, CO, sulfur oxides (SO_x), and VOCs; however, the amounts would be dependent on factors such as hours of operation and miles traveled. The short-term impacts of increased emissions from construction equipment associated with higher levels of facility demolition would not have a significant impact on regional air quality.

4.9.3 Airspace

4.9.3.1 Affected Environment

Fort Irwin has 955 square miles of FAA-designated SUA, with no limit in altitude. The installation has access to this airspace continuously, and is controlled by the FAA operating out of Edwards, California (USACE, 2002).

4.9.3.2 Environmental Consequences

No Action Alternative

Fort Irwin would continue to support large scale NTC maneuver training rotations and live-activity at the same intensity; therefore, impacts to airspace would be negligible under the No Action Alternative.

Alternative 1: Force Reduction (up to 2,400 Soldiers and Army Civilians)

Minor beneficial impact to airspace is anticipated from a slight reduction in live-fire operations at Fort Irwin. It is anticipated that the activities associated with a decrease of approximately 2,400 Soldiers and civilians would decrease live-fire activities in training range areas. At Fort Irwin, a majority of activities requiring airspace (artillery operations, helicopter training, UAS, live-fire activities) would continue in support of large-scale NTC maneuver training rotations. Use of this airspace would continue to be managed through scheduling and balancing training requirements with airspace availability.

4.9.4 Cultural Resources

4.9.4.1 Affected Environment

The affected environment for Fort Irwin, relating to cultural resources, is the installation footprint. Fort Irwin's landscape contains numerous prehistoric and historic archaeological sites and artifacts and areas of possible interest to Native American communities and other groups. The post, first established in the 1940's has one listed structure in the Goldstone area of the installation, which is leased by National Aeronautics and Space Administration (NASA). This historic structure, the Pioneer Antenna was the first of over 10 antennas at Goldstone, which tracked the Mars Rovers, Hubble, Voyager, and over 30 other satellites in deep space. Cultural resources are managed by Fort Irwin cultural resource specialists under the direction of the installation CRM. Fort Irwin possesses its own curation facility to preserve, document and record archaeological findings. The curation facility is located on the installation.

4.9.4.2 Environmental Consequences

No Action Alternative

Under the No Action Alternative, long-term minor impacts are anticipated on cultural resources. Due training restrictions placed around sensitive potentially eligible cultural resource sites (sites identified and managed as potentially eligible for listing on the National Historic Register), maneuver training at the NTC is not likely to cause significant impacts to cultural resources at

Fort Irwin. Ongoing management and monitoring is required to ensure cultural resource compliance and minimize disturbance and loss of cultural resources from heavy tracked vehicle maneuver training. Additionally, Soldiers are provided with instruction prior to maneuver training rotations to ensure they are aware not to inadvertently disturb surface archaeological sites or potentially significant cultural resources.

Alternative 1: Force Reduction (up to 2,400 Soldiers and Army Civilians)

Long-term minor beneficial impacts are anticipated on Fort Irwin in conjunction with a decrease of approximately 2,400 Soldiers and civilians. A lower number of Soldiers and reduced amounts of equipment used in the maneuver areas would reduce potential impacts to cultural resources at Fort Irwin. Any facilities reduction or demolition as a result of this action would not impact historic structures.

4.9.5 Soil Erosion

4.9.5.1 Affected Environment

Fort Irwin is located in the Central Mojave Desert and is characterized by high mountain peaks and ridges separated by broad alluvial fans and wide valleys. Large basins without external drainage develop playas (very flat, dry lake beds). The average elevation is approximately 2,500 feet, with peaks up to 6,150 feet.

Fort Irwin's desert soils are fragile and vulnerable to disruption from wind and water erosion. These soils are also highly vulnerable to compaction. Hardened crusts can form on clay or silty loam soils as a result of biological activity. This stabilizes the soil surface integrity and resists erosion. "Desert pavement" surfaces consist of pebbles and rocks that protect the desert soils from erosion. Vehicle traffic can disrupt both the crusts and pavement and lead to exposed soils and increased rates of erosion.

4.9.5.2 Environmental Consequences

No Action Alternative

Long-term minor adverse impacts from the wheeled and tracked vehicles would continue to occur in association with maneuver activities. Off-road movement of tracked and wheeled vehicles would disturb vegetation and soil surfaces, leading to increased levels of soil erosion.

Alternative 1: Force Reduction (up to 2,400 Soldiers and Army Civilians)

As a result of the implementation of Alternative 1, minor beneficial impacts are anticipated. Impacts to soils and increased rates of erosion would continue as a result of the maneuver training activities associated with the NTC mission. These impacts, however, would be anticipated to be marginally reduced in comparison to the No Action Alternative. The terrain would continue to be impacted by rutting and soil disturbance from vehicle maneuvers, turns, and digging, mostly as a result of the NTC's maneuver training activities. These maneuver disturbance areas could then be prone to wind and water erosion. The implementation of Alternative 1 is not anticipated to change the frequency, intensity, or duration of NTC maneuver training, and therefore a bulk of the impacts to soils at Fort Irwin would continue to be realized. However, off-road traffic and maneuvers would decrease slightly with a force reduction of up to 2,400 Soldiers and civilians, which could have a minor positive impact on vegetation and the soils.

4.9.6 Biological Resources (Vegetation and Wildlife, Threatened and Endangered Species)

4.9.6.1 Affected Environment

There are approximately 45 special status species of flora and fauna that occur or may occur on Fort Irwin; however, Fort Irwin currently records only two ESA listed species as occurring on the installation. The installation's federally-listed species include the Desert Tortoise and the Lane Mountain Milk Vetch. Habitat that could support other federally-listed species in the area, such as the Least Bell's Vireo, and the Southwestern Willow Flycatcher, is not known to occur in the potentially affected ROI. Species of Concern include those listed in Table 4.9-2.

Table 4.9-2. Special-Status Species

Common Name	Scientific Name	Status
Flora		
Lane Mountain milkvetch	(<i>Astragalus jaegerianus</i>)	Federally Protected
Alkali mariposa lily	(<i>Calochortus striatus</i>)	California Listed or Species of Special Concern
Clokey's cryptantha	(<i>Cryptantha clokeyii</i>)	California Listed or Species of Special Concern
Small-flowered androstephium	(<i>Androstephium breviflorum</i>)	California Listed or Species of Special Concern
Desert cymopterus	(<i>Cymopterus deserticola</i>)	California Listed or Species of Special Concern
Barstow woolly sunflower	(<i>Eriophyllum mohavense</i>)	California Listed or Species of Special Concern
Mojave monkeyflower	(<i>Mimulus mohavensis</i>)	California Listed or Species of Special Concern
Birds		
Bendire's thrasher	(<i>Toxostoma bendirei</i>)	California Listed or Species of Special Concern
Black tern	(<i>Chlidonias niger</i>)	California Listed or Species of Special Concern
Burrowing owl	(<i>Speotyto cunicularia</i>)	California Listed or Species of Special Concern
California Black Rail	(<i>Laterallus jamaicensis coturniculus</i>).	California Listed or Species of Special Concern
California gull	(<i>Larus californicus</i>)	California Listed or Species of Special Concern
Cooper's hawk	(<i>Accipiter cooperii</i>)	California Listed or Species of Special Concern
Crissal thrasher	(<i>Toxostoma crissale</i>)	California Listed or Species of Special Concern
Ferruginous hawk	(<i>Buteo Regalis</i>)	California Listed or Species of Special Concern
Golden eagles	(<i>Aquila chrysaetos</i>),	California Listed or Species of Special Concern, Federally Protected

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Table 4.9-2. Special-Status Species (Continued)

Common Name	Scientific Name	Status
Gray vireo	(<i>Vireo vicinior</i>)	California Listed or Species of Special Concern
Least Bell's Vireo	(<i>Vireo bellii pusillus</i>)	Federally Protected
Le Conte's thrasher	(<i>Toxostoma lecontei</i>)	California Listed or Species of Special Concern
Loggerhead shrike	(<i>Lanius ludovicianus</i>)	California Listed or Species of Special Concern
Long-eared owl	(<i>Asio otus</i>)	California Listed or Species of Special Concern
Northern harrier	(<i>Circus cyaneus</i>)	California Listed or Species of Special Concern
Sharp-shinned hawk	(<i>Accipiter striatus</i>)	California Listed or Species of Special Concern
Southwestern Willow Flycatcher	(<i>Empidonax traillii extimus</i>)	Federally Protected
Swainson's Hawk	(<i>Buteo swainsoni</i>)	California Listed or Species of Special Concern
Vaux's swift	(<i>Chaetura vauxi</i>)	California Listed or Species of Special Concern
Vermillion flycatcher	(<i>Pyrocephalus rubinus</i>)	California Listed or Species of Special Concern
Virginia's warbler	(<i>Oreothlypis virginiae</i>)	California Listed or Species of Special Concern
White-faced ibis	(<i>Plegadis chihi</i>)	California Listed or Species of Special Concern
Peregrine Falcon	(<i>Falco peregrinus anatum</i>)	California Listed or Species of Special Concern
Reptiles		
Desert Tortoise	(<i>Gopherus agassizii</i>)	California Listed or Species of Special Concern, Federally Protected
Mammals		
Mohave Ground Squirrel	(<i>Spermophilus mohavensis</i>).	California Listed or Species of Special Concern

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4.9.6.2 Environmental Consequences

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No Action Alternative

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Long-term minor adverse impacts are anticipated on listed or other species recorded on the installation. Listed species and species at risk recorded on the installation would continue to be managed in accordance with the installation's INRMP and ESMP, terms and conditions identified within biological opinion(s) issued by the USFWS and any conservation measures identified in ESA, Section 7 consultation documents.

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Alternative 1: Force Reduction (up to 2,400 Soldiers and Army Civilians)

Minor beneficial impacts to biological resources as a result of the implementation of Alternative 1 are anticipated. Scheduling conflicts for training area access to conduct resource monitoring would be slightly reduced. Proactive conservation management practices would be more easily accomplished and the likelihood of wildlife and vegetation disturbance would be slightly reduced with a minor reduction in maneuvers and live-fire activities. A majority of maneuvers at Fort Irwin would continue to occur in support of NTC training rotations and to support the training of non-resident units from across the Army.

4.9.7 Water Resources

4.9.7.1 Affected Environment

Surface Water. Surface water resources within Fort Irwin and its surrounding vicinity are scarce. Surface water in shallow ephemeral lakes is usually lost through groundwater percolation or evaporation. The only naturally occurring permanent surface water resources on the NTC and Fort Irwin are six springs and one watershed that produce small quantities of surface water.

Groundwater. Bicycle, Irwin, and Langford groundwater basins are used to supply current water needs of the NTC and Fort Irwin. Fort Irwin is exploring the existence of other groundwater resources.

Total dissolved solids are a growing concern of the NTC. The total dissolved solids in the soil near the WWTP are being leached through the soil to the water table in the Irwin Basin, where the NTC and Fort Irwin draws its water.

Water Rights. Fort Irwin has water rights to water on property owned by Fort Irwin; any potential use of percolating groundwater would be limited to use by the Army. In the case of insufficient water supply, the available supply is equally appropriated among owners of overlying lands. Surplus water, which may be withdrawn without creating an overdraft on groundwater supply, may be appropriated for use on overlying lands. The Army has purchased two sections of land for water rights in Coyote Basin. This land could be developed as a groundwater resource for the NTC, if required.

Water Supply and Demand. The NTC and Fort Irwin consumes an average of 2.3 mgd (based on 2010 data). About 60,000 gpd of this demand are used outside the cantonment area for field activities involving Soldier maneuvers.

An approved water supply project involves development of one new production well in Langford Basin to meet anticipated future water demands. The NTC has recently completed two wells downrange to provide water for non-potable use. Coyote Basin is believed to contain substantial groundwater resources. Although the NTC and Fort Irwin has withdrawn two public land sections overlying Coyote Basin groundwater resources for water production purposes, it currently does not draw from Coyote Basin and is not likely to initiate immediate use of this basin. The need for future water development may be delayed by water conservation measures that reduce demand within the cantonment area and extend the production life of Bicycle, Langford, and Irwin aquifers. The installation's water system has recently been privatized.

Wastewater. The NTC and Fort Irwin WWTP have recently been privatized. It is permitted as a zero discharge system; therefore, no discharge to surface watercourses occurs except in the case of severe rainfall events.

Stormwater. Stormwater is an important facet of environmental management at Fort Irwin as significant rainfall events can generate enough stormwater to exceed the treatment capacity of

the WWTP. The installation requires the development of Stormwater Pollution Protection Plans for all construction activities to assist in management of stormwater and to control the impacts of stormwater pollution and erosion.

4.9.7.2 Environmental Consequences

No Action Alternative

Less than significant adverse impacts to water demand are anticipated with the maintenance of current Soldier and civilian strength at Fort Irwin. Personnel consumption and washing of vehicles would continue to require water demand and associated treatment at current levels. Motorpool activities and washing of heavy-tracked vehicles would continue to produce an increased water demand and associated treatment requirements; however, the installation water supply would not be significantly impacted. Fort Irwin is investing in water, wastewater, and water-related infrastructure to manage its water demand requirements to ensure long-term water availability.

Any new construction and land disturbance over 1 acre would require a stormwater construction permit that would entail identification and implementation of mitigation strategies to reduce impacts associated with stormwater runoff during and after construction.

Alternative 1: Force Reduction (up to 2,400 Soldiers and Army Civilians)

Minor beneficial impacts are anticipated with the reduction of up to 2,400 Soldiers and their Families at Fort Irwin. The reduction of military personnel would reduce water demand, wastewater generation, and the associated water treatment requirements. The implementation of force reduction would extend time horizons of water availability of water being drawn from Fort Irwin's current well's and water supply. Fort Irwin would continue to manage its water demand requirements and investigate ways to ensure long-term water availability, however.

4.9.8 Facilities

4.9.8.1 Affected Environment

The main cantonment area is the urbanized portion of Fort Irwin, and has been developed into a wide variety of land uses that comprise the elements necessary to support the military community that resides and works there. The cantonment area includes the installation Post Exchange, commissary, housing and Family support services, medical, and mission-support facilities. The environmental impacts for utilities, energy, and traffic and transportation are addressed in separate sections of this PEA.

4.9.8.2 Environmental Consequences

No Action Alternative

Short- and long-term minor adverse impacts to facilities resources are anticipated. Activities within the training and range areas would be limited to existing firing ranges, maneuver areas, roads and trails. Currently, Fort Irwin has the developed area in the cantonment area, as well as the training space to support its operations. Because the installation landfill is running at near capacity, long-term minor adverse impacts to the landfill are anticipated as a result of continued operations. A program to transport solid waste to facilities in Barstow may be developed if new landfill cells are not permitted for operation.

Alternative 1: Force Reduction (up to 2,400 Soldiers and Army Civilians)

Short- and long-term minor impacts to facilities resources are anticipated with the reduction of 2,400 Soldiers, Army civilians, and their Families. The reduction would decrease usage within

the cantonment and training areas and decrease the need for some facilities. Additional coordination and a review of the installation Real Property Master Plan would be conducted in conjunction with strength reduction. Older, less efficient facilities nearing the end of their life-cycle would be demolished when no longer needed to support Soldiers or their Families to save the Army on maintenance and energy requirements. Some facilities would be preserved in a maintenance status for future use. Some units and Soldiers currently in under-sized or inadequate facilities would have the opportunity to move to more appropriately sized or better equipped facilities. The available capacity of Fort Irwin's landfill would support the installation for a greater length of time as a result of this alternative.

4.9.9 Socioeconomics

4.9.9.1 Affected Environment

Fort Irwin is a major training area for the U.S. military and is a census-designated place located in the Mojave Desert in northern San Bernardino County, California. The ROI consists of San Bernardino County, which includes Fort Irwin CDP.

Population and Demographics. The Fort Irwin population is measured in three different ways. The daily working population is 5,539, and consists of full-time Soldiers and Army civilian employees working on post. The population that lives on Fort Irwin consists of 3,661 Soldiers and 5,006 dependents, for a total on-post resident population of 8,667. Finally, the portion of the ROI population related to Fort Irwin is 4,733 and consists of Soldiers, Army civilian employees, and their dependents living off post.

Compared to year 2000, the 2010 population increased 19.1 percent to over 2,000,000 in San Bernardino County. The racial and ethnic composition of the ROI is presented in Table 4.9-3.

Table 4.9-3. Racial and Ethnic Composition

State and Region of Influence Counties	Caucasian (Percent)	African American (Percent)	Native American (Percent)	Hispanic (Percent)	Asian (Percent)	Multiracial (Percent)	Other (Percent)
California	40	6	0	38	13	3	1
San Bernardino	33	8	0	49	6	2	0

Employment, Income, and Housing. Compared to 2000, the 2009 employment (private nonfarm) increased in San Bernardino County and decreased in the State of California. Employment, median household value and household income, and poverty levels are presented in Table 4.9-4.

Table 4.9-4. Employment, Housing, and Income

State and Region of Influence Counties	2009 Total Nonfarm Employment (Employees)	Employment Change 2000-2009 (Percent)	Median Home Value 2005-2009 (Dollars)	Median Household Income 2009 (Dollars)	Population Below Poverty Level 2009 (Percent)
California	12,833,709	- 0.41	479,200	58,925	14.20
San Bernardino	519,247	+ 11.50	338,300	52,137	17.00

On-Post Housing. Fort Irwin has approximately 2,030 military Family housing (MFH) units in nine major housing areas on the installation. Of the total MFH units, approximately 380 are

1 allocated to officers and 1,650 to enlisted personnel. Under the Community Development and
2 Management Plan (CDMP) negotiated between the Army and Clark Pinnacle (a private
3 developer), projections are that the number of MFH units at Fort Irwin will increase to 2,615. To
4 date, 715 new housing units are in Crackerjack Flats, Sandy Basin Phase I, Sleepy Hollow, and
5 Sandy Basin Phase II. Sandy Basin Phase II is currently being completed, which will add an
6 additional 92 units.

7 **Off-Post Housing.** Most of the military and civilian personnel who reside off post live in Barstow
8 and the adjacent small communities of Lenwood, Hinkley, Yermo, Daggett, and Newberry
9 Springs, or in the communities of Victorville, Hesperia, and Apple Valley.

10 Housing units are divided almost equally between owner-occupied and renter-occupied units,
11 reflecting the influence on the rental housing market of off-post Fort Irwin personnel. The
12 vacancy rate is between 15 and 16 percent, and the large majority of vacant units are rental
13 units. Characteristic of most communities of this size, the large majority of units are detached,
14 single-family units, with over 10 percent of the total number of housing units being mobile
15 homes.

16 **Schools.** School districts receive federal funding for students whose parent or parents live on or
17 work on federal property. The amount of Federal School Impact Aid a district receives is based
18 on the number of students who are considered “federally connected” and attend district schools.

19 The Silver Valley Unified School District provides K-12 educational services at Fort Irwin with
20 three elementary schools, two middle schools, and two high schools. Three schools are located
21 on the installation, including Lewis Elementary School with a capacity of 695 students; Tiefort
22 View Intermediate School with a capacity of 500 students; and Fort Irwin Middle School with a
23 capacity of 594 students. Enrollment in the 2009/2010 school year at Lewis Elementary was
24 798, at Tiefort View Intermediate it was 465, and at Fort Irwin Middle School it was 398
25 (California Department of Education, 2010).

26 **Public Services, Health, and Safety.** A number of services and facilities available on post
27 contribute to the quality of life experienced by residents. These services include law
28 enforcement, fire protection, medical services, schools, Family support services, retail shops
29 and services, and recreational facilities.

- 30 • **Law Enforcement Services.** Law enforcement at Fort Irwin is provided by 60
31 personnel. The installation also maintains a cooperative agreement with the San
32 Bernardino County Sheriff.
- 33 • **Fire Protection Services.** Off-post fire protection services in the region are provided by
34 the Barstow Fire Protection District, which has three fire stations. The Fire Protection
35 District is staffed by 25 paid firefighters, 6 volunteer firefighters, and 2 non-firefighting
36 employees (Fire Departments Net, 2010). Fort Irwin maintains a mutual assistance
37 agreement with the Barstow Fire Protection District.
- 38 • **Medical and Dental Services.** The Medical Department Activity and Dental Activity at
39 the installation provide essential health services to Fort Irwin residents. Weed Army
40 Community Hospital is a 29-bed, one-story facility that houses inpatient and ancillary
41 functions. The hospital was built originally in 1968, with two subsequent additions in the
42 1980s. The Mary E. Walker Clinic is an ambulatory-care clinic built in 1997 to
43 consolidate most outpatient functions, including outpatient-related administrative
44 functions. Outpatient services include primary care, optometry, audiology, orthopedics,
45 obstetrics and gynecology, mental health, emergency services, preventive medicine,
46 internal medicine, Exceptional Family Member Program, laboratory, pediatrics and baby

care, physical exams, physical therapy, radiology, social work services, and substance abuse and rehabilitation services.

The on-post dental care facility is approved to provide dental care to Active Duty military members. Services provided include general dentistry, pediatric dentistry, oral surgery, and orthodontics. Family members acquire dental services located off-post in neighboring communities.

The primary off-post healthcare provider in the area is the Barstow Community Hospital, with a 56-bed capacity. Also in the immediate area are 61 physicians and surgeons, 19 dentists, 4 optometrists, 6 chiropractors, a convalescent home, and an ambulance air service.

- **Family Support.** Fort Irwin supports numerous programs and services to assist installation residents and employees. Family support includes Family counseling, career counseling, and financial counseling. Fort Irwin has two child development centers, a teen center, a school liaison, and youth sports and fitness planning.
- **Shops and Services.** Services available on Fort Irwin include two shoppettes, a laundry facility, a hotel, and several fast food restaurants. On-post shopping includes the Main Store Mall (12 shops), the Mini Mall (shops and services), the commissary, and the thrift shop. Services available include beauty and barber services, dry cleaning, flower shops, tailoring, eye care, video rental, auto rental agency, two gas stations, and laundry facilities. One multiplex theatre is on the installation.

Protection of Children. E.O. 13405 seeks to protect children from disproportionately incurring environmental health or safety risks that might arise as a result of Army policies, programs, activities, and standards.

Fort Irwin has engaged in an aggressive MFH replacement and upgrade program in recent years. This program has resulted in the construction of 438 housing units since 2000. Potential health and safety concerns are often associated with the presence of lead-based paint and asbestos-containing material (ACM) in residential and other buildings. With the replacement and upgrade of the on-post housing units, the potential for adverse impacts to children has been reduced substantially.

Environmental Justice. On February 11, 1994, President Clinton issued E.O. 12898, "Federal Actions to Address Environmental Justice in Minority and Low-Income Populations." The E.O. is designed to focus the attention of federal agencies on the human health and environmental conditions in minority communities and low-income communities. Environmental justice analyses are performed to identify potential disproportionately high and adverse impacts from Proposed Actions and identify alternatives that might mitigate the impacts.

The proportion of the total population of minority groups is higher for the City of Barstow than for San Bernardino County and the State of California, while that for ZIP Code area 92311 is lower. Proportions of minority populations for all geographical areas exceed 50 percent. The proportion of the population below the poverty level in the City of Barstow and in ZIP Code area 92311 is higher than for San Bernardino County and the State of California.

4.9.9.2 Environmental Consequences

No Action Alternative

There would be no change or minor impacts anticipated under the No Action Alternative. Fort Irwin would continue providing a positive economic impact to the surrounding community as a result of this alternative. No additional impacts to housing, public and social services, public schools, public safety, or environmental justice are anticipated.

Alternative 1: Force Reduction (up to 2,400¹ Soldiers and Army Civilians)

Economic Impacts. Alternative 1 would result in the loss of up to 2,400 military (uniformed Soldier and Army civilian employee) positions, each with an average annual income of \$41,830. In addition, this alternative would affect an estimated 1,325 spouses and 2,280 dependent children, for a total estimated potential impact to 3,605 dependents. The total population of military employees and their dependents directly affected by Alternative 1 is projected to be 5,980 military employees and their dependents.

Based on the EIFS analysis, there would be no significant impacts for sales volume, income, populations, or employment. The range of values that would represent a significant economic impact in accordance with the EIFS model is presented in Table 4.9-5. Table 4.9-6 presents the projected economic impacts to the region for Alternative 1 as assessed by the Army's EIFS model.

Table 4.9-5. Economic Impact Forecast System and Rational Threshold Value Summary of Implementation of Alternative 1

Region of Influence Economic Impact Significance Thresholds	Sales Volume (Percent)	Income (Percent)	Employment (Percent)	Population (Percent)
Positive	13.48	12.75	3.64	3.64
Negative	- 5.93	- 4.33	- 3.85	- 2.16
Forecast Value	- 0.38	- 0.27	- 0.60	- 0.30

Table 4.9-6. Economic Impact Forecast System: Summary of Projected Economic Impacts of Implementation of Alternative 1

Region of Influence Impact	Sales Volume	Income	Employment	Population
Total	- \$171,974,300	- \$119,851,500	- 2,558 (Direct) - 541 (Indirect) - 3,129 (Total)	- 5,980
Percent	- 0.38	- 0.27	- 0.60	- 0.30

The total annual loss in sales volume from direct and indirect sales reductions in the ROI represents an estimated -0.38 percent change from the total current sales volume of \$45.26 billion within the ROI. It is estimated that state tax revenues would decrease by approximately \$12.03 million as a result of the loss in revenue from sales reductions. This does not include additional county sales tax, and these additional local tax revenues would be lost at the county and local level. Regional income would decrease by 0.27 percent. While approximately 2,400 Soldier and Army government civilian positions would be lost within the ROI, EIFS estimates another 183 contract service jobs would be lost as a direct result of the implementation of Alternative 1, and an additional 541 jobs would be lost indirectly as a result of the reduction in demand for goods and services in the ROI. The total estimated reduction in demand for goods and services within the ROI is projected to lead to a loss of 3,129 jobs, or a -0.6 percent change in regional employment. The total number of employed non-farm positions in the ROI is estimated to be approximately 525,000. A population reduction of 0.30 percent within the ROI would be anticipated as a result of this alternative. Of the approximately 2 million people

¹ Calculations used a number of 2,375 Soldiers and civilians for estimating socioeconomic impacts. This number was derived by assuming the loss of 35 percent of the installation's Soldiers and up to 15 percent of the civilian workforce. As discussed in Chapter 3, this number is rounded to the nearest hundred personnel when discussing impacts of Alternative 1.

(including those residing on Fort Irwin) that live within the ROI, 5,980 military employees and their dependents would no longer reside in the area following the implementation of Alternative 1. This would lead to a decrease in demand for housing, and increased housing availability in the region. This could lead to a slight reduction in median home values. It should be noted that this estimate of population reduction includes civilian and military employees and their dependents. This number likely overstates potential population impacts, as some of the people no longer employed by the military would continue to work and reside in the ROI, working in other economic sectors; however, this would in part be counterbalanced by the fact that some of the indirect impacts would include the relocation of local service providers and businesses to areas outside the ROI.

Table 4.9-7 shows the total projected economic impacts, based on the RECONS model, that would occur as a result of the implementation of Alternative 1.

Table 4.9-7. Regional Economic System: Summary of Projected Economic Impacts of Implementation of Alternative 1

Region of Influence Impact	Sales Volume	Income	Employment
Total	- \$108,599,501 (Local) - \$174,639,519 (State)	- \$218,540,864	- 2,683 (Direct) - 342 (Indirect) - 3,025 (Total)
Percent	- 0.23	- 0.50	- 0.58

The total annual loss in sales volume from direct and indirect sales reductions in the region represents an estimated -0.23 percent change in total regional sales volume according to the RECONS model, an impact that is 0.15 percentage points less than projected by EIFS; however, it is estimated that gross economic impacts at the state level would be greater. Extrapolating from sales volume numbers presented in the RECONS model, it is anticipated that state tax revenues would decrease by approximately \$12.22 million as a result of the loss in revenue from sales reductions, which would be \$190,000 more than projected by the EIFS model. Regional income is projected by RECONS to decrease by 0.50 percent, slightly more than the 0.27 percent reduction projected by EIFS. While approximately 2,400 Soldier and Army government civilian positions would be lost within the ROI, RECONS estimates another 308 military contract and service jobs would be lost, and an additional 342 job losses would occur indirectly as a result of the reduction in demand for goods and services in the ROI. The total estimated reduction in demand for goods and services within the ROI is projected to lead to a loss of 3,025 jobs, or a -0.58 percent change in regional employment, which would be 0.02 percentage points less than projected by the EIFS model.

When assessing the results together, both models indicate that the economic impacts of the implementation of Alternative 1 would lead to a similar net reduction of economic activity within the ROI.

Housing Impacts. Alternative 1 would increase availability of single occupancy barracks and single Soldier housing. If the number of permanent party Soldiers were reduced by up to 2,400 personnel on Fort Irwin, there is a possibility that vacancies could occur in on-post Family housing. Implementation of the Proposed Action would not displace substantial numbers of existing housing or people off-post. Therefore, the Proposed Action would have no significant impact associated with housing.

Schools Impacts. Potential significant adverse impacts to Fort Irwin schools that support on-post dependents as a result of the implementation of Alternative 1 are anticipated. A decrease in enrollment would be expected with a decrease in on-post dependents. Outside of Fort Irwin, the proposed reduction would not affect any other school district disproportionately. Less than significant adverse impacts to school funding in the region as a whole are anticipated if Alternative 1 is implemented.

Public Services, Health and Safety, and Protection of Children. As a result of the implementation of Alternative 1, resident and daytime population levels on Fort Irwin would decrease and this could reduce demand on law enforcement, fire and emergency service providers, and on medical care providers on and off post. Active Duty military, rotational unit Soldiers, retirees, and their dependents, would continue to demand these services. Fort Irwin anticipates less than significant impacts to public health and safety, recreation, and protection of children under the Proposed Action.

Environmental Justice. As a result of the implementation of Alternative 1, a disproportionate adverse impact to minorities, economically disadvantaged populations, or children is not anticipated. Any job loss would be felt across economic sectors and at all income levels and spread geographically throughout the ROI. The proposed force reduction in military authorizations on Fort Irwin would not have disproportionate or adverse health effects on low-income or minority populations in the ROI. The racial and ethnic composition of the ROI differs from that of the state as a whole. There is a higher Hispanic and African American population and lower Asian population than in the state. The median household income in Barstow is almost 10 percent higher than in Fort Irwin, and per capita income is 28 percent higher. The proportion of the population living below the poverty level is more than 16 percent for Barstow and just over 3 percent for Fort Irwin. Income levels for both areas are substantially lower than the corresponding levels for the State of California. Fort Irwin anticipates less than significant impacts to minorities, economically disadvantaged populations, or children. Given the higher population of low-income and minority people in the area compared with the state as a whole, adverse impacts would be disproportionate.

4.9.10 Land Use Conflicts and Compatibility

4.9.10.1 Affected Environment

The primary land use at Fort Irwin is military training and would remain so with the implementation of either the No Action Alternative or Alternative 1. Fort Irwin supports heavy armored unit maneuvers of the Army and joint forces and supports large-scale combined arms maneuver training exercises.

4.9.10.2 Environmental Consequences

No Action and Alternative 1

Minor environmental impacts to installation land use are anticipated as a result of the implementation of either the No Action Alternative or Alternative 1. The installation has sufficient land and facilities to meet each unit's mission requirements as well as the requirements to train non-resident units as part of the NTC's training mission. Land use and existing facilities have been planned and coordinated to support the installation's training mission while remaining compatible with external land uses surrounding the installation. Changes in land use from the implementation of Alternative 1 would not be anticipated to occur. Fort Irwin would continue to support training activities of the NTC with the implementation of Alternative 1.

4.9.11 Hazardous Materials and Hazardous Waste

4.9.11.1 Affected Environment

Use, storage, transport, and disposal of hazardous materials and wastes occur at Fort Irwin. This includes hazardous materials and wastes from USTs and ASTs, pesticides, LBP, asbestos, PCBs, radon, and UXO. Fort Irwin manages a HWMP that manages hazardous waste to promote the protection of public health and the environment. The program manages all of the hazardous waste generated by Fort Irwin to ensure proper disposal, storage, and recovery of hazardous materials and protection of public health. Hazardous waste is managed in accordance with Fort Irwin's HWMP and applicable regulations.

4.9.11.2 Environmental Consequences

No Action and Alternative 1

Short- and long-term minor adverse impacts from hazardous materials and waste are anticipated as a result of the implementation of either the No Action Alternative or Alternative 1. A minor decrease in the storage and use of hazardous chemicals is anticipated in the cantonment and training and range areas as a result of Alternative 1. Demolition of facilities as a result of Alternative 1 would result in a temporary increase in the generation of asbestos, lead-contaminated wastes, and other hazardous waste as building materials are disposed of. There would be a minor decrease in the use of pesticides due to the reduction in Family housing and other facilities. Wastes would be managed in accordance with current standards and regulations. The hazardous waste disposal facilities would be adequate to manage the hazardous waste for either alternative. Waste management programs may be updated as needed to incorporate mission activities associated with units stationed at Fort Irwin and expanded training activities. In general, Fort Irwin would continue to implement its hazardous waste management in accordance with its HMWP and applicable regulations under either alternative.

4.9.12 Traffic and Transportation

4.9.12.1 Affected Environment

Fort Irwin is located approximately 37 miles northeast of Barstow, California. The ROI of the affected environment for traffic and transportation aspects includes Fort Irwin, and the neighboring communities of Yermo and Barstow, California. The major road in the region is I-15, a north-south interstate highway located about 20 miles from the cantonment area. I-15 links the installation to Barstow and Los Angeles, California, to the southwest, and Las Vegas, Nevada, to the northeast.

4.9.12.2 Environmental Consequences

No Action Alternative

Traffic conditions at Fort Irwin would remain unchanged. During peak hours of travel the installation's main ACP would continue to experience some delays. Overall, the transportation system does not experience significant congestion and LOS is adequate to support installation operations. Impacts under the No Action Alternative would be minor.

Alternative 1: Force Reduction (up to 2,400 Soldiers and Army Civilians)

Short and long-term minor beneficial impacts on traffic and transportation systems on the installation due to the reduction of 2,400 Soldiers, Army civilians, and their Family members would occur. There would be a reduction in the time of delays at the installation's main gate

ACP during morning and evening commutes. Spread across the ROI, this population would have *de minimis* impact on the overall traffic congestion in the neighboring communities.

4.9.13 Cumulative Effects

Fort Irwin has identified no foreseeable off-post projects, or on-post military operations or activities that would, in conjunction with Army strength reduction, result in adverse cumulative effects to the environment. The ROI includes the high desert of San Bernardino County and the Fort Irwin census-designated place in California. There would be no significant adverse environmental or socioeconomic impacts within the ROI that would occur given the large size of the population and economy of San Bernardino County.

4.10 JOINT BASE ELMENDORF-RICHARDSON, ALASKA

4.10.1 Introduction

As of October 2010, Joint Base Elmendorf-Richardson (JBER) reached full operational capability and Fort Richardson (FRA) and Elmendorf Air Force Base successfully merged operations and have ceased to exist as separately administered facilities. However, for purposes of this PEA, references to former FRA, former Elmendorf Air Force Base, and/or U.S. Army Garrison (USAG) may be used where proper to avoid confusion and where reference to JBER would be improper. Since this Proposed Action would mainly affect the Richardson side of JBER (JBER-Richardson), the focus of the analysis will be based on former FRA while still considering impacts to JBER as a whole. JBER-Richardson is bounded by the Knik Arm of the Cook Inlet to the north, the community of Eagle River and Chugach State Park to the east, Anchorage to the west, and Chugach State Park to the south (Figure 4.10-1) (JBER-Richardson bordered in orange) (USARAK, 2004).

Today, the major units under U.S. Army Alaska (USARAK) are the 1st SBCT, 25th Infantry Division, 1-52nd General Support Aviation Battalion, and 6-17th Air Cavalry, all three located at Fort Wainwright (FWA); and the 4th BCT (Airborne), 25th Infantry Division (commonly referred to as the Airborne BCT or 4/25 Airborne BCT) and 2nd Engineer Brigade located at JBER-Richardson. In 2008, Army growth resulted in approximately 1,800 additional Soldiers stationed at FRA.

The 4/25 Airborne BCT is comprised of a Brigade Headquarters, two infantry battalions, one field artillery battalion, a cavalry squadron, a brigade special troops battalion, and a brigade support battalion. The recent transformation of the 4/25 Airborne BCT is documented in *Environmental Assessment, Conversion of the Airborne Task Force to an Airborne Brigade Combat Team*, Fort Richardson, Alaska (USAG FRA, 2005), which was prepared subsequent to *Transformation of U.S. Army Alaska Final Environmental Impact Statement* (USARAK, 2004).

The 4/25 Airborne BCT, utilizes a range of individual and crew-served weapons systems including mortars and howitzers, which requires them to conduct live-fire and maneuver training at JBER-Richardson. The 4/25 Airborne BCT trains in the SAC and other sites on the northern and southern part of JBER-Richardson that make up the Richardson Training Area, JBER Alaska. The location of the Richardson Training Area is shown in Figure 4.10-1. The SAC is a developed range complex located on the southern part of JBER-Richardson; Glenn Highway borders the SAC to the north.

The 4/25 Airborne BCT has both Combat/Combat Support Soldiers with different training requirements. Combat Service Support would consist of personnel involved with logistics support, engineers, and military police. Combat Service Support training may be limited to weapons qualification convoy live fire, Improvised Explosive Device disposal, and field set up with limited field training (e.g., in support of tactical unit maneuvers), although they would generally train in the same areas as Combat Support units.

The USARAK inventory of ranges in the Richardson Training Area meets TC 25-8 standards and accommodates all of the 4/25 Airborne BCT's DA Pamphlet 350-38 (Standards in Training Commission) requirements. USARAK ranges have capacity to support additional use by units not assigned to the command. Training would continue in accordance with management practices as outlined in previous NEPA documents.

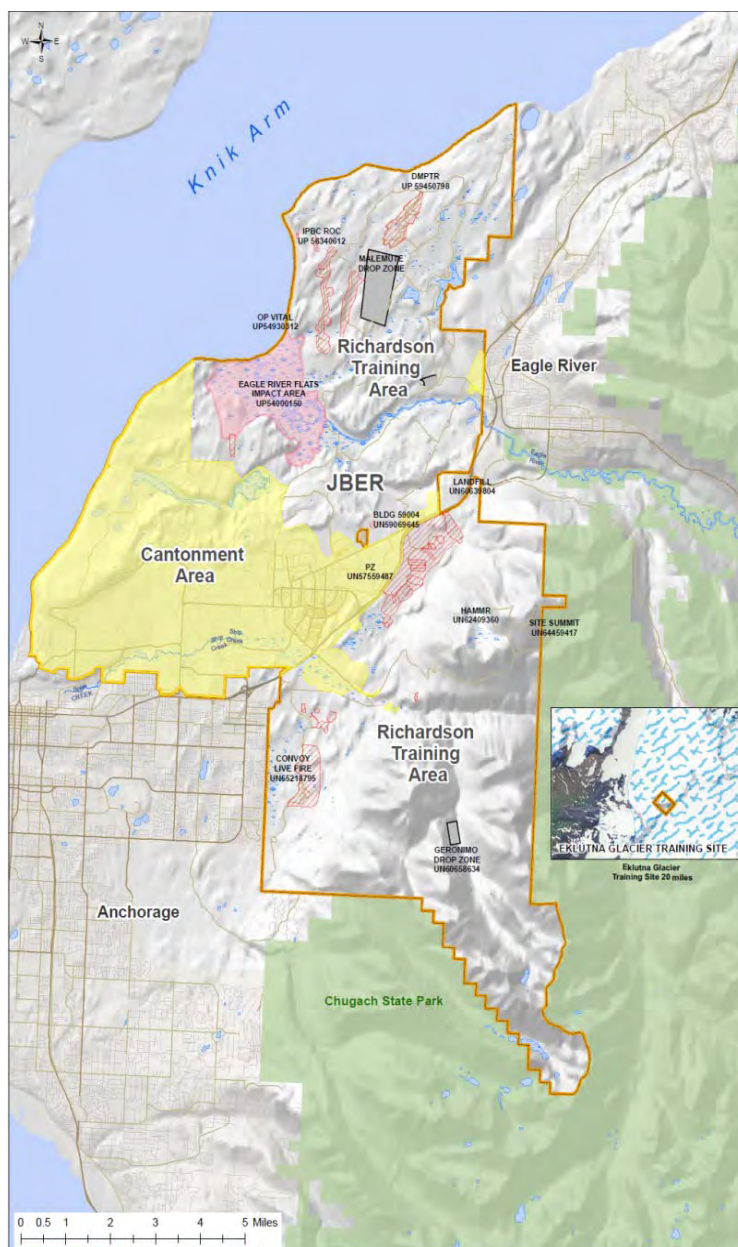


Figure 4.10-1. Joint Base Elmendorf-Richardson

The total Soldier population of the 4/25 Airborne BCT is approximately 3,500 Soldiers. The current estimated JBER population is 38,685 (U.S. Air Force at 5,700, U.S. Army at 6,900, U.S. Marine Corp at 90, U.S. Navy at 135, National Guard at 1,040, Air National Guard at 1,480, Coast Guard at 90, with approximately 20,250 joint service Family members, and 3,000 civilian employees (JBER Brochure n.d.).

Army units stationed at JBER may also train at ranges located at Donnelly Training Area (DTA). Training at DTA would primarily facilitate large unit maneuvers, e.g., company level and above. More information on training that may occur at DTA may be found in *Transformation of U.S. Army Alaska Final Environmental Impact Statement* (USARAK, 2004) and the sections of this PEA that pertain to DTA.

4.10.1.1 Valued Environmental Components

For alternatives the Army is considering as part of Army 2020 force structure realignments, JBER does not anticipate any significant adverse environmental impacts as a result of the implementation of Alternative 1 (Force reduction of up to 4,300 Soldiers and Army Civilians) or Alternative 2 (Installation gain of up to 1,000 Soldiers). However, further environmental analysis including consultation under the ESA and/or the Marine Mammal Protection Act (MMPA) would be required for Alternative 2 to ensure no significant impacts would occur. In addition, the Air Force requires that a basing actions be submitted to Headquarters Air Force A8 in accordance with Air Force Instruction 10-503. The Army anticipates potentially significant adverse socioeconomic impacts to regional employment and population as a result of the implementation of Alternative 1. Table 4.10-1 summarizes the anticipated impacts to VECs from each alternative.

Table 4.10-1. Joint Base Elmendorf-Richardson Valued Environmental Component Impact Ratings

Valued Environmental Component	No Action Alternative	Alternative 1: Force Reduction of up to 4,300	Alternative 2: Growth of up to 1,000
Air Quality	Less than Significant	Beneficial	Less than Significant
Airspace	Minor	Beneficial	Minor
Cultural Resources	Significant but Mitigable	Significant but Mitigable	Significant but Mitigable
Noise	Minor	Beneficial	Less than Significant
Soil Erosion	Less than Significant	Minor	Less than Significant
Biological Resources	Significant but Mitigable	Minor	Significant but Mitigable
Wetlands	Less than Significant	Beneficial	Less than Significant
Water Resources	Minor	Beneficial	Less than Significant
Facilities	Minor	Minor	Less than Significant
Socioeconomics	Beneficial	Significant	Beneficial
Energy Demand and Generation	Minor	Beneficial	Minor
Land Use Conflict and Compatibility	Minor	Minor	Less than Significant
Hazardous Material and Hazardous Waste	Less than Significant	Less than Significant	Less than Significant
Traffic and Transportation	Less than Significant	Beneficial	Less than Significant

The analysis of environmental consequences is grouped into four categories: cantonment construction, range maintenance, live-fire training, and maneuver training as the majority of environmental impacts would be associated with these types of training/associated activities. However, where training does not fall within these areas and/or there is the potential for unique environmental impacts from certain other types of training, it will be specifically mentioned. Cantonment construction includes all construction-related work (e.g., renovations, demolition, and maintenance). Range maintenance would include similar construction-related impacts as the types of vehicles used would be the same used in the cantonment area.

To the extent practicable, this PEA will direct the reader to previous NEPA documents for more detailed information. Many of these documents are available electronically at <http://www.jber.af.mil/library/environmental/epc/index.asp>. For information on how to locate documents not available at this website, please contact the 673d Air Base Wing Public Affairs Office:

Joint Base Elmendorf-Richardson Public Affairs
10480 22nd Street, Suite 123, JBER, Alaska 99506
(907) 552-8151
pateam@elmendorf.af.mil

4.10.2 Air Quality

4.10.2.1 Affected Environment

The ROI for this VEC is JBER and the surrounding communities within the Municipality of Anchorage (e.g., Eagle River, Chugiak, Eklutna, Peters Creek, and Birchwood), which may be affected by air quality impacts under this Proposed Action.

In accordance with the CAA, the EPA has established NAAQS for pollutants considered harmful to public health and the environment. These standards have been adopted by the State of Alaska. NAAQS exist for six principal pollutants and are presented in Table 4.10-2. These pollutants are referred to as "criteria" pollutants. Units of measure (e.g., parts per million [ppm]) are by volume. Primary standards are those that must be complied with as they are provided for the protection of the public health (e.g., children and elderly) whereas secondary standards are supplemental and are focused on protection of the public welfare (e.g., vegetation and buildings) (JBER, 2010a).

Table 4.10-2. National Ambient Air Quality Standards

Pollutant	Primary/ Secondary	Averaging Time	Level	Form
CO	Primary	8-hour	9 parts per million (ppm)	Not to be exceeded more than once per year
		1-hour	35 ppm	
Lead	Primary and Secondary	Rolling 3 month average	0.15 µg/m ³ (microgram per cubic meter) ¹	Not to be exceeded
Nitrogen Dioxide	Primary	1-hour	10 ppb (parts per billion)	98 th percentile, averaged over 3 years
	Primary and Secondary	Annual	53 ppb ²	Annual Mean

1

Table 4.10-2. National Ambient Air Quality Standards (Continued)

Pollutant	Primary/ Secondary	Averaging Time	Level	Form
O ₃	Primary and Secondary	8-hour	0.075 ppm ³	Annual fourth-highest daily maximum 8-hr concentration, averaged over 3 years
PM _{2.5}	primary and secondary	Annual 24-hour	15 µg/m ³ 35 µg/m ³	98 th percentile, averaged over 3 years
PM ₁₀	primary and secondary	24-hour	150 µg/m ³	Not to be exceeded more than once per year on average over 3 years
Sulfur Dioxide	primary	1-hour	75 ppb ⁴	99 th percentile of 1-hour daily maximum concentrations, averaged over 3 years
	secondary	3-hour	0.5 ppm	Not to be exceeded more than once per year

Source: EPA, 2011, available at <http://www.epa.gov/air/criteria.html> (last accessed December 1, 2011).

¹Final rule signed October 15, 2008. The 1978 lead standard (1.5 µg/m³ as a quarterly average) remains in effect until 1 year after an area is designated for the 2008 standard, except that in areas designated nonattainment for 1978, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.

²The official level of the annual NO₂ standard is 0.053 ppm, equal to 53 ppb, which is shown here for the purpose of clearer comparison to the 1-hour standard.

³Final rule signed March 12, 2008. The 1997 O₃ standard (0.08 ppm, annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years) and related implementation rules remain in place. In 1997, EPA revoked the 1-hour O₃ standard (0.12 ppm, not to be exceeded more than once per year) in all areas, although some areas have continued obligations under that standard ("anti-backsliding"). The 1-hour O₃ standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above 0.12 ppm is less than or equal to 1.

⁴Final rule signed June 2, 2010. The 1971 annual and 24-hour SO₂ standards were revoked in that same rulemaking. However, these standards remain in effect until 1 year after an area is designated for the 2010 standard, except in areas designated nonattainment for the 1971 standards, where the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standard are approved.

2 Areas that are in compliance with the NAAQS are referred to as attainment areas, while areas in
3 noncompliance with the NAAQS are designated as non-attainment areas. Areas that have been
4 redesignated from nonattainment to attainment are maintenance areas. A conformity
5 determination under the CAA Section 176(c) is required for federal actions when the activity is
6 located within a non-attainment or maintenance area. The purpose of the conformity analysis,
7 generally, is to ensure that an activity would not cause or contribute a violation of the NAAQS or
8 affect attainment with NAAQS (EPA, 2012a). Anchorage is classified as a maintenance area for
9 CO and Eagle River is a nonattainment area for PM₁₀. The primary source of CO emissions in
10 Anchorage is motor vehicles (approximately 83.6 percent), which are believed to be the result of
11 engine "cold starts" during the winter months. Based on air quality monitoring results from 1980
12 to 2002, there appears to be a downward trend of CO emissions whereas fugitive dust due to
13 unpaved roads accounts for a large percent of Eagle River PM₁₀ emissions (MoA, 2004).

JBER is outside the boundaries of the Anchorage maintenance area and the Eagle River nonattainment area, and; therefore, a conformity determination is not required (Fowler, 2011). Prior to merging as a joint base, both FRA and Elmendorf Air Force Base managed their air emissions through disaggregation by Standard Industrial Classification code (SIC). This approach continued following the merge. Under this approach, each stationary emission source is assigned to one of 15 SIC codes based upon the functional activity it supports. Each SIC is evaluated for permit requirements separately from other SICs. Currently, JBER-Elmendorf has a Title V (operating) permit for SIC 45 - Transportation by Air, and an Owner Requested Limit for SIC 80 - Health Services. JBER-Richardson has three Title I (minor) permits for SIC 65 - Real Estate, SIC 70 - Hotels/Lodging, and SIC 97 - National Security (Fowler, 2011). JBER is not a major source for HAPs (Fowler, 2011). JBER is the owner/operator of the aforementioned permits; however, as a result of the privatization of utilities on JBER-Richardson, a private contractor (i.e., Doyon Utilities) is responsible for their own emissions and permitting (JBER, 2010a; Fowler, 2012).

Activities addressed by this PEA are anticipated to primarily fall under JBER-Richardson SIC 97, with sources added from construction of barracks falling under SIC 70; emission sources will be evaluated for permit requirements accordingly (Fowler, 2011).

No ambient air monitoring is performed on JBER; however, JBER maintains an emissions inventory for stationary sources (Fowler, 2011). Although JBER is not within the maintenance area or the nonattainment area, JBER is a major source of CAPs, specifically NO_x and CO. The problems associated with CO and inhalable PM are usually related to localized conditions, such as congested traffic intersections or construction activities, whereas other criteria pollutants, such as NO_x, are associated with more regionalized problems that result from the interaction of pollutants from a great number of widely dispersed sources (e.g., a large city containing many stationary and mobile sources) (JBER, 2010a). Table 4.10-3 shows JBER's estimated emissions summary for 2010.

Table 4.10-3. Joint Base Elmendorf-Richardson Estimated Emissions Summary (2010)

JBER Stationary Source Group	Criteria Pollutant Potential to Emit (tons per year)				
	NO _x	CO	PM	VOCs	SO _x
45 – Transportation By Air (Flight Line)	249.426	137.711	18.669	15.426	6.692
48 – Communications	14.598	3.589	1.064	1.133	0.824
58 – Eating and Drinking Places	20.501	9.112	1.650	1.256	0.256
65 – Real Estate	60.862	32.388	4.916	3.557	0.388
70 – Hotels, Rooming Houses, Camps & Other Lodging	99.410	51.616	7.808	5.650	0.616
72 – Laundry and Garment Services	5.212	5.628	1.399	2.206	0.139
78 – Motion Pictures	2.830	1.138	0.234	0.169	0.018
79 – Amusement and Recreation Services	20.846	8.711	1.717	1.243	0.136
80 – Health Services	31.038	24.850	2.361	1.736	0.243
82 – Educational Services	10.975	5.443	0.891	0.645	0.070
83 – Social Services	10.812	5.090	0.882	0.638	0.070
86 – Membership Organizations	1.092	0.439	0.090	0.065	0.007
87 – Engineering, Accounting, Research, & Management	84.176	34.758	6.559	4.872	1.707

**Table 4.10-3. Joint Base Elmendorf-Richardson Estimated Emissions Summary (2010)
(Continued)**

JBER Stationary Source Group	Criteria Pollutant Potential to Emit (tons per year)				
	NO _x	CO	PM	VOCs	SO _x
92 – Justice, Public Order, and Safety	9.338	4.920	0.731	0.578	0.157
97 – National Security	80.543	34.364	6.060	4.708	2.380
JBER-E Title V Operating Permit, SIC 45, 30-03-10 (PTE)	264.7	152.7	25.0	34.5	93.8

Source: F22 Plus-Up Environmental Assessment (JBER, 2011a), Table 3.4-3 at 3-29, available at <http://www.jber.af.mil/library/environmental/epc/index.asp>

Vehicles emissions for vehicles that may be in use at JBER-Richardson have been previously evaluated and estimated. Table 4.10-4 provides the emission rate for a High Mobility Multi-Purpose Wheeled Vehicle (HMMWV) and a M1117 Armored Security Vehicle in addition to Table 4.10-5 which presents general emission rates for a variety of vehicles based on weight.

Table 4.10-4. Exhaust Emissions of the High Mobility Multi-Purpose Wheeled Vehicle and Armored Security Vehicle

Emission	High Mobility Multi-Purpose Wheeled Vehicle (gallons per mile per hour)	Armored Security Vehicle (gallons per mile per hour)
NO _x	480	1,210
HC [hydrocarbons]	37.5	153.4
CO	270	143
particulates	34.5	50.2

Source: PEA for Use of the M1117 Armored Security Vehicle at Army installations in the U.S. (U.S. Army, 2008b).

Table 4.10-5. MOBILE Annual Emission Summary (in tons per year) for All Stryker Brigade Combat Team Fleet Training Activities at Fort Wainwright

Pollutant	Light Duty Diesel (0-6,600 pounds)	Diesel Vehicles (8,501 – 10,000 pounds)	Diesel Vehicles (19,501 – 26,000 pounds)	Diesel Vehicles (33,000 – 60,000 pounds)	Diesel Vehicles (> 60,000 pounds)	Total Emissions
NO _x ²	4.5	4.0	2.1	20.6	1.4	32.6
CO ³	7.1	1.0	0.4	4.3	0.3	13.1
VOC ⁴	4.2	0.2	0.1	0.8	0.1	5.4

Source: USARAK, 2004.

Note that inclusion of Tables 4.10-4 and 4.10-5 is for illustrative purposes only as the rate of emissions presented in these tables are specific to past actions evaluated in the above referenced NEPA documents. Specific analysis would be required for this Proposed Action to determine the actual rate of emissions based on actual vehicles in use and to be used at JBER; however, for purposes of this PEA, the use of vehicles under the Proposed Action would be a

continuation of those that presently exist at JBER and for which the use has already been analyzed in past NEPA documents.

In addition to vehicle emissions during training, use of weapons also emit pollutants, although it has been determined to have low emissions rates. More information can be found at EPA's Technology Transfer network Clearinghouse for Inventories & Emissions Factors, AP42, Fifth Edition, Volume I, available at www.epa.gov/ttn/chief/ap42/ch15/index.html. In addition, approximately 99.8 percent of munitions are consumed during combustion, resulting in minimal deposition on ranges/training lands if munitions operate properly (high order detonation) (U.S. Army, 2008).

E.O. 13514, *Federal Leadership in Environmental, Energy, and Economic Performance*, sets forth a series of policies for federal agencies to, in part, make reduction of GHG emissions a priority for federal agencies. The principal GHGs are CO₂, CH₄, N₂O, and fluorinated gases (EPA, 2012b). GHGs trap heat and warm the atmosphere (JBER, 2010a). CEQ guidance sets 27,563 tpy of CO₂ equivalent emissions effect threshold for a federal action under NEPA (JBER, 2010a). Military activities in Alaska are responsible for 5 percent of global GHG emissions within the state (JBER, 2011a). Recently, a stationary source applicability analysis for GHGs was completed in response to EPA's GHG reporting rule (Fowler, 2012). This analysis (which included a separate analysis for combustion sources and landfills) found that JBER's GHG emissions were below the reporting threshold of 25,000 tpy CO₂ equivalent for each of the two source categories (Fowler, 2012). JBER is currently pursuing efforts to reduce energy consumption in base facilities. In addition, forests on JBER may act as a carbon sink or source (USAG Alaska, 2010). Forests take up carbon from the atmosphere through photosynthesis, and lose it through respiration, decomposition, and through emissions associated with disturbances like fire, insect mortality, and harvesting (USAG Alaska, 2010). The balance between carbon uptake and losses determines whether the forest is a net sink or source for a given period (USAG Alaska, 2010). More information is required to determine whether forests on JBER are acting as a carbon sink or source.

Other activities and naturally-occurring events may contribute to the generation of criteria pollutants and/or GHGs. Fires have the potential to generate smoke containing CO₂, water vapor, CO, PM, hydrocarbons and other organics, NO_x and trace minerals (ADEC, 2001). Although wildfires are a concern at JBER-Richardson, they are rarely a significant problem (U.S. Army, 2008). The last fire at JBER-Richardson larger than 50 acres occurred in 2007 (U.S. Army, 2008). Prescribed burns are carried out about once a year at JBER-Richardson (Robinson, 2011). Temperature inversions may also contribute to the degradation of air quality by trapping CO close to the ground, sometimes resulting in conditions where Anchorage exceeds the NAAQS CO standard.

4.10.2.2 Environmental Consequences

No Action Alternative

There would continue to be less than significant short- and long-term air emissions impacts from training and installation operations. Permit conditions would continue to be monitored and met, but no changes to emission sources are anticipated, other than those mandated by maintenance, replacement, or elimination of sources as they age or are removed from service.

Cantonment Construction. Mobile and stationary source emissions would adversely affect air quality. Mobile source emissions would include fugitive dust and PM from use of heavy machinery and other construction vehicles. Stationary source emissions would be generated at existing and new facilities, if current planned projects are funded, within the cantonment area.

As to mobile source emissions, BMPs could be developed to mitigate against unavoidable impacts of using vehicles, e.g., no idling engines.

The construction of new buildings may require the use of small boilers and/or water heaters. Each new construction and renovation project would be evaluated for JBER air program requirements and new emission sources would be incorporated into the JBER annual emissions inventory. New construction already programmed for the 4/25 Airborne BCT (new barracks) is anticipated to fall under JBER-Richardson under SIC 70; however, a review of 2010 JBER emissions suggests additional emissions would not exceed the annual thresholds. A Minor Source Title I permit may be required for construction projects that propose to construct or modify a stationary source. Because JBER resides in an attainment area for all criteria pollutants, a conformity analysis would not be necessary for new construction. Continuation of baseline condition is not anticipated to cause JBER or surrounding areas to violate the NAAQS as current trends indicate that CO, for example, is decreasing in neighboring Anchorage.

Recent energy conservation measures and demolition of inefficient buildings on JBER may eventually result in a decrease of criteria pollutant emissions being generated at stationary sources. It is possible that new construction would not result in a measurable increase of emissions where operationally inefficient buildings are replaced with energy efficient buildings.

Generation of GHG emissions may occur; however, based on 5 percent impacts military activities have in Alaska, the contribution of JBER would be much lower and continuation of the status quo would not likely breach the CEQ threshold for effect under NEPA. In support, the recent GHG stationary source applicability analysis for JBER indicates that GHGs at JBER are within acceptable levels. However, since JBER GHG emissions are not fully inventoried, further analysis may be required to validate this assumption.

Range Maintenance. Maintenance activities (e.g., paving/grading) would result in the same or similar impacts to cantonment construction (i.e., mobile source emissions), although impacts would be less than for new construction. Prescribed burn and/or fuels management may occur in areas near ranges and training areas to prevent wildfire from preventing use of these areas for training. The potential to generate GHG emissions is the same as discussed under Cantonment Construction (No Action Alternative).

Live-Fire Training. Weapon emissions may occur at firing points and/or the impact area, although emissions would likely be low. Air impacts would be localized and represent both short-term impacts during the exercise and long-term impacts as long as training continues. Use of weapons carries the risk of starting wildfires. Wildfires are not frequent on JBER, but may create both short- and long-term adverse impacts to air quality by generating CO, PM₁₀ and PM_{2.5}, and Polycyclic Aromatic Hydrocarbons, among other combustion byproducts.

The potential to generate GHG emissions is the same as discussed under Cantonment Construction (No Action Alternative).

Maneuver Training. Vehicle emissions from on-road maneuvering, e.g., 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. Emissions from maneuvering would include PM, CO, and O₃. BMPs for mobile sources could mitigate vehicle emissions (see cantonment construction above). Although data is not readily available in regards to current vehicular emissions generated by the 4/25 Airborne BCT, the baseline conditions are the result of prior NEPA analyses that have determined no significant impacts from use of vehicles that are currently in use at JBER. The potential to generate GHG emissions is the same as discussed under Cantonment Construction (No Action Alternative).

In summary, less than significant impacts are anticipated from continued operations, although adverse impacts to air quality are anticipated from both mobile and stationary emission sources in addition to naturally occurring activities. It is not anticipated that continuation of the status quo would result in a violation of air quality standards at JBER or cause surrounding communities to violate such standards. Further analysis would be necessary to quantify these impacts.

Alternative 1: Force Reduction (up to 4,300 Soldiers and Army Civilians)

There would be an anticipated beneficial impact to regional air quality from reduced stationary and mobile emission sources. There would be less combustion and generation of CAPs and HAPs associated with military training.

Construction-related impacts and impacts of facilities demolition would be temporary and would include an increase in dust mobile source emissions from construction vehicles and limited demolition activity. Long-term effects from reduction of these units at JBER would include a decrease in stationary source emissions such as from boiler units and generators used in new facilities and by units using transportable generators during training operations. No additional private or military fleet vehicles would contribute to air pollutants (for example CO and O₃) in the vicinity of JBER's cantonment area. Since no training infrastructure construction would occur, no soil disturbance generating fugitive dust would occur. Additionally, no effects from the added use of generators or from construction vehicles would occur. Localized emissions from the live fire of small arms weapons would decrease. However, rifles and machine guns generally have very low emissions rates. Also, the risk of wildfires would decrease, eliminating the possibility of military-caused short-term adverse impacts to air quality.

A decrease in maneuver activities would occur resulting in a decrease of opacity or fugitive dust emissions, and vehicle emissions, including PM, CO, and O₃.

Cantonment Construction. The reduction in force has the potential to reduce air emissions to below baseline conditions in regards to both stationary and mobile sources over the long term. The reduction of approximately 4,300 Soldiers and civilians would result in a reduction in the JBER population of approximately 11 percent (excluding dependents). Despite this decrease, JBER would still generate emissions and have to maintain compliance with any Title 1 and Title V permits. This population reduction may result in a re-evaluation of the current JBER construction, demolition and consolidation plans to determine the path ahead for JBER. The potential to generate GHG emissions is the same as discussed under Cantonment Construction (No Action Alternative).

Range Maintenance. Same general considerations as the No Action; however, the reduction in force has the potential to reduce air emissions to below baseline conditions in regards to mobile sources used for maintenance activities.

The potential to generate GHG emissions is the same as discussed under Cantonment Construction (No Action Alternative).

Live-Fire and Maneuver Training. The force reduction has the potential to reduce air emissions from weapon use to below baseline conditions because of decreased training requirements and also reduce vehicle combustion as a result of less frequent maneuver training events. However, the risk of fire as a result of training would remain. The potential to generate GHG emissions is the same as discussed under Cantonment Construction (No Action Alternative).

In summary, reduced impacts are anticipated from decreased mobile and stationary source emissions of criteria pollutants and/or GHGs to below baseline conditions. Further analysis would be necessary to quantify these potential impacts.

Alternative 2: Installation gain of up to 1,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

There would be an anticipated less than significant impact on air quality in the airsheds surrounding JBER as a result of implementing Alternative 2. There would be an anticipated minor increase in air emissions from both mobile and stationary sources that would be generated to support additional Soldiers and their Families. Though JBER can expect increased emissions from military vehicles and generators used to support training events as well as an increase in fugitive dust, the increase of 1,000 Soldiers would not have significant impacts to regional air quality. JBER would not be anticipated to exceed the emissions limits of its Title V permit or to engage in activities causing any change in attainment status or exceedance of NAAQS, though specific analysis would be required to confirm this conclusion.

Cantonment Construction. Additional Soldiers and their Families at JBER would tend to increase the rate of maintenance activities due to increased use of facilities within the cantonment area. These additional Soldiers would represent a 3 percent increase in the military population at JBER. Although no new construction is proposed with this increase, it is not certain that JBER can currently accommodate this increase within existing facilities. This population increase may require a re-evaluation of the current JBER consolidation plan so to retain existing buildings presently slated for demolition, to avoid new construction. In either case, increased emissions may be generated by adding new facilities or increasing the use of existing yet operationally inefficient buildings. It is possible that emissions from stationary sources for O₃ and NO_x may breach the annual emissions threshold in the future and require permitting action.

The potential to generate GHG emissions is the same as discussed under Cantonment Construction (No Action Alternative).

Range Maintenance. Range maintenance is similar to that discussed under Cantonment Construction (mobile source emissions). As with cantonment construction, additional Soldiers at JBER would tend to increase the rate of maintenance activities on existing ranges and training areas due to increased use and wear and tear of roads; however, past range expansions that have occurred on JBER-Richardson have resulted in sufficient space to absorb an additional 1,000 infantry Soldiers.

Live-fire Training. The increased weapons emissions would likely occur as a result of increased throughput at the training areas and ranges; however, emissions from weapons are low. Based on the proposed increased, it is possible that emissions currently generated by the 4/25 Airborne BCT could increase by up to 29 percent; however, considering JBER as a whole, it is possible that emissions from weapons firing may increase by only 14.5 percent over current conditions. However, it should be noted that percent population increase does not necessarily equate to the percent increase of air emissions from weapons firing activities. Impacts to air quality from increased live-fire activities would be minor.

Maneuver Training. Increased vehicular emissions would occur as a result of increased maneuver training. The same considerations discussed under live-fire training (percent increase) pertain to this alternative as well. A 1,000 Soldier increase would not be projected to cause significant impacts to air quality based on a review of past NEPA documentation, such as the 2008 *Grow the Army EA*, which determined that an increase in 1,773 Soldiers would not significantly affect air quality.

Significant impacts are not anticipated, although adverse impacts to air quality would occur from increased use of facilities and ranges and training areas on JBER. Even if increased emissions may lead to new permitting requirements, it would still be unlikely that this increase would lead to a violation of NAAQS or cause surrounding communities to violate the NAAQS. Further analysis would be necessary to quantify these impacts.

4.10.3 Airspace

4.10.3.1 Affected Environment

The ROI for this VEC is airspace within JBER and the surrounding areas within the Municipality of Anchorage that may be affected by this Proposed Action.

There are competing requirements for airspace by both military and commercial or private and civilian air traffic surrounding JBER; however, as explained in the recent *F22 Plus Up EA*, there has been no conflict with civil aviation from joint use of the airspace for the past 60 years (JBER, 2011a). Anchorage International Airport is the nearest commercial airport and is located about 15 miles southwest of JBER, but other civilian airports in the area of JBER include Merrill Field, Birchwood General Aviation, and two floatplane bases (JBER, 2010a). JBER includes the JBER-Elmendorf Airfield and Bryant Army Airfield on JBER-Richardson (JBER, 2010a).

Class D controlled airspace has been established around the JBER-Elmendorf airfield, which abuts Class C controlled airspace around the Anchorage International Airport to the southwest and the restricted airspace (Restricted Area 2203 [R-2203]) over JBER-Richardson to the northeast (JBER, 2011a). Note that restricted airspace also exists at DTA (R-2202) and is used by units stationed at JBER-Richardson. Current efforts (apart from this PEA) are being pursued to acquire additional restricted areas in the DTA via the *Joint Pacific Alaska Range Complex EIS*. It is important to note that this Proposed Action does not drive the need for additional restricted areas at DTA as those efforts are being pursued under the *Joint Pacific Alaska Range Complex EIS* and are a result of training and mission requirements.

A restricted area is designated airspace that supports ground or flight activities that could be hazardous to non-participating aircraft (JBER, 2011a). R-2203 includes the southern tip of Eagle River Flats (ERF) impact area and some of JBER- Richardson's training areas. Training Areas 410, 411, 412, 413, 414, 415, 418, 419 are located underneath R-2203. R-2203 is closed to aircraft about 20 days per year for weapons training. About 30 percent of airspace closures in R-2203 can be attributed to the activities associated with the 4/25 Airborne BCT's training requirements. Operating hours of R-2203 is between 5:00 AM to 12:00 PM. Coordination between JBER and the FAA ensure that when the restricted area is active, no aircraft pass over the land that it overlies. For more information on airspace at and/or near JBER, see *F22 Plus-Up EA* (JBER, 2011a).

No formal designation of airspace exists for Bryant Army Airfield at this time; however, a request has been made to designate the airspace over Bryant Army Airfield as Class D. A letter of agreement is being prepared to identify roles and responsibilities between Bryant Army Airfield Air Traffic Control Tower and JBER-Elmendorf Airfield Air Traffic Control Tower.

Table 4.10-6 shows hours scheduled for restricted airspace versus used at JBER-Richardson and DTA in 2008, with recent JBER data in parentheses (2010-2011 data). Unused airspace time is able to be returned to the public and private use (USARAK, 2008).

1 **Table 4.10-6. Summary of Hours Used for Restricted Airspace**

Restricted Airspace	Hours Scheduled	Hours Actually Utilized	Unused Army Flight Hours	Total Unused Joint Flight Hours
Fort Wainwright				
R2205	2,926 (2795)	2,388 (1721)	438	6,372
Fort Richardson				
R2203 A	4,997 (4,921)	184 (113)	4,813	8,576 (4,808)
R2203 B	5,016 (5,092)	343(827)	4,673	8,417 (4,265)
R2203 C	5,035 (4,978)	225 (187)	4,810	8,535 (4,791)
Donnelly Training Area				
R2202 A	3,591 (3797.5)	3,591 (3797.5)	0	5,169
R2202 B	3,344.5 (2960.5)	3,344.5 (2960.5)	0	5,415.5
R2202 C	2,708.25 (3,207)	2,708.25 (3,207)	0	6,051.75
R2202 D	2,435.75 (2,294)	2,435.75 (2294)	0	6,324.25

Source: USARAK, 2008; IRO, 2012.

2 In addition, two CFAs exist in the southern part of JBER near the SAC at JBER-Richardson.
3 These areas contain activities that, if not conducted in a controlled environment, could be
4 hazardous to nonparticipating aircraft. Training activities are suspended immediately when
5 spotter aircraft, radar, or ground lookout positions indicate an aircraft might be approaching the
6 area. CFAs would not affect airspace use as the activities within the small arms ranges at
7 JBER-Richardson would stop once aircraft is spotted approaching the CFA.

8 **4.10.3.2 Environmental Consequences**

9 **No Action Alternative**

10 The No Action Alternative would not produce any new conflicts with overlying restricted
11 airspace. Military airspace use supporting JBER would have minor impacts on airspace
12 resources. Under the No Action Alternative, the current uses of the affected environment would
13 continue.

14 **Cantonment Construction.** No impacts on the availability of airspace, use of airspace, or
15 ability to activate restricted areas. Although on-going construction, maintenance, renovation,
16 demolitions and/or consolidation plans may involve buildings on or near the airfields, this would
17 not implicate airspace use (e.g., require modifications to controlled or SUA). These activities
18 could continue despite the use of airspace.

19 **Range Maintenance.** No impacts on the availability of airspace, use of airspace, or ability to
20 activate restricted areas. Continued maintenance activities at existing ranges and training areas
21 are not anticipated to affect airspace utilization. Maintenance activities would proceed despite
22 the use of airspace.

23 **Live-Fire Training.** No impacts on the availability of airspace, use of airspace, or ability to
24 activate restricted areas would occur. Current air traffic operations and airspace restrictions
25 would remain as they currently exist (no increase). The 4/25 Airborne BCT is responsible for
26 about 30 percent of the 20 days annual closures of restricted airspace R-2203. Range
27 management of ranges/training areas would continue to ensure proper notification is provided to
28 activate the use of R-2203 at JBER-Richardson and R-2202 at DTA.

Maneuver Training. Impacts would be the same as live-fire training (training at current levels/continued management). Activation of R-2203 is possible if maneuver training includes indirect live fire at ERF Impact Area. This may be the case with collective training/crew gunnery.

Significant impacts are not anticipated to airspace as a result of ground-base weapons training or construction and maintenance operations because continued management of ranges/training areas would ensure shared-use and no modifications to controlled or SUA are required.

Alternative 1: Force Reduction (up to 4,300 Soldiers and Army Civilians)

Impacts as a result of the implementation of Alternative 1 would be beneficial. The use of airspace would not change significantly with the loss of ground units as a result of this alternative. The military would continue to require airspace to support training. The implementation of Alternative 1 would result in a slight and marginally lower utilization rate of existing military. No range expansion projects would occur as a result of this alternative. Thus, no modifications to controlled or SUA are anticipated for additional restricted airspace to support surface danger zones over new ranges. Reduction in training would likely result in less utilization of SUA by the Army. Thus, adverse impacts associated with closures of certain SUA would be reduced. This could be a beneficial impact to members of the general aviation community. Maneuver training would occur at reduced levels, potentially resulting in less closures of SUA over military lands. Loss of the 4/25 Airborne BCT would be anticipated to result in a reduction of airspace closures by 30 percent, which is the current percentage of closures attributed to use of R-2203 by the 4/25 Airborne BCT. It is possible that airspace closure days for R-2203 could be lower than baseline conditions, or remain the same if increased use occurs by other JBER tenants/components or the public.

Reduced impacts in regards to competition for airspace use are anticipated from a decreased need of the 4/25 Airborne BCT to train under R-2203; however, the number of closure days for R-2203 could remain near baseline conditions if other users increase use of R-2203. Further analysis would be required to quantify the significance of these impacts.

Alternative 2: Installation gain of up to 1,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignment

There would be an anticipated minor impact to airspace as a result of the implementation of Alternative 2. The increased use of airspace would likely remain unchanged or could change with a negligible increase. Additional airspace would not be required, however, and scheduling, activation, and utilization of existing military airspace (SUA) would proceed as it currently does without change. Maneuver training of these ground-based units would have no effect to airspace at JBER. Additional airspace is not required to accommodate the types of ground-based maneuvers associated with the proposed growth.

Live-fire Training. Increased training affecting R-2203 at JBER-Richardson and R-2202 at DTA would not require new airspace designations or a modification of existing airspace under this Proposed Action, although it would require active management of range. Increased airspace closure days would not occur because range managers would maximize use of existing training areas and ranges to avoid any increased closures of airspace. For example, increased use of the ERF Impact Area by the additional infantry battalion is estimated at 30 percent, but the number of closures for R2203 is not anticipated to increase. Past data indicates that often scheduled airspace is not fully utilized and returned to the public and private use.

However, even if increased activation of restricted areas was necessary, the amount of unused flight hours suggests that increased activation would not adversely affect airspace availability or

use. Increased maneuver training would have no effect to airspace at JBER-Richardson for the same reasons explained in Live-Fire Training as a result of this alternative (active management of ranges).

Significant impacts are not anticipated to affect the availability, use, designation, and/or management of airspace on JBER or DTA. No impact is anticipated from increased throughput on ranges and training areas so long as cooperation between competing users continues to facilitate joint use of airspace.

4.10.4 Cultural Resources

4.10.4.1 Affected Environment

The ROI for this VEC is areas within JBER and adjacent areas holding the potential to have cultural resources, which may be affected by this Proposed Action.

Several cultural resource studies, archeological surveys, and consultations with Native Alaskans have resulted in discoveries of prehistoric resources, historic properties, and/or sites with traditional, religious or cultural significance at JBER-Richardson. However, certain areas within JBER-Richardson were excluded from past archaeological inventories in the former FRA ICRMP because of mission considerations (including hazards), low site potential, or low potential for mission impact. Therefore, the following areas are not included in these past studies and surveys for JBER-Richardson:

- The ERF Impact Area;
- The Alpine Tundra zone;
- Wetlands, including freshwater and saltwater marshes, bogs, and lakes that are often covered by standing water. This does not include riparian areas along drainages; and
- Cantonment developed area; however, some isolated portions of the cantonment area near Ship Creek and Camp Carroll are comparatively undisturbed.

However, five areas within JBER-Richardson have a high potential to contain archaeological resources through the use of predictive modeling (U.S. Army, 2008). The five areas are the mouth of Eagle River; the shoreline of Knik Arm; upstream portions of Ship Creek; the Fossil Creek drainage; and the Elmendorf Moraine (U.S. Army, 2008). The Elmendorf moraine is generally located north of the cantonment areas and south of the ERF Impact Area (USACE, 2000).

A recent cultural resources desk survey and probability analysis was conducted for JBER to consolidate and analyze existing information based on past studies completed for the former Elmendorf Air Force Base and former FRA. Of the known cultural resource sites evaluated, the majority of known sites on JBER are military (World War II and Cold War) and are located within and/or near the cantonment areas within JBER (JBER, 2011b). Other sites include Alaska Native (prehistoric and historic), homestead-era, and unknown sites, which are located further out from the cantonment area (JBER, 2011b). Areas with low probability for encountering cultural resources are those areas that have been significantly disturbed or exhibit natural features that are typically restrictive to human activity (e.g., slope of land more than 40 percent) such as cantonment areas, along roadways, and within wetlands and waterways (JBER, 2011b). Areas with a medium probability for encountering cultural resources are those areas containing geological features that often attracted human activity, but that have likely experienced modern disturbance, such as the areas north of the cantonment areas, but south of the ERF Impact Area and along the northeastern portion of the installation boundary (JBER, 2011b). Areas with a high probability of encountering cultural resources include geologic features in close proximity to resources that do not appear to have been disturbed and also

include areas of unknown probability, such as areas along Eagle River, near the western edge of JBER, north of ERF Impact Area, and in the area between ERF Impact Area and the JBER-Elmendorf cantonment area along the western border of the installation (JBER, 2011b).

Ongoing and new construction (already planned but not funded) at JBER is located within or in close proximity to the cantonment areas, which correlates to areas of low probability to encounter cultural resources. The ranges and/or training areas used by the 4/25 Airborne BCT that have the potential for medium to high probability of encountering cultural resources are located in the northern part of the installation (PACAF, 2012). Approximately 30 percent of JBER land has been surveyed for archaeological resources (Scudder, 2012).

Despite the findings of past studies and surveys, coordination with the JBER CRM should be conducted prior to any work as the boundaries between low-medium-high probability areas is not clearly defined. For example, the areas near the cantonment area are low probability areas, but the Elmendorf Moraine is located just north of the cantonment area and has been previously stated to be in an area with a high potential to contain archeological resources.

In addition, all major projects on historic or historic-eligible buildings require the approval of the SHPO (Scudder, 2011). SHPO approval is also required for demolitions of any permanent building, even non-historic (Scudder, 2011). As a result of coordination or consultation, cultural resource surveys and/or archeological surveys may be required for projects where more information is needed and/or as a mitigation measure.

There is one historic district on JBER that is listed on the NRHP, which is the Nike Site Summit Historic District. Nike Site Summit is located on the eastern edge of JBER-Richardson and shown in Figure 4.10-2. In addition, there are three historic-eligible districts on JBER-Elmendorf – Alaska Air Depot, General's Quarters, and Flight Line. Although not managed under the NHPA, historic-eligible buildings are still treated as if they were listed on the NRHP by U.S. Air Force regulation (Scudder, 2012). The location of these districts is shown on Figure 4.10-3.

JBER is currently in the process of evaluating the buildings within the cantonment area to determine the potential eligibility of a Cold War historic district based on the findings of a Cold War Historic Context report (USARAK, 2003).

4.10.4.2 Environmental Consequences

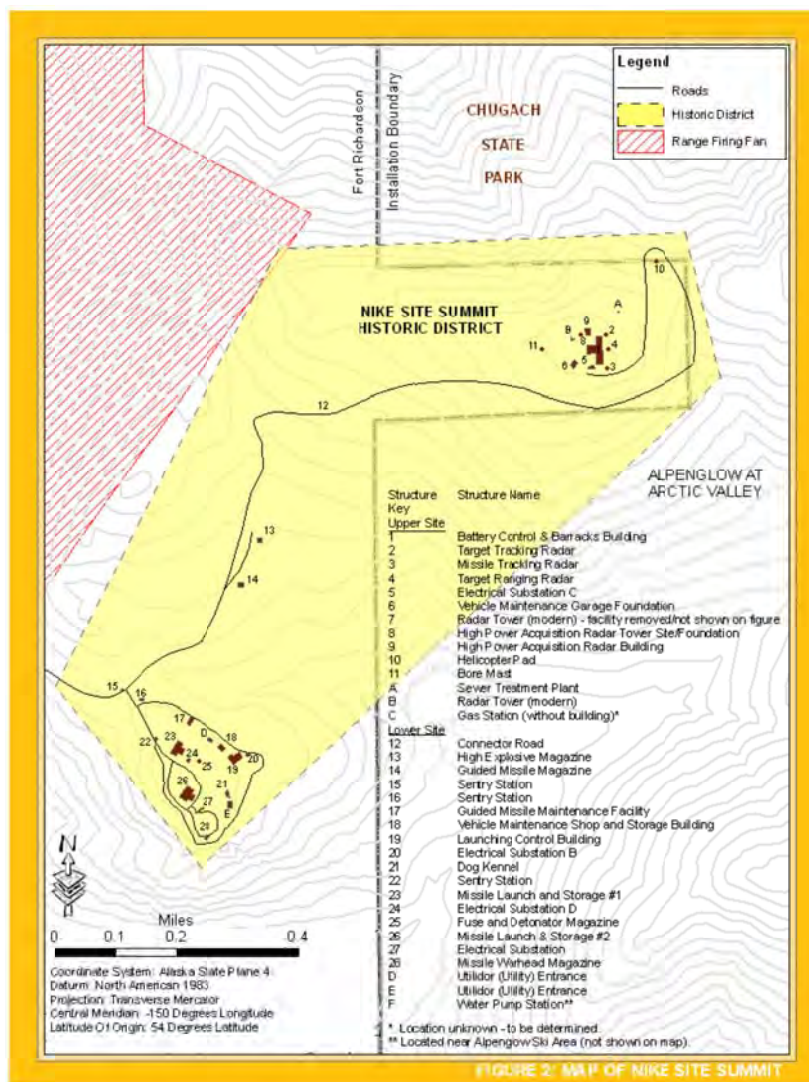
No Action Alternative

Impacts to cultural resources under the No Action Alternative are significant but mitigable. Activities with the potential to affect cultural resources are routinely monitored and regulated in accordance with the JBER ICRMP through the cultural resource management program.

Cantonment Construction. Ongoing and new construction including renovations, maintenance, and demolitions would continue, but generally be limited to the cantonment area and/or previously disturbed areas of the base where the probability of encountering cultural resources is low. However, care should still be taken when doing work in the cantonment area due to the presence of historic/historic-eligible buildings. For example, doing construction within and/or adjacent to these buildings can cause direct damage to these resources from the operation of heavy equipment or during demolition of nearby facilities (e.g., indirect impacts from vibration). Despite consultation/coordination efforts, there still is the potential to affect historic property adversely during subsurface work. Such incidents could implicate other cultural resource protection laws such as the NAGPRA.

In all cases, the potential to affect cultural resources exists and could be significant but mitigable. Coordination with the JBER CRM would precede any work.

Range Maintenance. Maintenance (e.g., use of vehicles for grading and regrading) could unearth unknown cultural resources because some ranges and training areas that would be used by the 4/25 Airborne BCT are located in areas that have a medium to high probability of encountering cultural resources. Even though maintenance operations would be confined to previously disturbed areas (e.g., existing roads), the potential to affect unknown subsurface cultural resources still exists and could be significant if adversely affected.



Not to Scale.
Source: Final Finding of No Significant Impact and Environmental Assessment,
Management of Nike Site Summit, Fort Richardson, Alaska (U.S. Army Garrison, Alaska February 2008).

Figure 4.10-2. Nike Site Summit Historic District



Not to Scale.
Source: PACAF 2011.

**Figure 4.10-3. Historic Eligible Districts
on Joint Base Elmendorf-Richardson - Elmendorf**

A large portion of the northern part of JBER-Richardson has been surveyed; care should be taken when working in the southern part of JBER-Richardson and near the Elmendorf Moraine, which is north of the cantonment area, but south of the ERF Impact Area.

Live-Fire Training. All the areas used for live-fire training have been surveyed for cultural resources. Continued use of existing areas for live fire is not likely to affect cultural resources as training would generally be limited to above-ground activities; however, the possibility remains to discover unknown cultural resources because ranges and training areas are located within an area with a medium to high potential to encounter cultural resources and not all portions of these areas have been previously disturbed.

Maneuver Training. Unknown cultural resources could be impacted through the use of vehicles for maneuver training; however, the potential for this remains low since maneuver training occurs on existing roads and trails, which are areas with a low probability of encountering cultural resources. Large unit maneuver exercises (company level and above) would continue to occur at DTA or other USAG Alaska training sites. The potential exists to inadvertently affect cultural resources.

Detonation of explosives would disturb subsurface resources. In using existing demolition areas, e.g., Demo II/III, and alternative areas (where noise impacts require alternative locations), care should be taken to avoid areas with medium or high potential for encountering cultural resources that have not been previously surveyed. Coordination with the JBER cultural resource program, prior to demolition training, would avoid adverse impacts to known cultural resources and minimize impacts to unknown cultural resources.

Significant but mitigable impacts could occur if known or unknown cultural resources are adversely affected during construction, range maintenance, and/or training activities. Despite the low-medium-high potential areas where activities may be occurring there still is a risk of inadvertently discovering unknown cultural resources. However, advance coordination with the JBER cultural resources program could minimize potential impacts.

Alternative 1: Force Reduction (up to 4,300 Soldiers and Army Civilians)

Significant but mitigable impacts are anticipated with this alternative at JBER. Despite the reduction in force, the potential to adversely affect cultural resources remains a risk as cantonment construction and demolition would continue. Building demolition, solid waste disposal, site recapitalization, and repurposing of existing facilities to assist the Army in efficiently managing its infrastructure and operating costs could potentially disturb or damage cultural resources, or could alter properties and districts. Demolition of facilities within JBER's current historic district may result in an adverse effect. NHPA Section 106 consultation would be required. Any demolition or repurposing activity occurring adjacent to the historic district and/or National Historic Landmark (NHL) may also require additional Section 106 consultation. JBER would avoid potential impacts to cultural resources during planning for potential cantonment area modification. If impacts cannot be avoided, measures to minimize or mitigate adverse impacts to cultural resources would be implemented through the NHPA Section 106 consultation process. All activity associated as a result of the implementation of this alternative would occur on previously disturbed ground. Thus, adverse impacts to other cultural resources are unlikely.

JBER would avoid potential impacts to cultural resources during facility planning. If impact could not be avoided, measures to minimize or mitigate adverse impacts to cultural resources would be implemented through the NHPA Section 106 consultation process. The frequency and intensity of maneuver training would decrease as a result of the implementation of Alternative 1. Under this alternative, all remaining maneuver training would be conducted within the footprint of existing ranges and trails at JBER. Any impacts resulting from maneuver training to undocumented cultural resources currently not identified; however, would be reduced given the lower amount of Army training occurring as a result of Alternative 1.

Alternative 2: Installation gain of up to 1,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

This level of growth on JBER is anticipated to have a significant but mitigable impact to cultural resources. Measures are in place to accommodate training to prevent adverse impacts to cultural resources. The types of training conducted by the additional Soldiers would not change, though some training areas on JBER might be used with more frequency or intensity compared with current baseline conditions. The JBER CRM would continue to follow the procedures outlined in the ICRMP in order to protect cultural resources.

JBER would likely construct additional facilities to support additional Soldiers as a result of the implementation of this alternative. The 4/24 Airborne BCT currently does not occupy historic or historic-eligible buildings on JBER, although construction activities to augment BCT facilities could require consultation with the SHPO.

JBER would avoid potential impacts to cultural resources during planning for potential cantonment construction. If impacts could not be avoided, measures to minimize or mitigate adverse impacts to cultural resources would be implemented through the NHPA Section 106 consultation process. All construction associated with Alternative 2 would occur on previously disturbed ground. Thus, adverse impacts to other cultural resources are unlikely.

Construction of additional training ranges, if required, would involve grading and re-grading site surfaces, grubbing vegetation, and using heavy equipment to excavate the subsurface during new range infrastructure construction. Expansion of some ranges may be required. Although range expansion projects would be located on previously disturbed ground, construction activities have the potential to result in damage to yet-to-be discovered cultural resources. JBER would avoid potential impacts to cultural resources during planning for potential range infrastructure construction. If impact could not be avoided, measures to minimize or mitigate adverse impacts to cultural resources would be implemented through the NHPA Section 106 consultation process.

Negligible impacts from live-fire training are anticipated. Range expansion and new targetry would be sited to avoid cultural resources at JBER following identification of these sites during cultural resource surveys. The frequency and intensity of maneuver training would slightly increase as a result of the implementation of Alternative 2. As a result of this alternative, all maneuver training would be conducted within the footprint of existing ranges and trails at JBER. However, undocumented cultural resources currently not identified could be impacted through maneuver training. Stationing scenarios involving Combat Support units, particularly engineer or combat engineer units, may involve some surface excavation, which could potentially uncover or damage undocumented cultural resources. If impact could not be avoided, measures to minimize or mitigate adverse impacts to cultural resources would be implemented through the NHPA Section 106 consultation process. Increased maneuver training would occur in low probability areas for encountering cultural resources, although the potential still exists to inadvertently affect cultural resources.

Demolition Training. As discussed under the No Action Alternative, potential adverse impacts could result from demolition training. Increased training may result in increased opportunities to encounter unknown cultural resources, especially if demolition exercises are conducted at alternative locations that have not been previously surveyed or disturbed (e.g., locating training area, for the purpose of avoiding noise impacts, into the Knik Arm).

In summary, potentially significant but mitigable impacts could occur with the implementation of Alternative 2. Increased construction and training activities would occur which would tend to result in increased opportunities to potentially affect cultural resources. However, advance coordination with the JBER cultural resources program could minimize potential impacts to less than significant levels.

4.10.5 Noise

4.10.5.1 Affected Environment

The ROI for this VEC is JBER and the surrounding communities and environment (e.g., Knik Arm) that may be affected by noise generated at JBER.

The main sources of noise at JBER-Richardson are traffic, live fire from small and large caliber weapons, and demolition exercises. Localized noise sources (e.g., construction activity) typically extend no more than 0.5 miles from the noise source where high intensity blast noises may extend a few miles beyond the noise source (JBER, 2010a).

The standard metric for noise is the dB, which is a measure of sound loudness derived from a comparison sound pressure with a reference pressure (e.g., sound levels in air are referenced to 20 micro-Pascals (μPa) (re 20 μPa) and sound levels in water are referenced to 1 μPa) (JBER, 2011a). The A-weighted decibel (dBA) simulates noise response by the human ear whereas the C-weighted frequency (dBC) better represents impulsive noise as would occur as a result of artillery/mortar/demolition training; dBC accounts for low frequency noise that are deemphasized under the A-weighting scale (JBER, 2011a). Un-weighted sound levels are

typically used when the responsiveness of the noise receptor to noise is variable or not well understood and is often used when assessing noise impacts on marine mammals (JBER, 2011a).

Average noise exposure over a 24-hour period is often presented as a DNL (JBER, 2010a). The average DNL is the primary descriptor for military noise, except small arms noise, which uses the peak sound level. A-weighted DNL (ADNL) is used to estimate noise around airfields and C-weighted DNL (CDNL) is used to estimate low frequency noise (e.g., mortars/artillery). Peak noise (PK15) represents the single loudest noise event during a noise-producing event as is used to assess impacts on marine mammals and small arms noise. Noise levels established by the Army are presented in Table 4.10-7.

Table 4.10-7. Noise Limits for Noise Zones

Noise Zone	Noise Limits (Decibels)	Noise Limits (Decibels)	Noise Limits (Decibels)
	Aviation ADNL	Impulsive CDNL	Small Arms – PK 15 (met)
LUPZ	60-65	57-62	N/A
I	<65	<62	<87
II	65-75	62-70	87-104
III	>75	>70	>104

Source: AR 200-1.

ADNL=A-weighted day-night levels; CDNL=C-weighted day-night levels; dB=decibel; LUPZ=land use planning zone; N/A=Not Applicable; PK 15(met)=Single event peak level exceeded by 15 percent of events; <=less than; >=greater than.

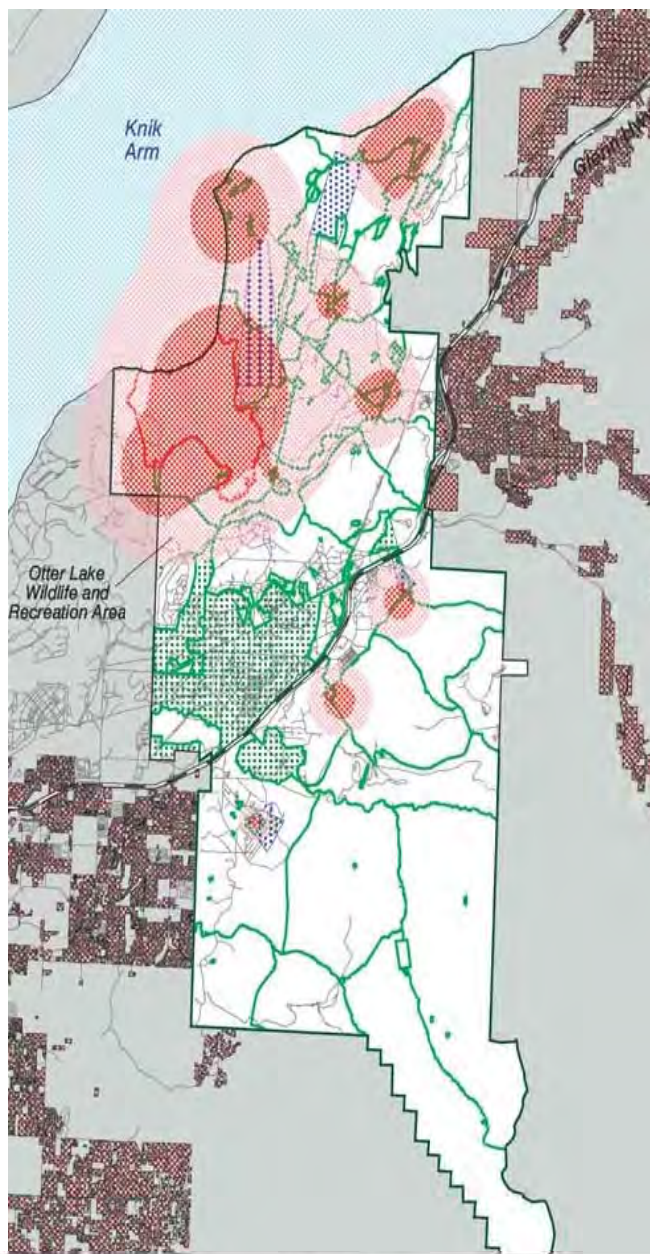
Noise sensitive land uses (e.g., residential and educational) are acceptable within areas identified as LUPZs or NZ I whereas noise-sensitive land uses should not occur in NZ III and in NZ II only if special noise reducing acoustics are implemented into the design of buildings in the area. NZ III is incompatible with most land uses (AR 200-1, Environmental Protection and Enhancement (2007); (JBER, 2010a).

Noise associated with construction equipment generally produce noise levels of 80 to 90 dBA at a distance of 50 feet from the source (U.S. Army, 2008a). The zone of relatively high construction noise may extend to distances of 400 to 800 feet from major equipment operations (U.S. Army, 2008a).

Noise contours associated with large and small caliber weapons and demolition operations have been previously estimated and are shown on Figure 4.10-4.

As illustrated, NZ III (dark pink area on Figure 4.10-4) is contained mostly within the installation boundary, and does not overlap with residential areas (both on and off post). NZ II (light pink area on Figure 4.10-4) affects the northern portion of the cantonment area and parts of the Otter Lake Wildlife and Recreation Area. However, both NZs II and III overlap a portion of the Knik Arm at Eagle Bay from use of ERF Impact Area and demolition operations.

Noise contours associated for F22 aircraft recently assigned to JBER are shown on Figure 4.10-5. The noise contours indicate that noise impacts equivalent to NZ II and III extend into portions of the Knik Arm, but do not extend into the southern communities, such as Mountain View. Noise impacts with the exposure level of 80 DNL (risk of hearing loss possible) are all located on JBER near the flight line and are unlikely to cause unacceptable noise levels (JBER, 2011a). Hearing conservation measures are in place at the flight line for workers in accordance with occupational noise exposure laws and regulations (JBER, 2011a).

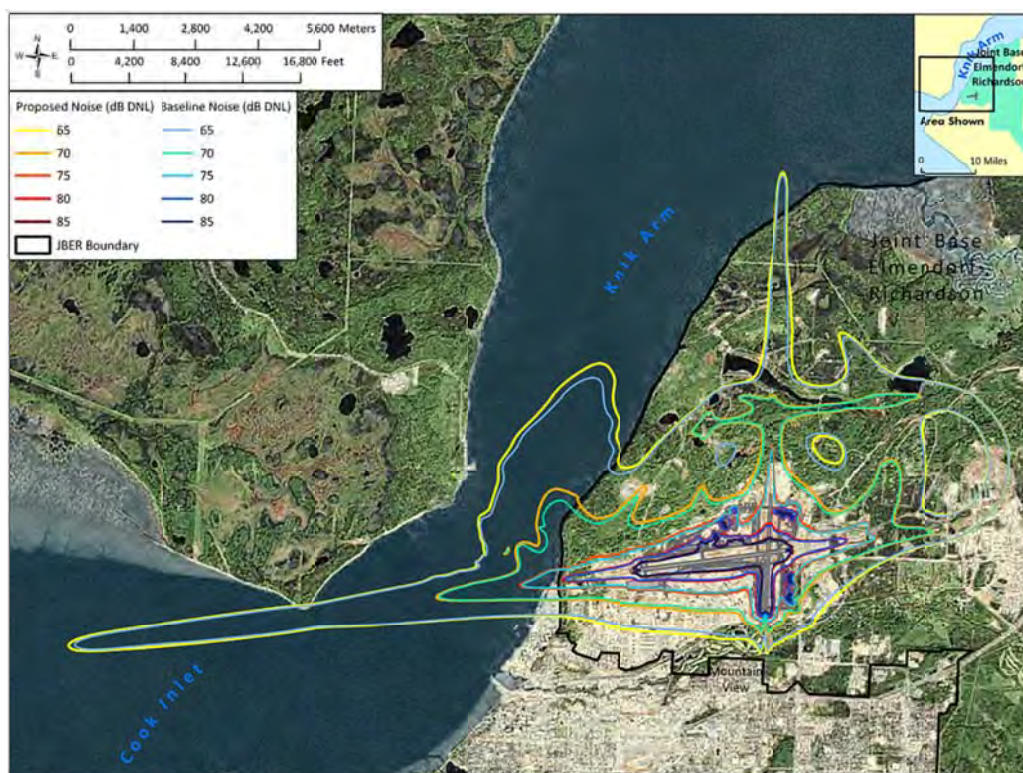


Note: Not to Scale.

Source: Transformation of U.S. Army Alaska Final Environmental Impact Statement (USARAK, 2004)

Figure 4.10-4. Noise Contours at JBER-Richardson

1



Source: JBER, 2011a.

Figure 4.10-5. Baseline Noise Contours at Joint Base Elmendorf-Richardson-Elmendorf Airfield

Noise impacts extending into the Knik Arm have the potential to affect the endangered Cook Inlet beluga whale (beluga). Noise has been identified as having the potential to disturb the species (NOAA, 2008).

Overflights of Knik Arm by F22 aircraft were estimated to generate water sound pressure levels up to 137 dB re 1 μ Pa (duration of a few seconds) and potentially result in behavioral harassment of the beluga. An assessment of the magnitude of the potential number of annual harassments yielded a *de minimis* number of events (0.04 behavioral harassment events annually). Based on this analysis, the NMFS determined that this increase is unlikely to adversely affect the beluga whale (JBER, 2011a).

Consultation under the ESA and MMPA is required for projects that may affect the beluga because the beluga is protected by both statutes. Under the MMPA, "take" may occur as a result of species harassment. To evaluate the potential for harassment by noise, National Oceanic and Atmospheric Administration Fisheries uses conservative thresholds of received sound pressure levels from broad band sounds that may cause behavioral disturbance, which is summarized in Table 4.10-8.

Table 4.10-8. National Oceanic and Atmospheric Administration Fisheries Current In-Water Acoustic Thresholds (excluding Tactical SONAR and Explosives)

Criterion	Criterion Definition	Threshold
Level A	PTS (injury) conservatively based on TTS	190 dB _{rms} for pinnipeds 180 dB _{rms} for cetaceans
Level B	Behavioral disruption for impulsive noise (e.g., impact pile driving)	160 dB _{rms}
Level B	Behavioral disruption for non-pulse noise (e.g., vibratory pile driving, drilling)	120 ¹ dB _{rms}

Source: NMFS, 2012.

All decibels referenced to 1 micro Pascal (re: 1μPa). Note all thresholds are based off root mean square (rms) levels.

¹The 120 db threshold may be slightly adjusted if background noise levels are at or above this level.

For impulsive sounds such as the firing and detonation of mortars and artillery, NMFS sets forth a 180 dB root mean square sound pressure level as the threshold for Level A take of whales and 160 dB root mean square sound pressure level as the Level B threshold for take or harassment of marine mammals in general (JBER, 2011a). Current efforts are underway to evaluate potential noise impacts to the beluga whale and other marine mammals from operations/training conducted on JBER.

The current use of the ERF Impact Area is restricted to conditions set forth in the 1991 *Environmental Assessment for the Resumption of Firing in the ERF Impact Area* under Alternative C, which avoids use of the ERF Impact Area during times when migratory birds and/or belugas are usually within the area of the ERF Impact Area—Eagle Bay of the Knik Arm and/or Eagle River. Firing is limited to the use of 60mm, 81mm, and 120mm mortar rounds and 105mm howitzer artillery rounds during winter conditions when ice covering the impact area is a certain thickness of 2 inches or more for 60mm and 80mm and 5 inches or more for 105mm.

Efforts are underway to expand the use of the ERF Impact Area to the summer in addition to the winter. Because belugas would be located in close proximity to the ERF Impact Area and/or within Eagle River in the summer, the Army has proposed habitat protection buffers in the Draft Resumption of Year-Round Firing Opportunities (RYFO) EIS to ensure that use of permissible weapons does not affect the beluga whale under the ESA/MMPA. The RYFO EIS is an ongoing effort and the Final EIS is anticipated to be published in 2012. Consultation under the ESA/MMPA is underway. More information on this effort may be found in the Draft RYFO EIS and in Appendix D therein, available at <http://www.jber.af.mil/environmental/epc/deis.asp> (last accessed November 5, 2012).

As previously stated, the 4/25 Airborne BCT accounts for 30 percent of closures of R-2203, which equates to 20 days a year that the 4/25 Airborne BCT may use the ERF Impact Area. Consultation would be required for Alternative 2 to ensure compliance with the ESA/MMPA as Alternative 2 would result in increased training at JBER.

4.10.5.2 Environmental Consequences

No Action Alternative

The implementation of the No Action Alternative would result in minor noise impacts from aviation, field artillery firing, and live-fire and maneuver training. Noise-generating activities would occur with no change to current frequencies or intensities of noise-generating activities.

Cantonment Construction. No impact on beluga and other marine mammals and/or off-post communities are anticipated from construction operations within the cantonment area. Since the source of noise from construction-related equipment would be within the cantonment area, the marine mammals within the Knik Arm and/or communities off post would not be within the 0.5 miles of the noise source to be affected. Construction workers near the flight line could be exposed to high noise levels (at or above 80 dBA), although hearing conservation measures could mitigate against this impact. Even if the noise from construction did extend off post, it is likely that such noise would be consistent with background noise that may be generated by the Alaska Railroad and the Glenn Highway, which forms the southern boundary of JBER-Elmendorf and bisects JBER-Richardson. No impacts are anticipated to surrounding communities or residential areas within the cantonment area at levels that present a risk of hearing loss from noise resulting from construction in the cantonment area.

Range Maintenance. No impact on beluga and other marine mammals and/or off-post communities are anticipated from range maintenance operations. Maintenance of existing ranges and training areas would continue with similar noise impacts as Cantonment Construction, although these noise impacts would likely occur in the undeveloped portions of the base where humans are not usually present. Wildlife, such as moose or birds, in these areas could be subject to high noise impacts near the noise source; however, since maintenance in these areas is reoccurring, the wildlife that remains in these areas may be adapted to the infrequent maintenance operations that occur on an as-needed basis. Ranges and training areas where maintenance operations occur are not known to contain marine mammals. No regular maintenance operations are carried out at the ERF Impact Area, where both belugas and harbor seals have been observed.

Live-Fire Training. Current efforts are underway to evaluate potential noise impacts to the beluga whale and other marine mammals to ensure compliance with the ESA/MMPA. Live-fire training would continue at the ERF Impact Area under current restrictions. Noise impacts to the surrounding community would continue to be within acceptable levels. However, this information should be reviewed upon completion of the current NEPA efforts assessing noise impacts on JBER.

Demolition Training. Current efforts are underway to evaluate potential noise impacts to the beluga whale and other marine mammals to ensure compliance with the ESA/MMPA. Noise impacts to the surrounding community would continue to be within acceptable levels. However, this information should be reviewed upon completion of the current NEPA efforts assessing noise impacts on JBER.

Significant impacts are not anticipated from continuing current operations; however, new information may be developed under other JBER NEPA efforts. Therefore, this section should be updated with the findings of other NEPA efforts as information becomes available.

Alternative 1: Force Reduction (up to 4,300 Soldiers and Army Civilians)

Impacts from noise are anticipated to be beneficial under Alternative 1. Existing ranges would still be utilized for firing the same types of weapons systems and conducting the same types of training. As a result of the implementation of Alternative 1; however, JBER would experience an anticipated reduction in the frequency of noise generating training events. The number of weapons qualifications and maneuver training events could be anticipated to decrease. Noise impacts would likely remain comparable to current conditions, though less frequent leading to a reduced risk of noise complaints.

Impacts from building demolition, site recapitalization, and the repurposing of existing facilities to accommodate different Army needs would temporarily increase noise. Both construction and

demolition activities would result in the use of similar equipment that has the potential to generate similar levels of noise.

The force reduction would decrease the need for live-fire training at existing ranges, which would likely result in decreased noise impacts to below baseline conditions by up to 30 percent (assuming that the 4/25 Airborne BCT activation of R-2203 is for use of the ERF Impact Area); however, the ERF Impact Area would continue to be used for mortar and artillery training by remaining Army Soldiers under current restrictions. The reduction in force would decrease the need for maneuver training at existing ranges, which would likely result in decreased noise impacts to below baseline conditions.

Current efforts are underway to evaluate potential noise impacts to the beluga whale and other marine mammals from operations/training conducted on JBER. Results of these efforts may affect operations/training under this Alternative.

Reduced impacts are anticipated from lesser potential to generate noise that could affect both humans and wildlife as noise would likely decrease to below baseline conditions. Further analysis would be required to quantify the significance of these impacts.

Alternative 2: Installation gain of up to 1,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

There would be an anticipated less than significant impact on the installation and surrounding communities by the restationing of up to 1,000 Combat/Combat Support Soldiers. There would be temporary minor impacts resulting from additional garrison construction. Noise associated with construction would result mainly result from the movement of vehicles and use of construction equipment. 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. Current programmed yet unfunded construction includes the need to demolish outdated structures. It is possible that JBER may not presently be able to accommodate the increase in Soldiers under the current demolition/consolidation plan and the requirement to accommodate this increase may result in retaining structures that are presently slated for demolition. As compared to the No Action, the nature of the construction work may change from demolition to retention and modification of outdated buildings; however, in either case the noise impacts would likely be similar as the noise to result from demolishing an old buildings would not differ substantially from the noise to construct a new building or modify an existing building. No impacts are anticipated to surrounding communities or residential areas within the cantonment area at levels that present a risk of hearing loss as a result of cantonment construction.

Live-Fire Training. Less than significant impacts are anticipated to occur; however, consultation would be required for Alternative 2 to ensure compliance with the ESA/MMPA as Alternative 2 would result in increased training at JBER. Since ranges and training areas would not be expanded or the number of live-fire closure days for R-2203 would not increase, the additional Soldiers would have to share existing training areas. The addition of 1,000 Soldiers could result in increased use of mortars and artillery at the ERF Impact Area. Potential noise impacts would generally be consistent with ongoing live-fire training. It is anticipated that increased training requirements would result in increased duration of training events and training days. Noise impacts would likely remain within acceptable limits as no new training areas and ranges would be developed and no new weapons would be used. However, this

information should be reviewed upon completion of the current NEPA efforts assessing noise impacts on JBER.

Demolition Training. Significant impacts are not anticipated from continuing current operations; however, new information may be developed under other JBER NEPA efforts. Therefore, this section should be updated with the findings of other NEPA efforts as information becomes available.

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, an estimated 10 to 20 percent increase. 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 SOPs for convoy maneuver. Frequency of noise impacts along on-post roadways and along military vehicle trails would increase. In addition, the noise produced from convoy travel on public roads (when traveling between JBER-Richardson and DTA) would be short term as these activities are intermittent and are usually mitigated through SOPs for convoy maneuver (U.S. Army, 2008a). 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 (U.S. Army, 2008a). No impacts are anticipated to surrounding communities or residential areas within the cantonment area at levels that present a risk of hearing loss as a result of maneuver training.

Less than significant impacts are anticipated for the implementation of Alternative 2. Although increased frequency of noise may occur as a result of Alternative 2, the intensity of noise would remain the same provided Range Managers ensure increased throughout is spread out over available training days to minimize and avoid an increase in the intensity of noise impacts. Further analysis would be required to quantify these impacts. In addition, consultation would be required for Alternative 2 under this Proposed Action to ensure compliance with the ESA/MMPA as Alternative 2 would result in increased training at JBER.

4.10.6 Soil Erosion

4.10.6.1 Affected Environment

The ROI for this VEC is JBER and the surrounding areas which may be affected by impacts to soil resources from increases or decreases in Army training.

JBER-Richardson lies in the Cook Inlet–Susitna Lowland and Kenai–Chugach Mountains physiographic provinces on an alluvial plain called the Anchorage Lowland (U.S. Army, 2008a). The Anchorage Lowland is characterized by rolling hills with up to 250 feet of topographic relief in the eastern portion along the Chugach Mountains with the terrain flattening to the west into an alluvial plain that is inundated with broad, shallow streams and wetlands. JBER-Richardson contains many landforms that are characteristic of glaciated terrain, including moraines, esker deposits, outwash plains, and estuarine sediments (U.S. Army, 2008a). 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 Eagle River, Ship, Campbell, and Chester creeks. JBER-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 most common surficial deposits are: end moraine, ground moraine, lateral moraine, glacioalluvial, alluvial, and alluvial fan, estuarine, and lacustrine (USACE, 2000). The soils have formed on glacial moraines, outwash, tidal flats

1 and peat bogs, which contributes to a wide variety of engineering properties and soil types (U.S.
2 Army, 2008a).

3 The Elmendorf Moraine is located just north of the cantonment area and continues along the
4 north edge of JBER-Elmendorf (USACE, 2000). Ponds and bogs are widespread in this area
5 (USACE, 2000). This is consistent with wetlands being present north of the cantonment areas
6 (PACAF, 2012). Sediments beneath the cantonment area are at least 229 to 295 feet thick
7 (USACE, 2000). Based on well logs, the thickness of sediments below the cantonment ranges
8 from 230 to 322 feet (U.S Army, 2008a).

9 The Bootlegger Cove Formation exists beneath JBER-Elmendorf and is exposed beneath the
10 Elmendorf Moraine in coastal bluffs of the Knik Arm (USACE, 2000). This formation acts as a
11 confining layer beneath Anchorage and JBER-Elmendorf, although its extent on JBER-
12 Richardson is not known (USACE, 2000). It is suspected that this formation transitions on
13 JBER-Richardson to an area of increased permeability and hydraulic conductivity (USACE,
14 2000). This is important in regards to groundwater quality, e.g., fate and transport of
15 contaminants in groundwater.

16 In general, JBER-Richardson soils are primarily shallow, immature, and tend to be nutrient-poor,
17 specifically of nitrogen, phosphorous, and potassium, which are the primary requirements for
18 plant growth (JBER, 2010a). The soils also have low water retention capacity, creating limiting
19 conditions for plant growth in dry periods (JBER, 2010a). In the wetland areas, the surface soil
20 may be covered with peat (partially decomposed vegetation) (JBER, 2010a).

21 There is no prime farmland, unique farmland, or farmland of statewide importance designated
22 for Alaska; however, Palmer, Wasilla, and Upper Susitna Soil and Water Conservation Districts
23 have adopted criteria for Farmlands of Local Importance for lands within their District
24 boundaries (USDA, 2012a).

25 JBER is located within an area that is classified as being outside of the permafrost regions of
26 Alaska and/or generally free from permafrost (USDA, 2012b). Permafrost is present on less
27 than 1 percent of JBER-Richardson, occurring primarily in patches of forested bogs along
28 Muldoon Road, as well as in the higher elevations of the areas within the Chugach Mountains.
29 The effects of thermokarst, e.g., the irregular subsidence of permafrost that causes mounds,
30 hummocks, water-filled depressions, flooded forests, and mudflows on steeper slopes, have
31 been less than 0.1 percent in the last 200 to 300 years in the JBER-Richardson area (USAG
32 Alaska, 2010)

33 Erosion and sedimentation are natural processes that may be accelerated by disturbance of
34 soils during construction, training, and wildfires on JBER. During construction, soil resources
35 management is achieved through prevention activities by implementing BMPs in agreement with
36 industry standard installation stormwater prevention techniques (see Section 4.10.9) (U.S.
37 Army, 2008a).

38 Increased sedimentation has the potential to adversely affect the beluga and its critical habitat
39 (Garner, 2011). For example, increased loading of soil in the water column of anadromous
40 streams could negatively affect salmon productivity (Garner, 2011). Four species of Pacific
41 salmon are identified in the Final Rule designating critical habitat for the beluga as a primary
42 constituent element (PCE) necessary for its continued survival (Garner, 2011). At this time,
43 sediment monitoring is not being conducted at JBER; however, the ITAM program on JBER-
44 Richardson is focused on conserving and managing soil resources, which would minimize and
45 avoid impacts to the beluga. Disturbed soils are restored by both erosion control and
46 streambank stabilization activities, which control installation sources of dust, runoff, silt, and
47 erosion debris to prevent damage to land, water, and air resources, equipment, and facilities

(including those on adjacent properties) (U.S. Army, 2008a). Soil monitoring is conducted through the Range and Training Land Assessment Program (RTLTA), which is the monitoring component of ITAM. Annual RTLTA reports detail the levels of current and past disturbance and land condition resulting from military training and recreational use on JBER-Richardson. RTLTA reports were not readily accessible at the time of this PEA; however, JBER has undertaken stream bank restoration projects in recent years. In addition, BMPs employed on ranges and training areas within at JBER-Richardson may be found in *Range Complex and Training Land Upgrades Final Finding of No Significant Impact and Programmatic Environmental Assessment* (USAG Alaska, 2010).

Wildfire plays an important role in Alaskan ecosystems; however, fire generated by military training activities may cause unacceptable damage to critical vegetative cover that aids in stabilizing soils from wind and water erosion (U.S. Army, 2008a). Vegetation normally protects soil from erosion by slowing surface runoff, intercepting raindrops before they reach the soil surface, and anchoring the soil with roots (U.S. Army, 2008a). Vegetation loss could indirectly cause large-scale removal and redeposition of soils, gully, or unstable slopes in areas of steep slopes and rapid runoff (U.S. Army, 2008a). In response to fires caused by military training, fuel maps were created indicating concentrations of fire-prone vegetation and areas recommended for hazard fuel reduction projects; these may be found in the Transformation EIS (USARAK, 2004).

Mineral resource extraction on JBER is limited to gravel. There are several gravel pits on JBER, which are located in close proximity to the cantonment area and JBER-Elmendorf Airfield (PACAF, 2012).

4.10.6.2 Environmental Consequences

No Action Alternative

Less than significant adverse impacts are anticipated under the No Action Alternative. JBER would continue its infantry and mechanized training, to include impacts to soils from removal of or damage to vegetation, digging activities, ground disturbance from vehicles, and ammunition or explosives used in training events. The installation's ITAM program conducts monitoring, rehabilitation, and maintenance and repair on areas of high use such as drop zones, artillery firing positions, observation points, and ranges.

Cantonment Construction. For the most part the cantonment area is already developed and/or the subsurface is previously disturbed by prior development, although soil resources could still be affected by construction, demolition, or renovation projects. The use of heavy equipment, for example, could disturb soil and result in localized fugitive dust, loss of vegetation (if it exists), potential risk of spills involving POLs, and compact soil in the construction area, making it difficult to support the future growth of natural vegetation while increasing the potential for soil erosion. There also exists the incidental effects of soil erosion and runoff on water quality as the stormwater management system on JBER-Richardson is not well developed (see Water Resources, Section 4.10.9), although strict enforcement of SWPPPs by JBER water program may negate this concern. Construction BMPs and stormwater management practices would mitigate against potential adverse effects. In the winter, impacts to soil resources would be minimized due to the protective cover that ice provides.

Natural erosion and sediment transport would continue to occur with construction activities being a contributing cause.

Range Maintenance. Impacts to soil could occur during maintenance activities. However, these activities would be focused on repairing wear and tear of existing ranges and training areas. Some of the ranges are located near wetlands and/or waterways, e.g., Ship Creek,

which could give rise to potential water quality concerns as a result of soil erosion. To avoid this issue, maintenance activities would avoid areas susceptible to soil erosion, e.g., adjacent to waterways, and stay on existing roads and trails. However, some soil erosion in these relatively undeveloped areas would occur by natural transport processes (e.g., precipitation and wind). In the winter, impacts to soil resources would be minimized due to the protective cover that ice provides. Natural erosion and sediment transport would continue to occur with maintenance activities being a contributing cause.

Live-Fire Training. Live-fire training would continue within the footprint of the existing ranges. However, weapons firing and demolition training can typically involve the disturbance of soils, denuding the soil surface of vegetation and increasing the erodibility of soils. Live-fire training may start wildfires, which would adversely affect soil resources, resulting in the potential inability of soils to sustain vegetation. Wildfire risk is higher for fires resulting from training as opposed to naturally occurring fires; however, the removal of fuels (e.g., dead vegetation) near these areas would minimize fires as a result of training. In the winter, impacts to soil resources would be minimized due to the protective cover that ice provides. Natural erosion and sediment transport would continue to occur with training being a contributing cause. Demolition training would disturb soil resources, although demolition operations are conducted in areas that are previously disturbed. However, if demolition training is moved to an alternative location due to the potential to impact the beluga from noise, new soil impacts may occur if the area is not previously disturbed; however, it is likely this area would be within an existing range and training area. Natural erosion and sediment transport would continue to occur with training being a contributing cause.

Maneuver Training. Maneuver training would remain at current levels and within the footprint of existing maneuver areas. Soils would continue to be disturbed on existing, unpaved roads and trails. Since off-road maneuver training would not occur at JBER, the potential to affect additional surface area and undisturbed vegetated areas is not anticipated. In the winter, impacts to soil resources would be minimized due to the protective cover that ice provides. Natural erosion and sediment transport would continue to occur with training being a contributing cause.

In summary, less than significant impacts are anticipated from the continuation of current operations although adverse effects to soils resources are anticipated. Continued implementation of resource management plans and programs (e.g., the INRMP and ITAM) would continue to ensure soil erosion-related impacts caused by maneuver training would be less than significant.

Alternative 1: Force Reduction (up to 4,300 Soldiers and Army Civilians)

Impacts from soil erosion are anticipated to be minor. Alternative 1 includes the reduction of no longer needed facilities that could result in short-term adverse impacts from demolition and temporary exposure of bare soils to rain, water and wind erosion. However, these impacts would be short term in duration. Exposed areas of soil after deconstruction would likely be reseeded with native species to reduce the impacts from fugitive dust. Consequently, minor soil erosion impacts from deconstruction activities at JBER are anticipated.

The number of required live-fire user days per year at JBER would drop below current 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. Consequently, impacts to soil erosion from a reduction in live-fire training would be negligible to minor impact as fewer opportunities for soil erosion would occur.

The intensity and frequency of maneuver training at JBER would also decrease below current levels. In addition, no new maneuver areas would be required and maneuver training would be conducted in the footprint of existing ranges and trails at JBER. Implementation of the INRMP and ITAM program work plans and associated management practices along with additional soil erosion mitigation measures would continue. Consequently, impacts to soil erosion from a reduction in live-fire training would be minor.

Alternative 2: Installation gain of up to 1,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

Less than significant impacts are anticipated to soil resources at JBER resulting from the implementation of Alternative 2. Alternative 2 would involve the demolition of some facilities and construction of new facilities within the existing cantonment area resulting in short- and long-term minor impacts. Short-term impacts 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. Fugitive dust may also occur; however, impacts from dust would likely be localized and not have any lasting adverse effects to nearby water bodies. 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 water bodies. 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).

Range construction and expansion projects, if necessary, 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. Short-term effects would occur from soil transport and loading into nearby water bodies. Fugitive dust may also occur; however, impacts from dust would likely be localized and not have any lasting adverse effects to nearby water bodies. 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. Long-term minor 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. The installation would continue to use existing construction BMPs to mitigate any potential effects.

Implementation of Alternative 2 would increase the frequency of live-fire activities on ranges, potentially causing a greater amount of soil disturbance. Weapons firing typically involves the disturbance of soils, denuding the soil surface of vegetation and increasing the erodibility of soils. JBER DPW staff monitor impacts from live-fire activities and would continue to institute the required mitigations and BMPs (such as berm revegetation and regrading) to minimize sediment migration off the firing ranges.

For Combat Support units, the use of ordnance 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 *USARAK Transformation EIS*.

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, gullyng, or unstable slopes in areas of steep slopes and rapid runoff. Although weapons training events would be periodic, long-term impacts are anticipated because soil disturbance typically requires time and effort to amend.

The addition of 1,000 Soldiers may increase the frequency of maneuvers by 10 to 20 percent. The increase in maneuver frequency is anticipated 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 gullyng, and indirectly to downstream sedimentation, particularly when the vehicles travel off-road.

This scenario, which involves travel on existing roads and trails, is anticipated to lead to very limited new soil erosion impacts. However, activities associated with any Combat Support 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.

Between JBER's main post and its training areas and at other maneuver areas in Alaska that can support Army unit maneuver training such as DTA, the installation has more than 1 million maneuver acres and is capable of handling brigade-level training; and more than capable of handling maneuvers associated with this alternative. At certain locations, the anticipated Maneuver Impact Mile requirement associated with Alternative 2 would slightly exceed the Maneuver Impact Miles summer capacity. Training requirements would be spread over a large number of like units resulting in a less than significant overall impact.

Training maneuvers in Alaska are often conducted more frequently in the winter months when the ground is frozen to reduce impacts from soil erosion and to water bodies. JBER 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 maneuvers 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.

During summer months, there is a great deal more open or standing water located on JBER. During the warmer seasons, the risk of sediment transport and loading to water bodies 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.

Increased use of existing ranges and training areas would increase the need for maintenance of these areas and result in increased soil disturbance by an increased use of construction equipment in these areas. Increased throughput may require increased management efforts to avoid a substantial increase in impacts to soils and minimize the risk of fires.

Increased live-fire activities could lead to an increased deposition of munitions constituents in soils. Although there could be increased deposition of munitions constituents in soil as a result of increased mortar and artillery use under this alternative, the information presented in the Draft RYFO EIS and its supporting studies suggest that munitions loading in soils is not occurring so as to present a concern for soil resources at JBER.

Less than significant impacts resulting from an increase in 1,000 Soldiers at JBER are anticipated. Additionally, significant impacts to soil resources are not anticipated for the same reasons as explained under the No Action Alternative.

4.10.7 Biological Resources (Vegetation, Wildlife, Threatened and Endangered Species)

4.10.7.1 Affected Environment

The ROI for this VEC is JBER and the surrounding communities/areas within the Municipality of Anchorage, e.g., Eagle River/Chugach State Park, which may be affected by biological impacts at JBER.

In accordance with the Sikes Act, wildlife and fish populations and their habitats are managed cooperatively by JBER, the Alaska Department of Fish and Game, and the USFWS, primarily through the INRMP process.

Wildlife and supporting habitat are abundant throughout JBER-Richardson and its surrounding areas, which include a variety of large mammals (including marine mammals); small mammals; amphibians; fish; and avian species including game birds, waterfowl, passerines, and raptors. For the most current complete list, see the Draft JBER 2012 INRMP. Army regulations prohibit the intentional targeting of wildlife, including marine mammals (e.g., beluga whales) that may be present in the Eagle River during live-fire training (USAG Alaska, 2010). Current management efforts at JBER are focused on the beluga, moose, large predators, waterfowl, and salmon. More information can be found in the 2010 JBER Interim INRMP (note: the 2012 JBER INRMP is in preparation). The JBER INRMP sets forth natural resources management programs and/or activities on JBER. The following information is focused on species that may be affected by the Proposed Action.

Endangered Species. Listings of candidate, threatened, and endangered species protected under the ESA that may be located at or near JBER are listed in Table 4.10-9.

Table 4.10-9. Threatened, Endangered, and Candidate Species Identified by U.S. Fish and Wildlife (2010) or National Oceanic Atmospheric Administration-National Marine Fisheries Service (2010) Suspected or Recorded in the Upper Cook Inlet Project Area

Common Name	Scientific Name	Endangered Species Status	Location Description
Beluga Whale (Cook Inlet Distinct Population Segment)	<i>Delphinapterus leucas</i>	Endangered	Occupies Cook Inlet waters and waters of North Gulf of Alaska. Found in Knik Arm waters to include lower Eagle River.
Steller Sea Lion ¹ (Western Alaska Distinct Population Segment)	<i>Eumetopias jubatus</i>	Endangered	Includes sea lions born on rookeries from Prince William Sound westward (JBER, 2010c). Observed rarely in Knik Arm waters adjacent to JBER.

Table 4.10-9. Threatened, Endangered, and Candidate Species Identified by U.S. Fish and Wildlife (2010) or National Oceanic Atmospheric Administration-National Marine Fisheries Service (2010) Suspected or Recorded in the Upper Cook Inlet Project Area (Continued)

Common Name	Scientific Name	Endangered Species Status	Location Description
Steller's Eider ¹	<i>Polysticta stelleri</i>	Threatened	Occurs in northern and western Alaska. Not reported for JBER but observed rarely in Anchorage area.
Yellow-billed Loon ¹	<i>Gavia adamsii</i>	Candidate	Nest near freshwater lakes in the arctic tundra and winter along the Alaskan coast to the Puget Sound. One observation reported for Green Lake, JBER.
Kittlitz's Murrelet ¹	<i>Brachyramphus brevirostris</i>	Candidate	Nest near glaciers in rocky slopes near Gulf of Alaska waters, winters off shore in Gulf of Alaska. Not reported for Upper Cook Inlet.
Chinook salmon ¹ : Lower Columbia River (spring) Puget Sound Snake River (spring/summer) Snake River (fall) Upper Columbia River (spring) Upper Willamette River	<i>Onchorhynchus tshawytscha</i>	Threatened Threatened Threatened Threatened Endangered Threatened	These stocks range throughout the North Pacific. However, the specific occurrence of listed salmonids within close proximity to JBER is highly unlikely.
Steelhead ¹ : Lower Columbia River Middle Columbia River Snake River Basin Upper Columbia River Upper Willamette River	<i>Onchorhynchus mykiss</i>	Threatened Threatened Threatened Endangered Threatened	These stocks range throughout the North Pacific. However, the specific occurrence of listed salmonids within close proximity to JBER is highly unlikely.

Source: JBER, 2010c (internal citations omitted).

¹May potentially move on or within close proximity to JBER but occur so infrequently that projects are anticipated to have negligible effect.

Marine Mammals. All marine mammals are protected by the MMPA and the following may occur near JBER: the beluga, Stellar sea lions, minke whale, gray whale, killer whale, harbor porpoise, and harbor seal (NMFS, 2010). Species protected under the MMPA that may be located at or near JBER are listed in Table 4.10-10.

Table 4.10-10. Upper Cook Inlet Species Protected by the Marine Mammal Protection Act

Common Name	Scientific Name	Location Description
Cook Inlet Beluga Whale	<i>Delphinapterus leucas</i>	Observed in Eagle Bay and Eagle River of the JBER Eagle River Flats Impact Area.
Killer Whale	<i>Orcinus orca</i>	Observations by NMFS from 1975 to 2002 indicate only occasions that killer whales were in Knik Arm; however, they are observed a few times a year in the rest of Cook Inlet (JBER, 2010c).
Harbor Porpoise	<i>Phocoena phocoena</i>	Considered infrequent occurrence in Knik Arm.
Harbor Seal	<i>Phoca vitulina</i>	Considered infrequent occurrence in Knik Arm, yet observations occur regularly at mouth of Eagle River.

Source: Griese, 2012.

Some marine mammals are also listed as threatened and endangered and are afforded protection under the ESA as well. The beluga is protected under the ESA and MMPA. The beluga was listed as an endangered species on October 2008 and its critical habitat was designated in April 2011. The Final Rule designating critical habitat excludes the ERF Impact Area and military lands of JBER between Mean Higher High Water and Mean High Water. As explained in the Final Rule designating its critical habitat, there are five PCE of beluga critical habitat of which one or more of the PCEs are found in its critical habitat. The PCEs are as follows:

- Intertidal and subtidal waters of Cook Inlet with depths less than 30 feet (mean lower low water) and within 5 miles of high and medium flow anadromous fish streams;
- Primary prey species consisting of four species of Pacific salmon (Chinook, sockeye, chum, and coho), Pacific eulachon, Pacific cod, walleye pollock, saffron cod, and yellowfin sole;
- Waters free of toxins or other agents of a type and amount harmful to Cook Inlet beluga whales;
- Unrestricted passage within or between the critical habitat areas; and
- Waters with in-water noise below levels resulting in the abandonment of critical habitat areas by Cook Inlet beluga whales.

These PCEs are features that are deemed essential for the conservation of the beluga.

Belugas have been sighted within the ERF Impact Area as far as 1.25 miles up the Eagle River and in Cook Inlet adjacent to JBER. Harbor seals and killer whales are sighted occasionally (USAG Alaska, 2010).

Fisheries. The main water bodies that contain fish occurring on the northern part of JBER-Richardson, include Ship Creek, Eagle River, Otter Creek, Fire Creek, ponds on ERF Impact Area, Clunie, Walden, Gwen and Otter Lakes, and adjacent Eagle Bay of Cook Inlet. Water bodies that contain fish on the southern part of JBER-Richardson are Ship Creek, North Fork Campbell Creek, Chester Creek, and perhaps Snowhawk Creek. Ship Creek is located downstream of Snowhawk Creek.

Any waters listed on the State of Alaska Anadromous Waters Catalog are presumed to be essential fish habitat for which consultation may be required under the Magnuson-Stevens Act.

Consultation is required for federal projects that have the potential to adversely affect essential fish habitat. Eagle River, Sixmile Creek and Lake, Ship Creek, the North and South Fork of Campbell Creek, and Chester Creek are depicted on the Catalog. Eagle River, Sixmile Creek/Lakes, Campbell Creek, and Chester Creek are known to contain spawning populations of salmon. There is no information on fish populations in Snowhawk Creek.

Ten fish species occur at JBER-Elmendorf including five Pacific salmon species (JBER, 2011a). Pacific salmon stocks are listed under the ESA and occur within Alaskan waters, but occurrence in the water near or within JBER is unlikely (NMFS, 2010).

Rainbow trout (*Oncorhynchus mykiss*) and Chinook salmon (*Onchorhynchus tshawytscha*) are stocked in Clunie Lake, Green Lake, and Hillberg Lake while arctic char (*Salvelinus alpinus*) is only stocked in Clunie Lake. Otter Lake is not planned for stocking in 2012 due to the existence of northern pike (an invasive species). All other lakes on JBER that may be stocked in the future would be limited to rainbow trout. Wild populations of the coho salmon (*Oncorhynchus kisutch*), chum salmon, sockeye salmon (*Oncorhynchus nerka*), pink salmon (*Oncorhynchus gorbuscha*), Dolly Varden (*Salvelinus malma*), and the three-spine stickleback (*Gasterosteus aculeatus*) may occur in Eagle River, Sixmile Creek and Lakes, and EOD Creek between Sixmile Creek/Lakes and Eagle River. The illegally introduced invasive northern pike (*Esox lucius*) occurs in Otter Lake. Current efforts are underway to eradicate pike from Otter Lake.

Terrestrial Mammals. Large mammals on JBER-Richardson include black bear, grizzly bear, moose, Dall sheep, and wolves (USAG Alaska, 2010). Small game and furbearers include coyote, lynx, red squirrel, snowshoe hare, hoary marmot, pine marten, beaver, river otter, wolverine, red fox, porcupine, mink, beaver, muskrat, and ermine or short-tailed weasel (USAG Alaska, 2010). All land mammal species are managed under regulations promulgated by the State of Alaska (USAG Alaska, 2010).

Over the past 20 years, the moose population at JBER has remained relatively stable with a projected population of 400 to 650 animals (JBER, 2010a). Although not formally identified on JBER, wildlife corridors would generally be located between the separation of ecotypes and along waterways; results of wildlife corridor studies on JBER may be available in the near future to confirm actual corridors (Troyer, 2012). Wetland (lowland and riverine) and alpine areas are the main sensitive ecotypes on JBER (Troyer, 2012). JBER ecotypes are presented on Figure 4.10-6.

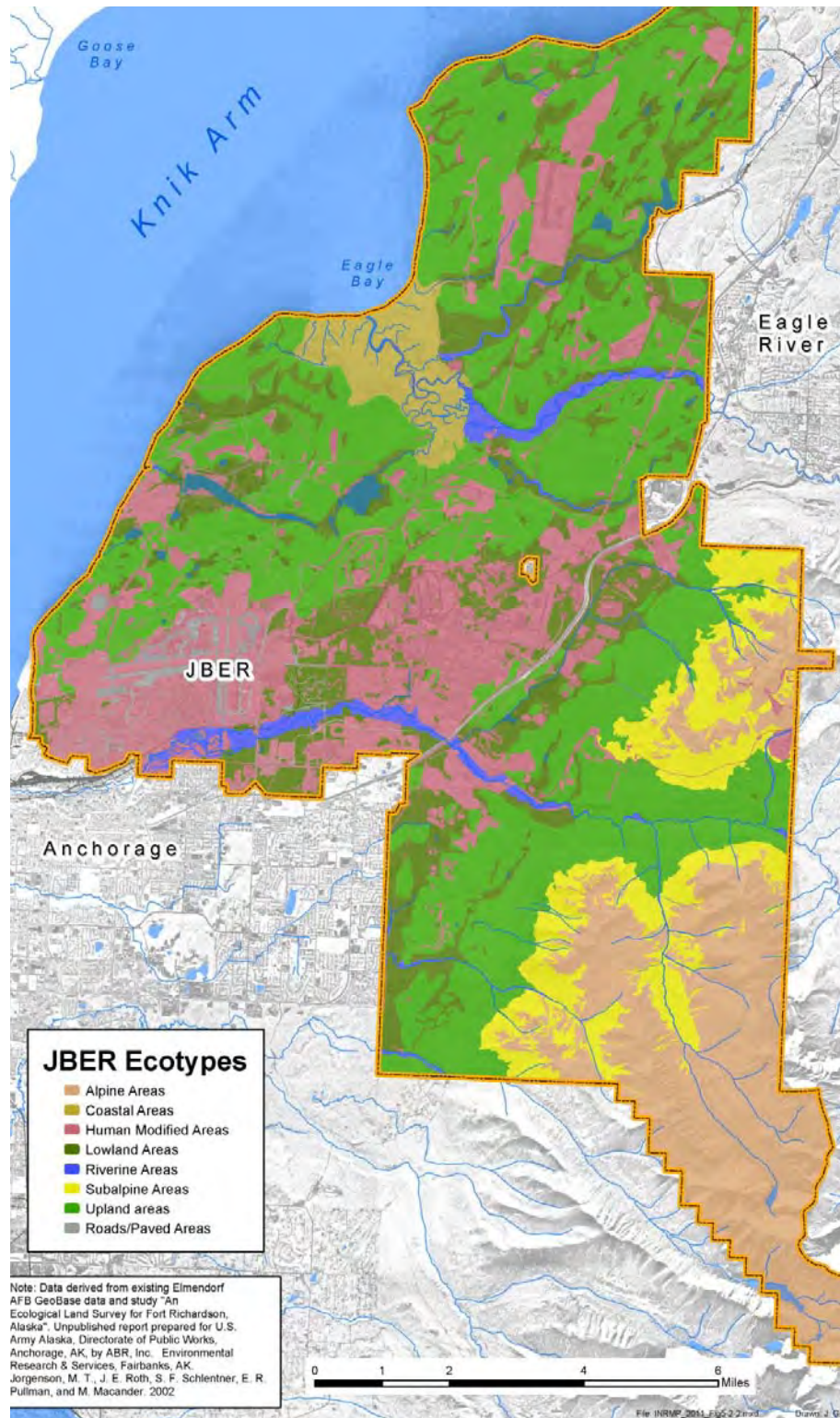
Waterfowl and Eagles. The MBTA and the Bald and Golden Eagle Protection Act offer protection for migratory birds and eagles that exist within JBER.

An estimated 1 million waterfowl pass over or near JBER-Richardson during spring migration and 1.2 million during fall (USARAK, 2004). Waterfowl mainly occur on the northern portion of JBER near the ERF Impact Area, Otter and Sixmile Lakes. The ERF wetland, located within the ERF Impact Area, serves as a major staging area for migrating waterfowl. JBER-Richardson also provides habitat for two species of eagle, the bald eagle (*Haliaeetus leucocephalus*) and the golden eagle (*Aquila chrysaetos*). Eagle populations are not well documented for the southern part of JBER-Richardson, but known nest locations exist within the northern portion. Bald eagle nests were surveyed on JBER in 2011 and fourteen active nests were identified; two were south of the Glenn Highway (Griese, 2012). Golden eagle nests, typically found in the alpine on cliff faces, have not been documented on JBER (Griese, 2012).

As part of the INRMP, JBER Conservation Staff monitor the location of eagle nests and occupancy throughout the year to ensure eagle nests are not adversely affected during construction and training activities. In addition, when trees are removed, JBER follows the USFWS construction guidance on not removing trees during the nesting season.

Priority Species for JBER. The following information is extracted from the 2012 JBER INRMP that is under preparation and anticipated to be released early this year. Priority species (Table 4.10-11) for JBER include:

- **Keystone or Key Species (K)** play a disproportionately large role in ecosystem structure. Their significant ecosystem role may be because they are important to the feeding structure, provide a critical process in the system, provide necessary interactions, or generally have a significant impact on the ecosystem.
- **Managed Species (M)** unlike key species, are chosen based on human values instead of ecosystem values. These species may or may not be key or indicator species. They likely have socioeconomic importance as a locally harvested species.
- **Species with Legal Constraints (L)** have been listed as endangered or threatened by the USFWS, National Oceanic and Atmospheric Administration and/or Alaska Department of Fish and Game. Additionally, this group could contain species that are of concern from an installation, regional, or state perspective (USFWS, BLM, U.S. Forest Service, and Audubon) as summarized in the 2011 Alaska Natural Heritage Program species tracking lists. [Online: http://aknhp.uaa.alaska.edu/wp-content/uploads/2010/11/All_Tracking_Lists_Combined_7Nov2011.pdf].
- **Indicator Species (I)** are species that managers choose to track ecosystem health or status or have specific management programs. These species may or may not be key or managed species, and may include invasive species.



Source: JBER, 2010c.

Figure 4.10-6. Joint Base Elmendorf-Richardson Ecotypes

1

Table 4.10-11. Priority Species at Joint Base Elmendorf-Richardson

Species	Ecotypes represented	Species Category
Mammals		
Little Brown Bat	Human modified, Upland, Lowland	M
Gray Wolf	All but Human modified and Pavement	M, K
Lynx	Upland, Lowland, Subalpine	K
Wolverine	Alpine, Subalpine, Upland	M
Harbor Seal	Coastal	L
Black Bear	Upland, Lowland, Subalpine	M
Brown Bear	All but Human Modified and Pavement	M,K
Beluga Whale	Coastal	L, I
Moose	All but Pavement	M
Dall's Sheep	Alpine	M
Beaver	Lowland, Riverine	K,M
Microtines	All but Pavement	I
Collared Pika	Alpine	I
Snowshoe Hare	Upland, Lowland, Subalpine, Riverine	K, M, I
Birds		
Canada Goose	Lowland	M
³ Trumpeter Swan	Lowland	L
All grouse species	Upland, Subalpine, Alpine	M
Loons (Common and Pacific)	Lowland	I
Bald Eagle	Upland, Lowland, Riverine	L, M
Northern Goshawk	Upland	I
³ Golden Eagle	Alpine	L
Sandhill Crane	Coastal, Lowland	M
¹ Solitary Sandpiper	Upland, Lowland	L
¹ Lesser Yellowlegs	Lowland	L
Boreal Owl	Upland	I
¹ Olive-sided Flycatcher	Upland, Lowland	L
American Dipper	Riverine	I
² Varied Thrush	Upland, Subalpine	I
² Blackpoll Warbler	Upland, Subalpine	L
³ Townsend's Warbler	Upland, Riverine, Subalpine	L
White-crowned Sparrow	Upland, Subalpine	I
Golden-crowned Sparrow	Subalpine	I
¹ Rusty Blackbird	Lowland	L
Amphibians		
Wood Frog	Lowland, Upland	I
Fish		
Northern Pike	Lowland, Riverine	K,I

Coho Salmon	Lowland, Riverine	K,M,I
Sockeye Salmon	Lowland, Riverine	K,M,I
Rainbow Trout	Lowland, Riverine	M
Insects		
Odonates	Lowland, Riverine	I
Plants		
<i>Prunus padus</i>	Lowland, Riverine	I
<i>Picea alba</i>	Upland	M
<i>Betula papyrifera</i>	Upland	K, M
<i>Viola selkirkii</i>	Alpine	L #
<i>Taraxacum carneocoloratum</i>	Alpine	L #
<i>Saxifraga adscendens ssp. Oregonensis</i>	Alpine	L #
<i>Vicia cracca</i>	Upland, Human modified	I
(Suite of undetermined vascular plants)	Alpine	I #
(Suite of undetermined vascular plants)	Coastal	I #

Source: JBER, 2010c (internal citations omitted).

¹USFWS, 2008. Birds of Conservation Concern 2008. U.S. Department of Interior, Fish and Wildlife Service, Division of Migratory Bird Management, Arlington, Virginia. 85 pp. [Online version available at <http://www.fws.gov/migratorybirds/>]

²2010 Audubon watch list³Bureau of Land Management (BLM)

= Needs additional research

Special Interest Areas: Ship Creek and Eagle River Flats Impact Area. Areas previously identified on JBER-Richardson as sensitive habitats for sensitive or unique wildlife species or plant communities include:

- Ship Creek Riparian Area;
- ERF and associated tidal wetlands;
- Alpine tundra in the adjacent Chugach Mountains;
- Old growth forest; and
- Snowhawk Valley.

Water quality at Ship Creek is important to both people (drinking water) and marine mammals (a PCE for the beluga). The ERF Impact Area and the ERF wetland are important for natural resources conservation and for continued military training (USAG Alaska, 2010). Wetlands play a role in reducing flood damage and preserving water quality (JBER, 2010a). Wetlands exist along Ship Creek and at the ERF Impact Area (PACAF, 2012).

Vegetation plays an important role within range and training lands including providing concealment and realistic training conditions, habitat to wildlife, filtering of surface water runoff, stabilization of soils, and regulating GHGs (USAG Alaska, 2010). The largest threat to vegetative communities is spreading invasive species by transporting seeds and propagative plant parts on equipment (Robinson, 2012). An ecological survey of JBER-Richardson indicates the installation is covered by 55.3 percent forest (USAG Alaska, 2010). Forty eight percent of

FRA over the past 200 years has been affected by fire (USAG Alaska, 2010). This was indicated by the occurrence of early to mid-successional forest stages that have developed since the fires in the 1800s and early 1900s (USAG Alaska, 2010). Second growth forests may make up the majority of the JBER cantonment area since this area has been previously disturbed; however, at the time of this PEA, information on the location of old growth forest within JBER is not readily available, but suspected to exist within JBER.

A 1997 publication by alpine researchers identified Snowhawk Valley as a unique and sensitive area on JBER-Richardson that should also be managed as sensitive/special interest area (Walker, 1997).

Current and prospective natural resource projects at JBER will be set forth in the current Interim 2010 INRMP (the 2012 JBER INRMP is in preparation).

Recreational Hunting, Fishing. In accordance with the Sikes Act, JBER allows recreational use of its land and resources by the public when not being used for military training. Most of the northern part of JBER-Richardson is open to recreational use, while the southern part of the installation is only open to non-motorized forms of recreation (JBER, 2010a). 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 as well as access to the Moose Run Golf Course and Otter Lake (JBER, 2010a). Public access to JBER is facilitated by the U.S. Army Recreation Tracking website; however, current efforts by JBER are underway to upgrade this system (<http://www.jber.isportsman.net/>). For more information, see http://www.usarak.army.mil/conservation/REC_USARTRAK.htm.

JBER-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 2011-2012 Alaska Hunting Regulations, No. 52 (Regulated by Title 5, Alaska Administrative Code and Title 16 of Alaska Statutes).

Fish stocking is a common activity at four lakes on JBER-Richardson (Clunie, Gwenn, Otter and Waldon lakes) 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. However, Otter Lake has not been stocked since 2006 due to the invasive northern pike that prey on the stocked fish species.

Subsistence. Military lands are excluded from the federal subsistence management program established under the Alaska National Interest Lands Conservation Act because of national security and defense reasons, and therefore, JBER lands are not available for use by rural Alaska residents for harvest of subsistence resources (Scudder, 2011). Note, however, that some recreational activities may include subsistence-type activities, e.g., berry picking. These recreational activities, although permitted on JBER, are not to be confused with subsistence as the term is used under Alaska National Interest Lands Conservation Act.

JBER-Richardson is located within the traditional lands of the Dena'ina, northern Athabascan Tribes of Cook Inlet (U.S. Army, 2008a). Several locations on JBER-Richardson have been identified as areas of traditional use by Dena'ina Athabascans, such as areas along Clunie Creek, coastal bluffs north of Eagle River, and the Knik Arm shoreline. For example, the School Fish Camp Site is located along the Knik Arm shoreline and was used for subsistence fishing by a Bureau of Indian Affairs vocational school from 1924 to 1946. ERF has also been identified as an important subsistence area. Consultation with Alaskan Native Tribes to identify TCPs or other sites of cultural or sacred significance is on-going.

Wildland Fire Management. Wildland fire management in Alaska requires multi-agency cooperation. Fire management is a joint effort by JBER, the BLM, and Alaska Fire Service that is governed/facilitated by the Alaska Wildland Fire Management Plan (U.S. Army, 2008a). The north post of JBER-Richardson is classified for Full and Critical fire management options due to the high value of resources at risk from fire, in addition to the post's proximity to Anchorage and Eagle River (U.S. Army, 2008a). Most of the north post is classified for Critical fire management (U.S. Army, 2008a). The training areas along Knik Arm are classified for Full fire management (U.S. Army, 2008a). 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 (U.S. Army, 2008a). The alpine zones are classified for Limited fire management because of their remote location (U.S. Army, 2008a). Although wildfires are a concern at JBER-Richardson, no major fires have occurred on JBER-Richardson since 1950; the last fire at JBER-Richardson larger than 50 acres occurred in 2007. Fires are usually mission-related, small, and easily contained. However, 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 (U.S. Army, 2008a). The dead spruce has resulted in high fuel load conditions on the forest floor. To reduce this threat, fuels reduction is carried out on JBER (U.S. Army, 2008a). Wildfires have been traditionally confined to areas behind the SAC range on JBER-Richardson (USAG Alaska, 2010). Fire response times for most of the installation are not anticipated to be a problem.

4.10.7.2 Environmental Consequences

No Action Alternative

Significant but mitigable adverse effects would occur at JBER under the No Action Alternative. JBER would continue to adhere to its existing resource management plans and INRMP to further minimize and monitor any potential effects. Units are briefed prior to each training event regarding sensitive areas on post, such as protected species habitat, and what is and is not allowed within certain areas.

Cantonment Construction. The cantonment area is generally not suitable habitat for biological resources. However, wildlife may traverse the cantonment area or take up residence in trees, in the case of avian species. Potential effects to biological resources from construction-related activities within the cantonment area include noise impacts, stormwater runoff from construction sites, loss of vegetation and trees, and increased soil erosion. However, any species that occur within the cantonment area may be adapted to noise impacts as construction noise would be part of the background noise. Stormwater runoff from the construction site(s) may result in short-term adverse impacts to nearby water bodies and wetlands, increasing turbidity and temporarily degrading water quality and potentially impacting the fish and invertebrates that live and feed in those waters; and indirectly affecting the terrestrial, avian, and marine mammals (such as the beluga) that feed on fish that use these waterways (U.S. Army, 2008a). Stormwater runoff may be prevented by implementation of BMPs and SWPPPs measures. Removal of trees in the cantonment area would not affect old growth forest stands. If trees are removed, care would be taken to remove trees outside of the nesting season, in accordance with the construction guidance formulated to ensure compliance with the MBTA. However, the loss of vegetative cover would increase the incidence of soil erosion and potentially cause segmentation of ecotypes and disrupt wildlife movement throughout the installation. Adverse effects to biological resources may also adversely affect recreation activities based on these resources, e.g., hunting and fishing; however, there is no data to indicate a decline in any species as a result of activities carried out on JBER. Also, no impacts to subsistence rights are anticipated because JBER is excluded from the federal subsistence management program.

Implementation of the INRMP and ITAM (for soil management/monitoring) program work plans and associated BMPs and SWPPPs would continue to ensure that impacts to biological resources would be less than significant. Direct adverse impacts to moose, waterfowl, eagle, fish populations would not be anticipated.

Range Maintenance. Maintenance would be limited to already disturbed areas within ranges and training areas; however, because these areas are located away from the cantonment area, these activities have a greater potential to adversely affect biological resources. Noise from construction-type activities extend no more than 0.5 miles from the noise source and so potential noise impacts at these ranges and training areas would be localized and short term. Implementation of the INRMP and ITAM program work plans and associated BMPs would continue to ensure that impacts to biological resources would be less than significant.

Since new construction is not anticipated, the potential to affect old growth forest that may occur in these remote areas of JBER would be low. Direct adverse impacts to moose, waterfowl, eagle, fish populations would not be anticipated.

Live-Fire Training. Weapons firing can remove vegetation directly and indirectly through the disturbance of vegetation and soils increasing the erodibility of soils and requiring more monitoring and maintenance under the ITAM program. Live-fire training could potentially increase the frequency of wildfires. Sources of wildfire ignition would include small arms fire, vehicles, flammable materials, and cigarettes. Prescribed burns of deadfall timber would continue to ensure reduced levels of fuel loading in range areas.

Noise from weapons firing can disturb wildlife, causing more sensitive species and individuals to move away from training ranges. 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. 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, wildlife species tend to adjust to training activities.

Current efforts are underway to evaluate potential noise impacts to the beluga whale and other marine mammals to ensure compliance with the ESA/MMPA. The potential for fires to affect old growth forest would exist in these more remote areas of JBER where it is likely that old growth forests could occur and exist. Direct adverse impacts to moose, waterfowl, eagle, and fish populations are not anticipated. Implementation of the INRMP and ITAM program work plans and associated BMPs would continue to ensure that impacts to biological resources would be less than significant.

Maneuver Training. Maneuver training would continue within the existing ranges and would have the potential to affect biological resources. Noise impacts to wildlife are not anticipated to have a significant impact. Direct adverse impacts to moose, waterfowl, eagle, and fish populations are not anticipated.

Significant impacts are not anticipated to biological resources from the continuation of current operations because of adherence to natural resource programs and plans, BMPs, and management measures; however, adverse effects would occur as a result of direct and indirect impacts to soil resources, water resources, and from noise.

Alternative 1: Force Reduction (up to 4,300 Soldiers and Army Civilians)

Minor impacts to biological resources, as a result of the implementation of Alternative 1, are anticipated. Scheduling conflicts for training area access to conduct resource monitoring would be reduced. Proactive conservation management practices and species monitoring would be more easily accomplished with reduced mission throughput. The land within the main

1 cantonment area where deconstruction would occur does not support any critical habitat,
2 threatened or endangered species, or Species of Concern. This area is highly disturbed and
3 used by humans daily. Consequently, the impacts to wildlife from deconstruction on the garrison
4 are anticipated to be negligible or minor, but ultimately beneficial.

5 Construction vehicles operating in the cantonment area could spill hazardous materials such as
6 POLs onto the soil surface which could remain in the soils for an extended period of time and
7 may enter groundwater. POLs may also be transported to surface waters with runoff from the
8 construction site. Hazardous materials that enter the soil media and water column may have
9 detrimental effects to the wildlife that inhabit and use these areas. JBER has SWMPs in place
10 to mitigate the effects of sediment and hazardous materials transport.

11 Impacts to vegetation from deconstruction can include breaking and crushing of plants and
12 direct mortality. This can directly or indirectly alter plant community composition and structure
13 and vegetative cover; however, the extent to which these plant communities have been
14 previously disturbed is an important consideration in assessing impacts. Fugitive dust from
15 these construction projects could occur and result in short-term impacts to vegetation.
16 Deconstruction projects would occur in existing, disturbed cantonment areas, and there would
17 be little or no direct impacts to native or sensitive vegetation.

18 Soils that are disturbed from deconstruction could be transported to surface water thereby
19 causing temporary increases in turbidity, and degrading the water quality. Impacts to water
20 quality have direct effects to the inhabitants (fish, invertebrates) and indirect effects to the
21 wildlife that forage for food in these areas. JBER implements BMPs and SOPs to minimize the
22 impacts from sedimentation into nearby water bodies. Consequently, the impacts to water
23 quality are anticipated to be negligible or minor.

24 Since no training infrastructure construction or expansion would occur, no effects to vegetation,
25 wildlife, or Species of Concern are anticipated. Invasive species is a concern on all Army lands
26 and JBER is committed to proactive management of non-native species; therefore, no
27 anticipated impacts from noxious weeds would occur.

28 The number of required live-fire user days per year at JBER would drop below current levels. A
29 reduction in live-fire training related wildfires is anticipated, as well as reduced impacts to fish
30 and wildlife and vegetation. Reducing the number of Soldiers stationed at JBER would open up
31 opportunities for more recreational activities because training areas wouldn't be closed as often.

32 The intensity and frequency of maneuver training at JBER would drop below current levels. In
33 addition, no new maneuver areas would be required and maneuver training would be conducted
34 in the footprint of existing ranges and trails at JBER. Reduced impacts to fish, wildlife and
35 vegetation would be similar to that discussed for live-fire training. Reducing the number of
36 Soldiers stationed at JBER would open up opportunities for more recreational activities because
37 training areas wouldn't be closed as often. No impacts to subsistence rights are anticipated
38 because JBER is excluded from the federal subsistence management program.

39 Although impacts to biological resources would continue to occur, the reduction in maintenance,
40 live fire, and construction activities are not anticipated to result in more than minor impacts to
41 biological resources above baseline conditions. Current efforts are underway to evaluate
42 potential noise impacts to the beluga whale and other marine mammals to ensure compliance
43 with the ESA and MMPA.

44 Reduced impacts are anticipated from lesser potential to adversely affect biological resources
45 during construction, maintenance, and training. Short-term minor impacts would occur with
46 regards to facilities demolition and deconstruction in the existing cantonment area. Further
47 analysis would be required to quantify the significance of these impacts.

Alternative 2: Installation gain of up to 1,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignment

Significant but mitigable adverse impacts are anticipated, as a result of the implementation of Alternative 2. The increase in the number of Soldiers is less than 20 percent above the current stationing level. While this moderate force augmentation would increase traffic in the training lands and ranges, it would not cause significant degradation or destruction of rare or sensitive species habitats. The land within the main cantonment area where construction and deconstruction would occur does not support any critical habitat, threatened or endangered species, or species of concern. 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. 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. JBER has SWMPs in place to mitigate the effects of sediment and hazardous materials transport.

Impacts to vegetation from construction and deconstruction and training can include vegetation shear or clearance. This can directly or indirectly alter plant community composition, structure and vegetative cover, and can lead to increased presence of invasive species. Fugitive dust from these construction projects could occur and result in short-term impacts to vegetation. Construction and deconstruction projects would occur in existing, disturbed cantonment areas, and there would be little or no direct impacts to native or sensitive vegetation. New construction to the north and in the southeast corner of the installation cantonment area may be needed. Clearing of vegetation and soils may lead to the movement of animals away from the construction site.

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. BMPs and management procedures used by JBER to prevent soil migration would be implemented to reduce these impacts.

Recreational activities or wildland fire management are not anticipated to be impacted from construction and deconstruction that would occur as a result of this alternative; however, no impacts to subsistence rights are anticipated because JBER is excluded from the federal subsistence management program.

Construction noise on the JBER lands 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.

An increase in training infrastructure construction may close training areas to recreational activities for short periods of time. Consequently, these impacts are anticipated to be minor.

1 The frequency and intensity of live-fire training in the JBER small arms range complex would
2 increase by approximately 10 to 20 percent. Units would use the same weapons systems that
3 are currently being utilized at JBER and qualitatively noise-generating events would be the
4 same. Wildlife using these areas would adjust to any live-fire training modifications and short-
5 term effects are anticipated. These may include the temporary avoidance of live-fire areas and
6 the scattering of smaller mammals when firing is first initiated.

7 Impacts from live-fire activities would also include the disturbance of soils and vegetation on
8 ranges, increasing the erodibility of soils and requiring more monitoring and maintenance. Live-
9 fire training could increase the frequency of wildfires. Several fire mitigation measures, such as
10 prescribed burning and hazard fuels reduction and firebreaks, are being implemented
11 throughout the JBER on existing ranges and would be continued under all stationing scenarios.
12 JBER is only subject to wildfire risk at certain times of year and this risk is greatly reduced
13 during the winter, spring melt, and fall seasons. In general, the wet conditions reduce the overall
14 fire risk. Impacts to wildland fire management from an increase in live-fire training are
15 anticipated to be negligible or minor.

16 The frequency of maneuver training could increase by approximately 10 to 20 percent. Units
17 would support combat maneuver units by providing logistics support, mainly on roads and
18 hardened surfaces. The increase in maneuver mileage would result in relatively minor effects to
19 the existing range road network. Potential direct impacts include damage to soil surface and
20 causing disruption to the permafrost layer below. Disruption of soils may create situations
21 where permafrost melts, resulting in saturated conditions or subsidence. The potential for this
22 occurs on frozen soils particularly when the permafrost is shallow. JBER has BMPs in place to
23 avoid impacts to permafrost, these include avoiding areas where permafrost is known or thought
24 to occur during warmer weather conditions, and the limitation of maneuver over permafrost to
25 wintertime when snow depth is sufficient enough to ensure an insulating layer can support
26 maneuver while maintaining the integrity of the permafrost below. Any impacts to permafrost
27 may considerably alter the landscape and habitat in training areas. However, these areas are
28 avoided when possible and limited impacts would be anticipated as Combat Service Support
29 units would mostly use existing roads and trails.

30 The higher rate of maneuvers may have short-term immediate impacts to wildlife from the
31 additional noise; however, these impacts may be temporary as training with these scenarios
32 would not introduce new types of weapons to the range areas, and would not increase the level
33 of noise above what is heard currently on ranges. As cited above, wildlife would likely quickly
34 adjust to the new training schedules. Wildlife populations would be able to tolerate some
35 disturbance from vehicular traffic; however, information available currently is insufficient to
36 determine the extent of population-wide effects. Wildlife would be closely monitored by JBER's
37 ecosystem management program to understand better the impacts and the extent of
38 disturbance resulting from increased road use.

39 Increases in maneuver training frequency could temporarily affect the distribution of moose.
40 Moose appear well adapted to multiple use management (forestry, hunting, and military
41 activities), and military training seems no more detrimental to moose populations than other land
42 uses. Impacts to moose populations are potentially significant if winter habitats were degraded.
43 However, moose are readily adaptable to the creation of new early succession habitat. Moose
44 managers agree that activities that disturb soils and forest cover produce benefits for moose by
45 creating or enhancing early succession habitat.

46 Maneuver training would also result in negligible or minor impacts to fisheries. Expected
47 increases in training levels could lead to higher rates of erosion and sedimentation, as well as
48 an increased potential for petroleum spills during refueling. Implementation of the JBER

institutional programs as well as 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 would be negligible or minor.

Wildfire ignition from vehicle use and human activity may occur. Mitigation measures currently utilized by the JBER 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. Impacts to wildland fire management from an increase in maneuver training are anticipated to be negligible or minor.

The increased frequency of maneuver training may also result in restrictions to recreational uses of JBER lands. JBER would continue to identify areas available to the public and offer access for recreational use. Additional personnel stationed at JBER might participate in recreational hunting and fishing activities and could impact current availability resources. No impacts to subsistence rights are anticipated because JBER is excluded from the federal subsistence management program.

Current efforts are underway to evaluate potential noise impacts to the beluga whale and other marine mammals to ensure compliance with the ESA/MMPA. Consultation would be required for Alternative 2 to ensure compliance with the ESA and MMPA as Alternative 2 would result in increased training at JBER.

Significant but mitigable impacts are anticipated to biological resources. JBER would continue with management outlined in the INRMP and with actions agreed to as part of ESA consultation with the USFWS. Continued implementation of maintenance, programs/plans and BMPs would ensure no significant impacts occur to biological resources.

4.10.8 Wetlands

4.10.8.1 Affected Environment

The ROI for this VEC is JBER and surrounding areas where wetlands are or may be located, which could be affected by impacts at JBER.

On JBER, wetlands are prevalent to the north and south of the cantonment areas (PACAF, 2011). At JBER-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 contiguous wetland complex is ERF, which makes up the majority of the land within the ERF Impact Area; approximately 2,165 acres. The ERF is a 2,140-acre estuarine salt marsh located at the mouth of Eagle River. Table 4.10-12 provides more details on wetland types at JBER-Richardson.

Table 4.10-12. Wetlands on Joint Base Elmendorf-Richardson - Richardson

Wetland Type	JBER-Richardson Land (Percent)	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, Lyngbye sedge, Maritime arrow grass, Glasswort, Goose tongue, and Alkali grass.

1 **Table 4.10-12. Wetlands on Joint Base Elmendorf-Richardson – Richardson (Continued)**

Wetland Type	JBER-Richardson Land (Percent)	Wetland Characterization and/or Location	Vegetation
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 JBER-Richardson.	Bluejoint meadow wetlands.

Source: U.S. Army, 2008a.

2 The largest wetland on JBER is the ERF Impact Area, which is classified as a coastal halophytic
3 wetland. As discussed above, this area provides an important staging ground for migratory
4 birds. The ERF is listed on the EPA's National Priorities List due to white phosphorus, which
5 adversely affected waterfowl; however, other munitions constituents have not been detected at
6 levels that warrant treatment. Some past studies may be found at USACE, Engineer Research
7 and Development Center, available at, www.crrel.usace.army.mil (last accessed January 3,
8 2011). Since the ERF Impact Area has been used for live-fire training since the 1940s, any
9 accumulation of potential contaminants from munitions residue would have been discovered
10 during past studies carried out at the ERF Impact Area from the 1980s to the 1990s. For a
11 summary of findings see ERF, Comprehensive Evaluation Report, Fort Richardson Alaska
12 (CH2M Hill, 1994). It is likely that the ERF is acting as a filter and preventing the accumulation
13 of munitions residues and contamination of the surrounding areas and waters (see e.g., EPA
14 2012c). Munitions containing phosphorus as a primary constituent are now banned in wetlands
15 per AR 385-63, Safety, Range Safety, Headquarters DA: Washington, DC.

16 Pursuant to U.S. Air Force NEPA regulations (32 CFR 989.14(g)) any project that could be
17 located within a floodplain or a wetland must be evaluated in an EA and supported with a finding
18 of no practicable alternative.

19 **4.10.8.2 Environmental Consequences**

20 **No Action Alternative**

21 Less than significant impacts to wetlands are anticipated under the No Action Alternative.
22 Wetlands would be impacted through training, sedimentation, and construction each year, but
23 these impacts would not be significant.

24 **Cantonment Construction.** Activities within the cantonment area are not likely to affect
25 wetlands as no wetlands are located within the cantonment area; however, similar to biological
26 resources, direct and indirect adverse impact could occur from site runoff and adversely affect
27 the quality of wetlands if located near these areas. Implementation of BMPs/SWPPPs and
28 continued implementation of natural resource programs and plans (e.g., ITAM) would ensure
29 impacts to wetlands are avoided. Siting projects would avoid areas with wetlands by
30 coordinating projects with the JBER Conservation department prior to work, where wetlands

may occur in the project area. This is important in the springtime, when it has been historically difficult to differentiate between wetlands and temporary standing water from snowmelt. Ground-truthing efforts to determine whether an area is a wetland may be required and have been carried out in the recent past with the assistance of the USACE. Pursuant to Air Force NEPA regulations (32 CFR 989.14(g)) any project that could be located within a floodplain or a wetland must be evaluated in an EA and supported with a finding of no practicable alternative.

Range Maintenance. Wetlands are more common in areas outside of the cantonment area, which would be used by the 4/25 Airborne BCT. Maintenance of existing range and training areas is not anticipated to directly impair wetlands, e.g., cause a loss of wetlands; however, direct and indirect impacts from maintenance operations could impair the quality of wetlands if located in close proximity to these areas. Wetlands are known to be located within areas used by the 4/25 Airborne BCT; however, they are more likely located in the parts of ranges and training areas where the majority of training does not occur, with the exception of the Army's use of ERF for artillery and live-fire training.

Live-Fire and Maneuver Training. Live-fire training has occurred within the ERF wetlands since the 1940s with no evidence that the nature or function of the wetland is being adversely affected. The ERF Impact Area continues to be an important staging ground for migratory birds, despite the past die off of waterfowl that occurred due to white phosphorus. White phosphorus is no longer in used in the ERF Impact Area. Maneuver training would continue, with no direct impacts to wetlands anticipated. A majority of impacts would be indirect, resulting from soil sedimentation impacts into existing wetlands from adjacent maneuver areas. The installation would continue to implement Land Rehabilitation and Maintenance (LRAM) through the ITAM program to reduce and repair maneuver damage that could lead to wetlands impacts. Less than significant impacts to wetlands are anticipated.

Alternative 1: Force Reduction (up to 4,300 Soldiers and Army Civilians)

Beneficial impacts are anticipated as a result of the implementation of Alternative 1. The reduction of approximately 4,300 Combat/Combat Support Soldiers is not anticipated to adversely affect wetlands. It is likely that substantial reduction in force as a result of this alternative could result in decreased stressors on wetlands located in close proximity to the cantonment area to below current impacts, although the potential to impact wetland would continue as operations at JBER would continue in support of the remaining military population. Deconstruction of facilities is not likely to result in sedimentation as there are no wetland resources directly adjacent to the cantonment area. The impacts would likely be negligible or minor because the JBER has SWMPs in place to mitigate the effects of sediment transport. No new range construction would occur. In addition, none of the current ranges would be expanded. Therefore, no effects to wetlands are anticipated from range construction.

The number of required live-fire and maneuver training user days per year at JBER would drop below current levels. Because the live-fire ranges were located to avoid significant wetland impacts, continued live-fire training is not anticipated to affect the function or presence of wetlands at JBER. 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 JBER. Consequently, no change in impacts to wetlands from maneuver training is anticipated.

Maneuver training would continue to lead to direct and indirect impairment of wetlands, but at greatly reduced levels with the loss of the 4/25 Airborne BCT and other Combat Support units. Decreased stressors on wetlands are anticipated, although the potential to impact wetlands would continue as operations at JBER would continue in support of the remaining military population.

Reduced impacts are anticipated from lesser potential impacts to wetlands. Further analysis would be required to quantify the significance of these impacts.

Alternative 2: Installation gain of up to 1,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

Overall, less than significant impacts to wetlands are anticipated as a result of the implementation of Alternative 2.

Garrison Construction and Deconstruction. Loss of wetlands is not anticipated as a result of the Proposed Action because no wetlands are present in the cantonment area. The minor effects from construction and demolition would be less harmful in winter due to the frozen nature of the wetlands, and the snowpack that protects vegetation. The impacts would likely be negligible or minor because the JBER has SWMPs in place to mitigate the effects of sediment transport.

Increased potential for wetland impairment could occur from increased maintenance within areas near wetlands. Increased potential for impairment could occur from increased live-fire training, although past studies of the ERF Impact Area suggest that wetlands may filter out any potential contaminants that may enter the wetland. As discussed for the No Action Alternative, white phosphorus is no longer used as part of live-fire training exercises. Increased maneuvers would lead to minimal additional impacts to wetlands at JBER. 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 minimal. No additional roads or trails would be constructed; 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.

Less than significant impacts to wetlands are anticipated, although increased adverse effects may result from the increased use of the ranges and training areas within and/or adjacent to wetlands. Further analysis would be required to quantify these impacts.

4.10.9 Water Resources

4.10.9.1 Affected Environment

The ROI for this VEC is JBER and surrounding areas where water resources are located, which could be affected by impacts at JBER.

Surface Water. JBER-Richardson is located within the Anchorage watershed (JBER, 2010a). Most of the streams on JBER-Richardson flow from the headwaters in the Chugach Mountains to the Knik Arm of the Cook Inlet (JBER, 2010a). Major waterways in Alaska may be classified as either glacial or non-glacial (U.S. Army, 2008a). 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 (U.S. Army, 2008a). Non-glacial waterways 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 (U.S. Army, 2008). Eagle River is the largest stream that traverses JBER and is glacial fed (JBER, 2010a). Eagle River flows through JBER-Richardson and settles out at ERF, the estuarine tidal marsh located at the mouth of the river (U.S. Army, 2008a).

Ship Creek is the second largest river (JBER, 2010a). Ship Creek (a non-glacial waterway) that flows from Ship Lake at the Chugach Mountains to the Knik Arm (U.S. Army, 2008a). Other perennial streams on JBER include Chester Creek and the North Fork of Campbell Creek (JBER, 2010a). Chester Creek (located south of Ship Creek) flows through the southwestern portion of JBER-Richardson and into a marsh wetland at the base of the Chugach Mountains

1 and then is re-channeled near JBER-Richardson's western border (U.S. Army, 2008a). North
2 Fork Campbell Creek is a non-glacial stream that stems from Long Lake (in the Chugach
3 Mountains) and flows across JBER-Richardson's southwestern corner where water flow there
4 recharges the groundwater aquifer (U.S. Army, 2008a). McVeigh Creek also begins near the
5 Chugach Mountains and flows west to southwest (parallel to Glenn Highway) and flows through
6 JBER-Richardson's small arms range where it continues to McVeigh Marsh and drains into Ship
7 Creek upstream from the Glenn Highway Bridge (U.S. Army, 2008a).

8 Snowhawk Creek (also non-glacial) is a tributary to Ship Creek; it drains Tanaina Lake and
9 flows northeast through Snowhawk Valley and joins Ship Creek upstream of Ship Creek Dam
10 and Reservoir (U.S. Army, 2008a). Clunie Creek flows from wetlands located south of Clunie
11 Lake into ERF and ultimately drains into Knik Arm (U.S. Army, 2008a).

12 Otter Creek is a perennial stream that flows from Otter Lake to ERF (U.S. Army, 2008a).

13 **Groundwater.** Two aquifers underlie JBER-Richardson, the upper, unconfined aquifer at
14 depths as shallow as 50 feet below ground surface and a confined aquifer at depths between
15 200 to 400 feet below ground surface (JBER, 2010a). Note however that JBER-Richardson
16 groundwater conditions remain poorly understood as discussed in Soil Erosion, Section 4.10.6.

17 Groundwater flow tends to be to the northwest (USACE, 2000).

18 Operable Units (OU) B and E have resulted in groundwater contamination. Chlorinated solvents
19 at OU-B (Poleline Road Disposal Area), located between Eagle River and the Glenn Highway,
20 have impacted both groundwater aquifers (JBER, 2010a). OU-E (Armored Vehicle
21 Maintenance Area), near the northwestern edge of the cantonment area, has perchloroethylene
22 (JBER, 2010a). These sites are monitored by the Environmental Restoration Program (ERP).
23 For more information see Section 4.10.14, Hazardous Materials and Hazardous Waste.

24 **Floodplains.** E.O. 11988, *Floodplain Management*, requires federal agencies to reduce the risk
25 of flood loss, to minimize the impact of floods on human safety, health and welfare, and to
26 restore and preserve the natural and beneficial values served by floodplains. Pursuant to Air
27 Force NEPA regulations (32 CFR 989.14(g)) any project that could be located within a
28 floodplain or a wetland must be evaluated in an EA and supported with a finding of no
29 practicable alternative.

30 **Water Quality.** The State of Alaska has identified a portion of Eagle River and Ship Creek
31 between Glenn Highway and the river's mouth as Category 4a impaired water bodies for which
32 TMDLs have been developed (ADEC, 2010b). For Eagle River, TMDLs exist for discharges of
33 ammonia, chlorine, copper, lead, and silver due to a WWTP (ADEC, 2010b). For Ship Creek, a
34 TMDL exists for Fecal Coliform Bacteria due to urban runoff (ADEC, 2010b).

35 The status of Eagle River has improved over the years. In 1996, it was listed on the Section
36 303(d) list for the presence of white phosphorus, followed by the delisting and placement on the
37 Category 4b list (impaired; needing a TDML but expected to meet standards in a reasonable
38 time) and then recategorized as a Category 2 water body (attaining some uses) (JBER, 2010a).
39 Eagle River is no longer considered an impaired water body (JBER, 2010a).

40 Ship Creek is listed as a Category 4a impaired water body (impaired; not needing a TDML) for
41 fecal coliform due to urban runoff and is listed as a Category 5 impaired water body (impaired;
42 requires a TDML) for petroleum products due to contaminated groundwater discharges and
43 urban runoff (JBER, 2010a). Ship Creek currently is listed as a 303d federally-impaired water
44 body with TMDLs for fecal coliform and pending TMDLs for petroleum oil and sheen (Haas,
45 2011). Water quality on Ship Creek is important because any deterioration on JBER lands will
46 affect downstream locations within the installation, Anchorage, and the Knik Arm where the

beluga are located (USAG Alaska, 2010). In addition, Ship Creek is a source of drinking water. Chester Creek and Campbell Creek are listed as Category 4a impaired water bodies for fecal coliform bacteria as a result of urban runoff (JBER, 2010a). The impaired segments of these creeks are located downstream from JBER (JBER, 2010a).

In the recent past, there is no documented discharge from McVeigh Creek to Ship Creek (Haas, 2011). It is believed to infiltrate complete in the marsh area, as even during recorded discharge times (August 2009) no discharge was noted at this location (Haas, 2011). ERF (60 acres) is identified as a Category 2 water body due to military base operations that have resulted in the deposition of white phosphorus and munitions residue. Water bodies that are placed in Category 2 are presumed to be attaining all uses. Active remediation of the ERF has been completed with the continuation of long-term monitoring in accordance with the terms of the CERCLA ROD (ADEC, 2010a). More information may be found at U.S. EPA, Water: Nonpoint Source Success Stories, available at http://water.epa.gov/polwaste/nps/success319/ak_eagle.cfm.

Drinking Water. JBER receives most of its potable water from the Ship Creek Water Treatment Plant; however, there are times based upon demand and supply that JBER also relies on up to three groundwater wells located near Moose Crossing Housing (U.S. Army, 2008a). Additionally, JBER accesses water from Anchorage Water and Wastewater Utility (AWWU) for the National Guard on JBER-Richardson (U.S. Army, 2008a). The Army has primary rights to 7 mgd, and nearly 10 mgd is diverted from the reservoir to the AWWU (U.S. Army, 2008a). The water supply is treated and distributed throughout JBER-Richardson (U.S. Army, 2008a). The installation currently uses an average of 1 to 1.5 mgd and the water treatment plant is only capable of processing 6 mgd (U.S. Army, 2008a). While pipes bursting may have been a problem some time ago, upgrades to certain parts of the system have occurred to preclude failure during future earthquakes (U.S. Army, 2008a). The distribution system on post is gravity fed and in some locations is augmented with booster pumps due to low flow (U.S. Army, 2008a). If peak capacity is exceeded, or if an alternate source of water is necessary, JBER-Richardson also maintains the ability to access water from the Eklutna line through a 48- or 54-inch distribution pipe (U.S. Army, 2008a); 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 (U.S. Army, 2008a). Additionally, the installation may also use well network systems (three wells) situated near the hospital that have the capability of pumping up to 1,000 gpm (U.S. Army, 2008a). This system is sometimes used when spring water flow into Ship Creek is low (U.S. Army, 2008a).

In 2008, drinking water met or exceeded all public drinking water standards (U.S. Army, 2008a). A review of the 2011 Anchorage drinking water quality report indicates that all contaminants exist below the maximum contaminant level established for the specific contaminants (AWWU, 2011a). At the time of this PEA, updates to this determination were not readily available, but there is no indication to believe that drinking water is not meeting primary water standards.

Wastewater. There is no WWTP on JBER; all wastewater goes to the AWWU. There is one main line leaving post that carries wastewater from JBER to the AWWU. Historically, the WWTP (City-owned) could handle a maximum capacity waste stream from JBER of 3.5 to 4.0 mgd (JBER-Elmendorf accounts for approximately 60 percent of the waste stream). This is divided between three different metering stations: FRA station, Mountain View station, and Government Hill station; however, due to recent upgrades, the treatment plant may be able to accommodate up to 6.0 mgd. In 2008, it was stated that the wastewater system was in fair condition and that a system and flow analysis should be carried out to identify slow mains and possible inflow and infiltration (JBER, 2010a). At the time of this PEA, the result of such study,

if conducted, was not readily available. A review of the 2010 annual report of the AWWU indicates that capital improvement projects continue to be pursued (AWWU, 2011b).

Stormwater. JBER-Richardson has an intensive stormwater program and conducts strict enforcement of BMPs to ensure against stormwater runoff from the installation. JBER currently has applied for MS4 coverage, and currently has two multi-sector general permits to operate the 100 plus industrial sector facilities on base (Haas, 2011). Additionally, JBER has a construction general permit program which teams all projects together with installation personnel for weekly inspections to ensure compliance with SWPPPs (Haas, 2011). Stormwater generated north of D Street tends to flow into open areas; whereas, stormwater generated south of D Street is captured by catch basins, culverts, and shallow ditches and swales that direct flow to the south and eventually discharge into Ship Creek after passing through an open drainage ditch (JBER, 2010a). In 2008, the stormwater collection system south of D Street was deemed to be in good condition (JBER, 2010a). At the time of this PEA, updates to this determination were not readily available.

A private utility contractor now operates and maintains the water distribution system for JBER-Richardson (JBER, 2010a). All drinking water systems, wastewater treatment systems, and water discharge systems have been transferred to the private utility contractor. According to estimates provided by the contractor, existing capacity far exceeds current demand (U.S. Army, 2008a).

At the time of this PEA, updates to this determination were not readily available; however, upgrades to the JBER distribution system by the contractor have occurred and in conjunction with the capital improvement projects by the AWWU indicate that efforts are being made to sustain water distribution systems.

4.10.9.2 Environmental Consequences

No Action Alternative

Impacts to water resources would be minor under the No Action Alternative. JBER currently has plenty of potable and non-potable water to support its Soldiers, Families and missions.

Cantonment Construction. Ongoing construction and maintenance activities could affect surface water by localized increases in erosion and runoff. Activities may include grading, excavating, and trenching, which may expose erodible soils to stormwater runoff and increase the potential for sediments to migrate to surface waters. Any construction that disturbs more than 1 acre of land would require a SWPPP. A SWPPP would prescribe measures that the installation would implement to channel stormwater and decrease turbidity and sedimentation. Construction BMPs such as sediment and 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, a SPCC Plan, and an SWPPP to address leaks or spills of hazardous materials. With these established measures, impacts are anticipated to be less than significant.

Upgrades to water distribution systems carried out by a private contractor or AWWU would continue under the baseline. Current demand is within capacity of the current distribution systems. Wastewater would continue to be generated by JBER and drinking water would continue to be provided to JBER. No impacts to groundwater are anticipated from compliance with JBER Oplan 19-3. Adverse impacts are not anticipated to water quality or to the capacity of water distributions systems.

Range Maintenance. Continued maintenance activities at existing ranges and training areas would result in existing levels of impacts. No impacts to groundwater are from compliance with JBER Oplan 19-3. Adverse impacts are not anticipated to water quality or to the capacity of water distributions systems.

Live-Fire Training. Continued live-fire training within existing ranges at current levels is not anticipated to directly affect water resources, but erosion may continue to affect nearby water ways. No impact to groundwater is anticipated as a result of compliance with JBER Oplan 19-3. Adverse impacts not anticipated to water quality or the capacity of water distributions systems.

Maneuver Training. Continued implementation of BMPs occurs as it relates to the operation of vehicles and maneuver training would ensure impacts do not rise to a level of significant impact.

No impact to groundwater is anticipated from compliance with JBER Oplan 19-3. Adverse impacts are not anticipated to water quality or to the capacity of water distributions systems.

Minor impacts are anticipated. Implementation of BMPs and SWPPP measures would prevent degradation of drinking water.

Alternative 1: Force Reduction (up to 4,300 Soldiers and Army Civilians)

Beneficial impacts are anticipated as a result of the implementation of the Alternative 1. An increase in the FRP and facilities demolition at JBER would occur as a result of Alternative 1. Older, less efficient facilities nearing the end of their life-cycle would be demolished when no longer needed to support Soldiers or their Families. The reduction in training would likely result in lesser demand on water resource and lesser potential indirect impacts from construction to below baseline conditions

Garrison Construction and Deconstruction. Alternative 1 would involve the demolition of some facilities within the existing cantonment area. Consequently, negligible to minor impacts to water resources at JBER are anticipated, including water supply and distribution, wastewater collection, and stormwater runoff.

Training Infrastructure Construction and Maintenance. No training infrastructure construction would occur as a result of reducing the number of Soldiers stationed at JBER and so no impacts to water resources at JBER ranges are anticipated. Maintenance requirements would be reduced resulting in less impacts to surface water resources.

Live-Fire Training. The number of required live-fire user days per year at JBER would drop below present levels. JBER would continue to implement its current BMPs, SPCC Plan, and SWPPP to address the ongoing effects of live-fire training on water resources. Negligible to minor impacts to water resources at JBER ranges are anticipated.

Maneuver Training. The intensity and frequency of maneuver training at JBER would drop below current levels. In addition, no new maneuver areas would be required and maneuver training would be conducted in the footprint of existing ranges and trails at JBER. JBER would continue to implement its current BMPs, SPCC Plan, and SWPPP to address the ongoing and potential effects of maneuver training; therefore, effects to water resources from maneuver training are anticipated to be negligible to minor.

Reduced impacts are anticipated from the lesser potential to adversely affect water resources. Further analysis would be required to quantify the significance of these impacts.

Alternative 2: Installation gain of up to 1,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

There would be less than significant impacts to water resources anticipated as a result of implementing Alternative 2. Construction and deconstruction 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 anticipated to be temporary. JBER has a robust stormwater monitoring and compliance program, and is prepared to handle additional capacity. Any construction and deconstruction that disturbs more than 1 acre of land would require a SWPPP including use of BMPs to minimize pollution. The wastewater collection and water distribution system may require some upgrades. This would consist of the new design of filters in the WWTP and additional piping in the water distribution system. The remainder of the water distribution infrastructure at JBER-Richardson should be adequate to meet demand.

Range Maintenance. Short-term effects to water quality could occur. Increased range maintenance activities could result in increased impacts to surface waters, though not significantly increased from current baseline conditions.

Live-Fire Training. The increase in weapons qualification training would increase lead and other ammunition 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. JBER DPW staff monitor 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 result in indirect effects resulting from vehicles parked at the training sites.

The risk of wildfires is anticipated 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 training may contribute to increased sedimentation and turbidity in water bodies. Efforts may be considered to reinforce stream crossings 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 use throughout those areas.

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 anticipated to be negligible or minor.

No impact to groundwater is anticipated from compliance with JBER Oplan 19-3. Adverse impacts are not anticipated to water quality or to the capacity of water distributions systems.

Overall less than significant impacts are anticipated, although adverse effects to surface waters may increase slightly above baseline conditions. Further analysis would be required to quantify these impacts.

4.10.10 Facilities

4.10.10.1 Affected Environment

The ROI for this VEC is JBER facilities that could be affected by impacts from the Proposed Action.

Facilities and infrastructure at JBER includes Family housing; a road network; community support facilities such as a Child Development Centers, police station, credit union, post offices, elementary schools, shops; a community hospital; outdoor recreational facilities; and installation support facilities such as airspace and airfields, and training and range facilities.

All utility services provided to USAG Alaska were privatized in August of 2008. The power distribution system at USAG FWA is being systematically upgraded, and substantial portions of the power system will be completely replaced in 2010.

In 2007, former FRA and former Elmendorf Air Force Base developed a Joint Base Housing Requirements and 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) (U.S. Army, 2008a). During this transition period, both JBER-Richardson and Elmendorf Air Force Base were projecting growth in mission and personnel (Table 4.10-13) (U.S. Army, 2008a). 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 (U.S. Army, 2008a). When reviewing the requirements for unaccompanied Soldiers, the study identified a total deficit of 798 housing units (Table 4.10-14) (U.S. Army, 2008a).

Table 4.10-13. Total Military Family Housing Units Requirement

Component	JBER-Elmendorf	JBER-Richardson
	Housing Requirements and Market Analysis Through 2012	Housing Requirements and Market Analysis 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

Source: U.S. Army, 2008a.

Table 4.10-14. Total Unaccompanied Personnel Housing Requirement

Component	2012		
	JBER Elmendorf	JBER 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

Source: U.S. Army, 2008a.

Currently, there is a shortage of on base housing for enlisted Soldiers; however, current programmed construction for new barracks is being pursued on JBER-Richardson to address this shortage in support of the 4/25 Airborne BCT (Dogan, 2011).

JBER includes about 74,000 acres of land of which JBER-Richardson consists of 61,500 acres (USARAK, 2004). About 90 percent of JBER-Richardson is dedicated to training of which 60 percent is designated as maneuver training area and 30 percent is designated as ranges or impact areas (USARAK, 2005). The quality and condition of Army ranges and training lands are managed and monitored as a part of the Army's Sustainable Range Program which includes the Range and Training Land Program and the ITAM program (U.S. Army, 2008a).

4.10.10.2 Environmental Consequences

No Action Alternative

Impacts to facilities would be minor under the No Action Alternative. JBER would continue to pursue funding for consolidation of existing facilities and already programmed construction projects to replace non-standard and aging facilities. No additional Soldiers would be stationed at JBER-Richardson so no cantonment construction is required. The garrison has an adequate quantity of facilities to support the existing units' requirements for living, operations, and maintenance. The majority of these facilities are 1950's era and not to current standards. Some construction would occur on an as needed basis in the future. Continued maintenance of range facilities would occur.

The number of required live-fire and maneuver user days per year at JBER-Richardson would continue at present levels on existing ranges. Therefore, no changes are anticipated 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/BMPs, impacts are anticipated to continue to be minor.

Minor facilities impacts are anticipated as a result of the normal wear and tear that occurs with ongoing use of facilities.

Alternative 1: Force Reduction (up to 4,300 Soldiers and Army Civilians)

Minor impacts are anticipated as a result of the implementation of the Alternative 1. An increase in the FRP and facilities demolition at JBER would occur as a result of Alternative 1. Older, less efficient facilities nearing the end of their life-cycle would be demolished when no longer needed to support Soldiers or their Families to save the Army on maintenance and energy requirements. Facility usage and availability for the remaining population would not be affected. Minor long-term effects are anticipated as a result of required building demolition, solid waste disposal, and site recapitalization, and the repurposing of existing facilities to accommodate different Army needs as part of force reduction. A reduction scenario would not result in the alteration or relocation of existing utility systems or expansion of existing installation facilities. A reduction in troop strength would impact the local housing community, on-post support services, the barracks program, and associated Army civilian staffing requirements. A troop reduction would cause a reduction in the requirements for on and off-post housing and eliminate the need for construction of additional housing. Additional new range construction would likely not occur given the reduction in troop strength as a result of Alternative 1. A reduction of Soldiers would lead to decreased training range use and a decrease in ammunition and generation of lead and other materials on ranges and within impact areas. Long-term impacts would include the decrease in use of maneuver areas during large brigade-sized and battalion-sized exercises.

Minor impacts may occur with regards to infrastructure at JBER. In the short term, many projects are already programmed and planned to facilitate continued needs of the military population at JBER including the specific needs of the 4/25 Airborne BCT. These plans would need to be re-evaluated if decisions were made to reduce forces at JBER. Further analysis would be required to quantify these impacts.

Alternative 2: Installation gain of up to 1,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

There would be less than significant impacts to facilities. Increased Soldier strength of 1,000 would be reflected through increased usage throughout the cantonment area.

Cantonment Construction. There is not currently enough vacant space at JBER-Richardson to fully accommodate the addition of 1,000 Soldiers. As noted in the 2007 study, JBER-Richardson has a deficit number of housing units for unaccompanied Soldiers. Construction at the main cantonment area would occur as infill to accommodate these Soldier stationing scenarios. Additional Battalion and Company operations facilities would be required; other construction may include Brigade Headquarters, storage, maintenance, and organizational parking to bring aging and non-standard facilities up to current standards. Projects to replace these facilities are programmed and waiting funding. These facilities would be tied in to existing utilities and in JBER-Richardson structure, but some upgrades to the water distribution and wastewater collection system would be required. Additionally, the WWTP 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. JBER is surrounded by park land, the City of Anchorage, the Town of Eagle River, and assorted private land holdings. Furthermore, JBER is a major competitor for space in the Anchorage area and is currently growing. According to the Joint Housing Market Analysis (HMA) 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 increase, more than half of the Soldiers may be

accompanied by Families and the remainder would be unaccompanied based on the current planning rations. At JBER, 48 percent of sponsors have children at 1.6 children per sponsor and 52 percent are married (Dogan, 2012). The additional housing requirements for both accompanied and unaccompanied Soldiers may need to be absorbed by both the military and surrounding areas, which is consistent with DoD policy. The surrounding areas of Municipality of Anchorage and MatSu Valley have sufficient vacant housing units as discussed in the socioeconomics section that follows.

Increased training on JBER's existing ranges and training areas would result in increased maintenance of these facilities and maneuver areas.

Less than significant impacts would occur as a result of the effect additional Soldiers may have on JBER's current plans for programmed construction and demolition. Further analysis would be required to quantify these impacts.

4.10.11 Socioeconomics

4.10.11.1 Affected Environment

The ROI consists of JBER and the surrounding communities, specifically the Municipality of Anchorage. The social and economic environment of the communities surrounding JBER is tied to and/or influenced by the state and national climate, which is multifaceted. Local factors may result in deviations from the state/national trends.

Population and Demographics. The 2010 Census population for the State of Alaska was 710,231, a 13.3 percent increase from 2000 (U.S. Census, 2010a) (Table 4.10-15). As of 2010, the predominant races in the State of Alaska are Caucasian, American Indian, and Alaska Natives (U.S. Census, 2010b). Estimated minority population in the State of Alaska is 35.9 percent in 2010 (U.S. Census, 2010c). The racial and ethnic composition of the ROI is presented in Table 4.10-16.

In 2010, the MoA had a total population of 291,826, with the predominant race being Caucasian, and other races having a larger presence (African American, Asian, and American Indian and Alaska Native) (U.S. Census, 2010b). These percentages closely track the trend of the entire state, except for having a decreased percent of American Indians and Alaska Natives.

Table 4.10-15. Population and Demographics

Region of Influence Counties	Population 2010	Population Change 2000-2010 (Percent)
Alaska	710,231	+ 13.3
Anchorage	291,826	+ 12.1

Source: U.S. Census Bureau, State and County Quick Facts, available at <http://quickfacts.census.gov/qfd/index.html> (last accessed February 23, 2011).

Table 4.10-16. Racial and Ethnic Composition

State and Region of Influence Counties	Caucasian (Percent)	African American (Percent)	Native American (Percent)	Hispanic (Percent)	Asian (Percent)	Multiracial (Percent)	Other (Percent)
Alaska	64	3	15	5	5	7	1
Anchorage	63	5	8	8	8	7	1

Information provided for the Municipality of Anchorage includes the census tracts for the communities of Eagle River, Chugiak, Eklutna, Peters Creek, and Birchwood (U.S. Census, 2010a). Specific 2010 populations for these communities by census tract is as follows:

- Census Tract 1.01 (Peters Creek/Eklutna) 5,736
- Census Tract 1.02 (Chugiak and Birchwood) 5,259
- Census Tract 2.01 (N. Eagle River, West of Glenn Highway) 4,110
- Census Tract 2.02 (N. Eagle River, East of Glenn Highway) 5,947
- Census Tract 2.03 (Eagle River) 10,549
- Census Tract 2.04 (Hiland and Eagle River Valley) 3,381 (Mat-Su Agency Partnership, 2011)

Eagle River and other communities are within the Municipality of Anchorage, but Eagle River directly borders the installation to the east with Chugiak located to the northeast of Eagle River and the other listed communities located further to the northeast/east (State of Alaska, 2012).

A comparison of population breakdown for youth and elderly are similar between the state and Anchorage, with approximately 26 percent under 18 years of age and 7 (Anchorage) to 8 (Alaska) percent over 65 years (U.S. Census, 2010b).

The current estimated JBER population of all military employees (uniformed and government civilians) is 38,685. The Army-related population of JBER is measured in three different ways. The daily working population is 6,861, and consists of full-time Soldiers and Army civilian employees working on post. The population that lives on JBER-Richardson consists of 4,310 Soldiers and 3,875 dependents, for a total on-base resident population of 8,185. Finally, the portion of the ROI population related to JBER is 6,408 and consists of Soldiers, Army civilian employees, and their dependents living off post.

Employment, Income and Housing. The main economic drivers for the State of Alaska are the oil industry, tourism (state), and the federal government, with each sector accounting for about one-third of the employment opportunities in Alaska (ADLWD, 2012a). Alaska's largest private employer is Providence Health & Services (ADLWD, 2012b).

Alaska trends for 2012 indicate modest job growth (1.2 percent or 3,900 jobs) from 2011 (ADLWD, 2012a). Anchorage's economy is forecasted to grow by 0.6 percent (1,000 jobs) (ADLWD, 2012a). Construction employment is expected to continue to decline with commercial and residential construction being very weak, although public construction is anticipated to remain strong (e.g., highway, military bases) (ADLWD, 2012a). Health care jobs would continue to increase, although future federal budget cuts may impact this sector as federal dollars pay over a third of Alaska's health bill (ADLWD, 2012a). Other sectors (federal/state government, business and professional services) may continue to sustain their job counts; however, state government jobs tend to be affected by the oil industry and federal spending rather than isolated factors within the state government (ADLWD, 2012a). Nearly 90 percent of the state's unrestricted government funds in 2010 were from oil-related taxes/royalties (ADLWD, 2012a).

Local government employment is likely to continue to decrease marginally in 2012 (ADLWD, 2012a). JBER, the MoA, and the Anchorage School District are reducing their budgets (ADLWD, 2012a). The local economies are partially dependent on military bases in their communities as a source of revenue (ADLWD, 2012a).

Three of the top 10 industries that benefit from federal expenditures fit within the health care sector, which is currently experiencing job growth in Anchorage (U.S. Army, 2011).

Potential challenges for Alaska in the future include declining oil production and decreased federal expenditures; the latter is anticipated to affect Alaska to a greater extent than the rest of the Nation (ADLWD, 2012a).

Compared to 2000, the 2009 employment (private nonfarm) increased in Anchorage (28.3 percent) and overall in the State of Alaska (23.4 percent). Total private nonfarm employment for Anchorage in 2009 was 144,656. Total private nonfarm employment for the State of Alaska was 252,882.

The State of Alaska unemployment rate was 7.5 percent in September 2012) which is below the national average of 7.8 percent as of September, 2012. The MoA is lower than the Alaska average, with a 6.1 unemployment rate for November 2011 (USDAL, 2011a). As compared to the Nation, Alaska only experienced job losses in 2009, whereas the Nation had job losses in 2008, 2009, and 2011, with 2009 experiencing severe job losses (ADLWD, 2012a).

The official poverty rate for the Nation in 2010 was 15.1 percent, which is up from 14.3 percent in 2009 (U.S. Census, 2010f). Alaska is one of the states with the lowest poverty rate averages, with 9.5 percent of the population living in poverty (based on 5-year averages) from 2006 to 2010. The 2011 federal poverty guidelines list the poverty level for Alaska at \$13,600 for an individual and \$27,940 for a family of four (DHHS, 2011).

Based on a 5-year average (2006-2010), the Alaska median household income is \$66,521, with a per capita income of \$30,726 (Quick Facts). In Anchorage (including adjacent communities, e.g., Eagle River-Chugiak), the median household income is \$73,004 and per capita is \$34,678 (Alaska Community Database Community Information Summaries, 2012).

Based on a 5-year average (2006-2010), the estimated Alaska population living in poverty is 9.5 percent with 6.6 percent of this total identified as Families. Based on a 5-year average (2006-2010), the estimated Anchorage population living in poverty is 7.9 percent with 5.8 percent of this total identified as Families.

The median cost of a home in Alaska is \$232,900, which is higher than the national average of \$185,200 (U.S. Census, 2009a). The most populated municipality in Alaska is Anchorage. In 2010, the MoA had a total of 113,032 households, with 107,332 being occupied and 5,700 vacant (U.S. Census, 2010d). In the adjacent Matanuska-Susitna, which includes the cities of Palmer and Wasilla, there are approximately 9,500 units of vacant housing (U.S. Census, 2010e).

According to the JBER housing community profile report, occupancy rates at JBER-Elmendorf were between 97 to 98 percent and between 92 to 98 percent for JBER-Richardson (Parsons, 2009). Housing construction at JBER occurred in the early 1940s and 1950s with additional construction occurring in the 1970s (Parsons, 2009). New construction at JBER-Elmendorf occurred in 2005 following the completion of privatization of Family housing in 2004 (Parsons, 2009). The private developer, Aurora, manages all related assets on JBER (e.g., construction, maintenance, renovations).

In 2007, former FRA and former Elmendorf Air Force Base developed a Joint HMA 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 (U.S. Army, 2008a). 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, but a deficit of housing units for unaccompanied Soldiers (U.S. Army, 2008a).

Currently, there is a shortage of on-base housing for enlisted Soldiers, but current programmed construction for new barracks is being pursued on JBER-Richardson to address this shortage in support of the 4/25 Airborne BCT (Dogan, 2011); however, DoD policy is to rely on the private sector as the primary source for housing (Parsons, 2009).

A recent study indicates that housing shortages may exist within the Municipality of Anchorage if the population continues to increase as projected over the next 20 years, although adjacent Chugiak-Eagle River would not experience housing shortages (MoA, 2012). On the other hand, if development continues within the MoA at the historic rate, there is anticipated to be a shortage of buildable lands whereas this shortage would not exist in Chugiak-Eagle River. However, if the price of housing increases within the MoA, people may decide to live in Chugiak-Eagle River and/or the Matanuska-Susitna (Mat-Su) Valley despite the present availability of housing within the MoA. The study identified potential areas for future residential development in nearby Chugiak-Eagle River, with the focus on lands held/owned by Eklutna Inc. In specific, "Powder Reserve Tract B" could be developed as a residential area and would abut JBER's eastern boundary (MoA, 2012).

Schools. JBER-Richardson children attend Ursa Major Elementary School, Ursa Minor Elementary School, Gruening Middle School, and Eagle River High School, which are part of the Anchorage School District (JBER, 2010a).

Elementary, middle, high, and charter schools are located within 1 mile of the JBER border (ASD, 2012a). Elementary schools include Aurora, Government Hill, Mount Iliamna, Mount Spurr, Mountain View, Muldoon, Orion, Tyson, Ursa Major, Ursa Minor, and Wonder Park (ASD, 2012b). Middle schools include: Clark (ASD, 2012b). High Schools include: Bartlett. Charter Schools include: Alaska Native Cultural (grades K-7), Eagle Academy (K-6), and Winterberry (K-8) (ASD, 2012b).

Recent reporting indicates that enrollment at all schools is near projected levels for fall 2011, with under enrollment reported for elementary schools, middle schools, and charter schools. From fall 2010 to fall 2011, there was a decrease in total enrollment by 0.54 percent (263 students). Fall 2011 projected enrollment also fell short of the projected numbers by 368 students. Only one of the schools is operating at full/over program capacity (Clark, at 107 percent capacity). Other schools with reported information indicate the ability to absorb additional students, specifically: Aurora (90 percent), Government Hill (90 percent), Mountain View (82 percent), Mt. Spurr (89 percent), Muldoon (90 percent), Orion (90 percent), Tyson (97 percent), Ursa Major (83 percent), Ursa Minor (92 percent), Wonder Park (86 percent), and Bartlett (80 percent) (ASD, 2012c).

Public Services, Health and Safety.

Police Services. Police services include two state trooper posts, a Federal Bureau of Investigation center, a district office for the U.S. Marshal Service, and Ted Stevens Anchorage International Airport Police and Fire Department (JBER, 2010a). One military police station is located within the main cantonment, north of the Fireweed neighborhood. (JBER, 2010a).

Fire and Emergency Services. Fire services include JBER-Richardson Fire Department, JBER-Elmendorf Fire Department, Anchorage Fire Department, and Ted Stevens Anchorage

International Airport Police and Fire Department (JBER, 2010a). The Anchorage Fire Department operates out of thirteen fire stations (JBER, 2010a).

Medical Facilities. There are several health care options in Anchorage, including Alaska Regional Hospital and Providence Alaska Medical Center, both with emergency room capabilities. Many other healthcare clinics and private practice offices are within Anchorage. A Department of Veterans Affairs Hospital is located near the Muldoon entrance of JBER and an Anchorage Veterans Center (also part of the Veterans healthcare system) is located on Tudor, south of JBER (VA, 2012). Military healthcare facilities include the U.S. Army medical clinic at JBER-Richardson, the Air National Guard Medical Squadron, and the 673d Medical Group at JBER (JBER, 2010a).

Family Support Services. Child development centers, child care centers, schools, and playgrounds are generally located within close proximity to the residential areas (PACAF, 2011). Children and youth programs are offered within the cantonment area at JBER-Richardson as part of The Family and Morale, Welfare, and Recreation Center (MWR) (JBER, 2010a). JBER-Elmendorf also has a second MWR facility that is available for use.

Recreation Facilities. Recreational facilities are mostly located within the cantonment area, including: a large physical fitness center, a theater, golf course (not within the cantonment area), cross country skiing and running trails, and a small ski hill (JBER, 2010a). JBER-Elmendorf also has these same/similar facilities that are available for use. Additional recreational opportunities are available on base and discussed further in “Biological Resources” and “Land Use Conflicts and Compatibility” herein.

Environmental Justice. E.O. 12898, *Federal Actions to address Environmental Justice in Minority and Low-Income Populations*, requires federal agencies to ensure that federal actions do not disproportionately impact low income and/or minority communities. E.O. 13045 requires federal agencies to identify and assess environmental health risks and safety risks that may disproportionately affect children and ensure that its policies, programs, activities, and standards address disproportionate risks to children that result from environmental health risks or safety risks.

Residential areas border JBER along the west (Government Hill, Mountain View, Northeast Anchorage, and Scenic Foothills) and east (communities of Eagle River, Chugiak, Birchwood, Peters Creek and Eklutna to the northeast) (PACAF, 2011). A review of all census tracts within the communities that border JBER indicate that a portion of Mountain View (Tract 6) is more than 50 percent minority (non-Caucasian African American, Asian, American Indian and Alaska Native, and Native Hawaiian and Pacific Islander), of which 21 percent of the minority population identify themselves as Hispanic/Latino. The largest minority group within Tract 6 is Asian followed by American Indian and Alaska Native and then African Americans with large populations. A review of census block groups within Tract 6 indicates that seven out of eight census blocks are between 53 to 61 percent minority.

The minority population of Census Tract 8.01, also within the community of Mountain View, is under 50 percent; however, within Census Tract 8.01, Block Group 6 is more than 50 percent minority of which 24 percent of the minority population identify themselves as Hispanic/Latino. The largest minority group within Block Group 6 is Asian followed by American Indian and Alaska Native and then African Americans.

4.10.11.2 Environmental Consequences

No Action Alternative

JBER anticipates a beneficial socioeconomic impact under the No Action Alternative. JBER's operations would continue to be a beneficial source of regional economic activity. No adverse impacts to population, employment, income, housing, public and social services, public schools, public safety, or recreational activities are anticipated from the status quo. Changes in population, employment, income, and housing would be anticipated to continue in accordance with historic/present rates.

Environmental Justice. The No Action Alternative is not anticipated to disproportionately impact low income and/or minority communities, and will not have any significant impacts.

Alternative 1: Force Reduction (up to 4,300² Soldiers and Army Civilians)

Economic Impacts. Alternative 1 would result in the loss of approximately 4,300 military employees (Soldiers and Army civilian employees), each with an average annual income of \$58,768³. In addition, this alternative would affect an estimated 2,422 spouses and 4,167 dependent children, for a total estimated potential impact to 6,589 dependents. The total population of military employees and their dependents directly affected by Alternative 1 is projected to be 10,930.

Based on the EIFS analysis, there would be no significant impacts for sales volume or income. There would be significant impacts for employment and population. The range of values that would represent a significant economic impact in accordance with the EIFS model is presented in Table 4.10-17. Table 4.10-18 presents the projected economic impacts to the region for Alternative 1 as assessed by the Army's EIFS model.

**Table 4.10-17. Economic Impact Forecast System and Rational Threshold Value
Summary of Implementation of Alternative 1**

Region of Influence Economic Impact Significance Thresholds	Sales Volume (Percent)	Income (Percent)	Employment (Percent)	Population (Percent)
Economic Growth Significance Value	18.14	17.02	9.94	5.46
Economic Contraction Significance Value	- 12.89	- 10.77	- 3.67	- 2.08
Forecast Value	- 2.93	- 2.93	- 3.90	- 3.7

Table 4.10-18. Economic Impact Forecast System: Summary of Projected Economic Impacts of Implementation of Alternative 1

Region of Influence Impact	Sales Volume	Income	Employment	Population
Total	- \$328,091,700	- \$296,341,200	- 4,936 (Direct) - 970 (Indirect) - 5,906 (Total)	- 10,809
Percent	- 2.93 (Annual Sales)	- 2.93	- 3.90	- 3.7

² Calculations used a number of 4,341 Soldiers and civilians for estimating socioeconomic impacts. This number was derived by assuming the loss of the 4/25 Airborne BCT (roughly 3,450 Soldiers), 30 percent of the installation's other Combat Support Soldiers not associated with the BCT, and up to 15 percent of the civilian workforce. As discussed in Chapter 3, this number is rounded to the nearest hundred personnel when discussing impacts of Alternative 1.

³ This number includes an adjustment for locality pay that is received by Soldiers living and working in Alaska.

The total annual loss in volume of direct and secondary sales in the ROI represents an estimated -2.93 percent change from the current total sales volume of \$11.19 billion within the ROI. Regional income would decrease by 2.93 percent. While approximately 4,300 Army Soldier and civilian employee positions would be lost within the ROI as a direct result of the implementation of Alternative 1, EIFS estimates another 595 military contract service jobs would be lost, and an additional 970 job losses would occur indirectly from a reduction in demand for goods and services. The total estimated reduction in demand for goods and services within the ROI is projected to lead to a loss of 5,906 jobs, or a -3.90 percent change in regional non-farm employment. According to EIFS, this is a significant impact. The total number of employed non-farm positions in the ROI is estimated to be 151,517. A significant population reduction of 3.7 percent within the ROI would be anticipated as a result of this alternative. Of the approximately 292,000 people (including those residing on JBER) that live within the ROI, 10,930 military employees and their dependents would no longer reside in the area following the implementation of Alternative 1. This would lead to a decrease in demand for housing, and increased housing availability in the region. This could lead to a slight reduction in median home values. It should be noted that this estimate of population reduction includes Civilian and military employees and their dependents. This number likely overstates potential population impacts, as some of the people no longer employed by the military would continue to work and reside in the ROI, working in other economic sectors; however, this would in part be counterbalanced by the fact that some of the indirect impacts would include the relocation of local service providers and businesses to areas outside the ROI.

Table 4.10-19 shows the total projected economic impacts, based on the RECONS model, that would be projected to occur as a result of the implementation of Alternative 1.

Table 4.10-19. Regional Economic System: Summary of Projected Economic Impacts of Implementation of Alternative 1

Region of Influence Impact	Sales Volume	Income	Employment
Total	- \$142,797,446 (Local) - \$229,239,065 (State)	- \$203,032,757	- 4,633 (Direct) - 341 (Indirect) - 4,974 (Total)
Percent	- 1.26 (Total Regional)	- 2.01	- 3.28

The total annual loss in volume of direct and secondary sales in the ROI represents an estimated -1.26 percent change in total regional sales volume according to the RECONS model, an impact that is approximately 1.67 percentage points less than projected by EIFS; however, it is estimated that gross economic impacts at the state level would be greater. Extrapolating from sales volume numbers presented in the RECONS model, it is anticipated that state tax revenues would decrease by approximately \$16.05 million as a result of the loss in revenue from sales reductions, which would be \$3.63 million less in lost state sales tax revenue than projected by the EIFS model. Regional income is projected by RECONS to decrease by 2.01 percent, less than the 2.93 percent reduction projected by EIFS. While approximately 4,300 Army Soldier and civilian positions would be lost within the ROI, RECONS estimates another 292 military contract and service jobs would be lost directly as a result of the implementation of Alternative 1, and an additional 341 job losses would occur from indirect reduction in demand for goods and services in the ROI as a result of force reduction. The total estimated reduction in demand for goods and services within the ROI is projected to lead to a loss of 4,974 jobs, or a -3.28 percent change in regional employment, which would be 0.62 percentage points less than projected by the EIFS model.

When assessing the results together, both models predict a net decrease in economic activity of roughly the same order of magnitude within the ROI.

Population and Demographics. JBER anticipates a substantial reduction in military population and training throughput as a result of the implementation of Alternative 1. Alternative 1 would result in the loss of up to 4,300 military employees (Soldiers and Army civilian employees). The total population of military employees and their dependents directly affected by Alternative 1 is projected to be 10,930 military employees and their dependents. Additional discussion of how population loss would affect employment, income, and housing is discussed in the following subsection.

Employment, Income and Housing. Alternative 1 would increase the availability of barracks space for unaccompanied personnel and the increase in the availability of Family quarters. Those outcomes would likely decrease the off-post demand for rentals and purchases of housing. Considering the results of the Joint HMA, this reduction would tend to resolve concerns of housing shortages both on-base and off-base. JBER anticipates long-term, significant adverse affects in the Municipality of Anchorage and in the smaller communities of the ROI.

Schools. JBER anticipates the potential for significant adverse impacts to Ursa Major and Ursa Minor elementary schools. It is likely that these schools have a large population of military dependent children, but specific numbers of military-connected students are not readily available.

Public Services, Health and Safety. Under Alternative 1, the anticipated population decrease at JBER-Richardson would likely reduce the demand for law enforcement services, fire and emergency services, and medical care services on that part of the installation and off post to some degree. Despite the potential decreased demand for these services under Alternative 1, these public services would still be available to the remainder of the community even if at a reduced scope because police, fire, and medical services are essential. JBER anticipates less than significant impacts to public health and safety under Alternative 1.

Family Support Services. Under Alternative 1, JBER anticipates a reduced demand for MWR and other Army community service programs on JBER-Richardson, although the MWR facility on JBER-Elmendorf would continue to exist and be utilized by the JBER-Elmendorf population and the remainder of the JBER-Richardson population. JBER anticipates less than significant impacts to Family support services under Alternative 1.

Recreation Facilities. Use of recreation facilities on post would likely decline under Alternative 1. They would continue to be operated at little or no cost and would continue to be used by the JBER-Elmendorf population and the remainder of the JBER-Richardson population.

Environmental Justice. Under Alternative 1, JBER anticipates no disproportionate adverse impact to minorities, economically disadvantaged populations, or children. Although census tracts near the boundary of JBER (e.g., Tract 6 and Tract 8) have a large population of minorities, there would be no disproportionate impact under Alternative 1. Job losses would likely be felt across the ROI, affecting all income levels and many economic sectors.

Alternative 2: Installation gain of up to 1,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

Economic Impacts. Alternative 2 would result in the increase of up to 1,000 Soldiers, each with an average annual income of \$58,768. In addition, this alternative would affect an estimated 558 spouses and 960 dependent children, for a total estimated potential impact to 1,518

dependents. The total population of military employees and their dependents directly affected by Alternative 2 is projected to be 2,518 Soldiers and their dependents.

Based on the EIFS analysis, there would be no significant impacts for increases to sales volume, income, population, or employment. The range of values that would represent a significant economic impact in accordance with the EIFS model is presented in Table 4.10-20. Table 4.10-21 presents the projected economic impacts to the region for Alternative 2 as assessed by the Army's EIFS model.

**Table 4.10-20. Economic Impact Forecast System and Rational Threshold Value
Summary of Implementation of Alternative 2**

Region of Influence Economic Impact Significance Thresholds	Sales Volume (Percent)	Income (Percent)	Employment (Percent)	Population (Percent)
Economic Growth Significance Value	18.14	17.02	9.94	5.46
Economic Contraction Significance Value	- 12.89	- 10.77	- 3.67	- 2.08
Forecast Value	0.67	0.67	0.90	0.85

**Table 4.10-21. Economic Impact Forecast System: Summary of Projected Economic
Impacts of Implementation of Alternative 2**

Region of Influence Impact	Sales Volume	Income	Employment	Population
Total	\$75,579,770	\$68,265,660	1,137 (Direct) 223 (Indirect) 1,360 (Total)	2,490
Percent	0.67 (Annual Sales)	0.67	0.90	0.85

The total annual gain in volume of direct and secondary sales in the ROI represents an estimated 0.67 percent change in total sales volume from the current sales volume of \$11.19 billion within the ROI. Regional income would increase by 0.67 percent. While 1,000 new Soldiers gained within the ROI, EIFS estimates another 137 direct contract service jobs would be gained, and an additional 223 jobs would be created as a result of increases in demand for goods and services in the ROI as a result of the indirect impacts of force increases. The total estimated increase in demand for goods and services within the ROI is projected to lead to a gain of 1,360 jobs, or a 0.90 percent change in regional employment. The total number of employed non-farm positions in the ROI is estimated to be 151,517. A population increase of 0.85 percent within the ROI would be anticipated as a result of this alternative. Of the approximately 292,000 people (including those residing on JBER) that live within the ROI, 2,518 Soldiers and their dependents would begin to reside in the area following the implementation of Alternative 2. This would lead to an increase in demand for housing, and decreased housing availability in the region. This would lead to a slight increase in median home values.

Table 4.10-22 shows the total projected economic impacts, based on the RECONS model, that would be projected to occur as a result of the implementation of Alternative 2.

Table 4.10-22. Regional Economic System: Summary of Projected Economic Impacts of Implementation of Alternative 2

Rational Threshold Value	Sales Volume	Income	Employment
Total	\$31,838,887 (Local) \$51,112,376 (State)	\$45,269,280	1,065 (Direct) 76 (Indirect) 1,141 (Total)
Percent	0.27 (Total Regional)	0.45	0.75

The total annual gain in volume of direct and secondary sales in the ROI represents an estimated 0.27 percent change in total regional sales volume according to the RECONS model, an impact that is approximately 0.40 percentage points less than projected by EIFS; however, it is estimated that gross economic impacts at the state level would be greater. Extrapolating from sales volume numbers presented in the RECONS model, it is anticipated that state tax revenues would increase by approximately \$3.06 million as a result of the gain in revenue from sales reductions, which would be \$1.44 million less in additional state sales tax revenue than projected by the EIFS model. Regional income is projected by RECONS to increase by 0.45 percent, slightly less than the 0.67 percent increase projected by EIFS. While 1,000 Soldier positions would be gained within the ROI, RECONS estimates another 1,065 direct contract and service jobs would be gained, and an additional 76 jobs would be created indirectly from an increase in demand for goods and services in the ROI. The total estimated increase in demand for goods and services within the ROI is projected to lead to a gain of 1,141 jobs, or a 0.75 percent change in regional employment, which would be 0.08 percentage points less than projected by the EIFS model.

When assessing the results together, both models predict beneficial economic impacts and a net increase of economic activity of roughly the same order of magnitude within the ROI.

Population and Demographics. Under Alternative 2, JBER anticipates a minor increase in military population and training throughput. Alternative 2 would result in the increase of up to 1,000 Soldiers. The total population of military employees and their dependents directly affected by Alternative 2 is projected to be 2,518 Soldiers and their dependents. Additional discussion of how population loss would affect employment, income, and housing is discussed in the following subsection.

Employment, Income and Housing. Alternative 2 would likely add to the pool of unaccompanied Soldiers and/or Families that would want to live on post. Barracks space for unaccompanied personnel and quarters for Families would not be available due to the current shortage; however, current construction efforts may serve to lessen the potential increase in the unaccompanied housing deficit. Also, the demand for off-post rentals and purchases of housing would likely increase. Although the recent Anchorage HMA suggests potential housing and buildable land shortages over the next 20 years, any increased demand may serve to increase the need for services, such as construction services, which are currently seeing job losses in the current economic climate. JBER anticipates long-term, minor beneficial impacts in the Municipality of Anchorage and in the smaller communities of the ROI.

Schools. JBER anticipates the potential for minor impacts to schools under Alternative 2. Although there would be an increased need due to increased dependents at JBER-Richardson, only one of the schools in close proximity to JBER is operating at full/over program capacity. Nevertheless, Alternative 2 would further challenge local school districts to accommodate this increase within the existing budgetary constraints, if any.

Public Health and Safety. Under Alternative 2, the anticipated population increase at JBER would likely increase the demand for law enforcement services, fire and emergency services, and medical care services on and off post to some degree. It is possible that increased demand for these services could lead to decreased services if existing budgets are already limited. However, services available at JBER could serve to lessen any adverse impact on these services within the Municipality of Anchorage and surrounding communities. JBER anticipates minor impacts to public health and safety under Alternative 2.

Family Support Services. Under Alternative 2, JBER anticipates an increased demand for MWR and other Army community service programs on post. The demand for Family support services off post would likely increase also. However, additional services may be available on JBER-Elmendorf, which could be used by Soldiers and their dependents. JBER anticipates minor impacts to Family support services under Alternative 2.

Recreation Facilities. Use of recreational facilities on post would likely increase under Alternative 2. JBER anticipates that utilization increases would be minor. Some facilities could become crowded and less user-friendly during peak use hours. However, additional facilities located on JBER-Elmendorf could be used by Soldiers and their dependents. Overall, the impact would be less than significant.

Environmental Justice. Under Alternative 2, JBER anticipates no disproportionate adverse impact to minorities, economically disadvantaged populations, or children. Although census tracts near the boundary of JBER (e.g., Tract 6 and Tract 8) have a large population of minorities, there would be no disproportionate impact under Alternative 2. The impacts of the anticipated growth of JBER would be felt throughout the ROI and across all populations.

4.10.12 Energy Demand and Generation

4.10.12.1 Affected Environment

The ROI for this VEC is JBER infrastructure and supporting infrastructure outside of JBER, which could be affected by impacts at JBER.

Utilities are privatized on JBER-Richardson. As of 2008, a private contractor assumed ownership, operations, and maintenance of the heat distribution, electrical distribution, potable water distribution, and wastewater collection utility systems at JBER-Richardson (JBER, 2010a). The contractor is responsible to comply with all applicable federal, state, and local laws and regulations and installation-specific requirements in performing its duties under its privatization contract (JBER, 2010a). A separate independent contractor retains partial ownership of the natural gas infrastructure (JBER, 2010a).

Electrical power is supplied to JBER-Richardson by Anchorage Municipal Light and Power (JBER, 2010a). As of 2008, there were about 30 MW of capacity available to JBER-Richardson, with higher demand in the winter. The installations largest load in the winter is about 15 MW (JBER, 2010a).

Natural gas distribution systems on JBER-Richardson are owned, operated, and maintained by and belong to three independent contractors and each service specific portions of JBER-Richardson (JBER, 2010a). Two contractor lines and distribution systems have sufficient capacity and are considered in good condition (JBER, 2010a). The third contractor lines are considered in good condition but lacking cathode protection (JBER, 2010a).

The energy supply and utilities infrastructure at JBER-Richardson is more than sufficient to meet existing demands (U.S. Army, 2008a). Additionally, the third contractor continues to assess opportunities for upgrades or replacements to ensure cleaner and more efficient use and distribution of power (U.S. Army, 2008a).

4.10.12.2 Environmental Consequences

No Action Alternative

The No Action Alternative would result in minor effects to existing energy demand and utilization by JBER. JBER would continue to look for ways to reduce energy use and increase energy efficiency as a result of this alternative.

Alternative 1: Force Reduction (up to 4,300 Soldiers and Army Civilians)

Long-term beneficial impacts to the power generation system are anticipated resulting from the proposed force reduction. Decreases associated with demand on the power plant, energy distribution lines, and infrastructure would result. The overall influence of the force reduction is anticipated to result in a decrease of regional power demand. Less energy resources, including coal and fuel, would be consumed.

Alternative 2: Installation gain of up to 1,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

JBER would experience minor impacts from the additional Soldiers and Family members. The installation's current energy infrastructure would be able to accommodate the addition of 1,000 Soldiers and more than 1,500 additional Family members. An increase in population associated with this alternative would increase demand on the power plant, energy distribution lines, and infrastructure. Given that privatization resulted 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 anticipated to be minimized to a minor impact. There may be additional long-term energy demand in training areas; however, demand is anticipated to be slight and inconsequential compared to system capacity. Current energy conservation efforts at JBER would likely reduce any net increase in energy use. In addition, a private contractor 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 this population increase.

4.10.13 Land Use Conflicts and Compatibility

4.10.13.1 Affected Environment

The ROI for this VEC is JBER and surrounding areas along the installation boundary or within the area of potential impacts of the Proposed Action.

JBER-Richardson is located in south-central Alaska, approximately 7 miles northeast of downtown Anchorage and it is situated between two prominent natural features: the Knik Arm of the Cook Inlet to the north and the Chugach Mountains to the east (JBER, 2010a). The community of Eagle River is northeast and roughly 12 miles from the entrance off the Glenn Highway overpass (JBER, 2010a).

Land use on JBER-Richardson includes the following categories: airfield, community, residential, industrial, and ranges and training with total acreage estimated at 61,000 acres of which training areas and ranges account for about 92 percent of land use (JBER, 2010a). The acreage used for training and ranges includes a heliport, a drop zone suitable for airborne and air and land operations, firing ranges, and other infantry training areas with a majority of the area designated as maneuver training areas (60 percent) (JBER, 2010a). The cantonment area comprises approximately 9.4 percent of the total land area and includes military housing, schools, medical and dental facilities, youth services, a commissary and post exchange, libraries, a large physical fitness center, a theater, golf course, cross country skiing and running

trails, and a small ski hill (JBER, 2010a). Most facilities (e.g., administration buildings and barracks) are located in the center of the cantonment area whereas the residential areas are to the south and east (JBER, 2010a). Table 4.10-23 provides a summary of estimated acreage for JBER-Richardson. On JBER-Richardson, residential areas are located east of the intersection of Richardson Drive and Arctic Valley Road (PACAF, 2011). The neighborhoods on JBER-Richardson are Birch Hill, Kodiak, Moose Haven, Cottonwood, Independence, Fireweed, Raven Ridge, Puffin Park. Child development centers, child care centers, schools, and playgrounds are generally located within close proximity to the residential areas (PACAF, 2011). Most of these areas are in close proximity to the Glenn Highway, which is located to the south (PACAF, 2011).

Table 4.10-23. Acres of U.S. Army Garrison Alaska Land Use Planning Categories at Joint Base Elmendorf-Richardson

Facilities	Acres
Transportation	339
Housing	336
Community	187
Installation Support	40
Range and Training Land	54,416
Maintenance	2,019
Outdoor Recreation	901
Miscellaneous	2,828
Total	61,376

Source: USARAK, 2004.

Outgrants (right to use through a lease or use agreement) on JBER-Richardson represent 5.2 percent of the total acreage (JBER, 2010a). The State of Alaska Department of Military and Veteran Affairs as the largest single-agency user, holding 904 acres, which is used by the National Guard who maintains a helicopter fleet at Bryant Army Airfield that is used primarily for rescue missions in the mountains and tidal flats surrounding JBER (JBER, 2010a). The majority of the other outgrants are for space for equipment and access rights (e.g., easements and ROW) (JBER, 2010a).

In accordance with the Sikes Act, some parts of JBER-Richardson are accessible to the public for recreational use when not in use for military training. Most of the northern part of JBER-Richardson is open to recreational use, while the southern part of the installation is only open to non-motorized forms of recreation (JBER, 2010a). 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 as well as access to the Moose Run Golf Course and Otter Lake (JBER, 2010a). However, these uses are second to military training needs.

Construction within JBER also takes into account Air Installation Compatibility Use Zones (AICUZ). At the time of this PEA, AICUZ for JBER was not readily available, but a review of a past AICUZ map indicates that these areas are generally adjacent to airfields.

4.10.13.2 Environmental Consequences

No Action Alternative

If this alternative were chosen, no changes to land use conditions would occur. Continuing minor impacts to land use would be anticipated. Any noise generated is anticipated to remain within acceptable limits.

Alternative 1: Force Reduction (up to 4,300 Soldiers and Army Civilians)

Minor impacts to land use would be anticipated to occur through implementation of Alternative 1 at JBER. A reduction in training land use would be anticipated that roughly correlates with the number of Soldiers inactivated or realigned as a result of this alternative in comparison to those remaining at JBER. The loss of approximately 4,300 Soldiers and Army civilians would decrease use of existing training land and training facilities. Alternative would involve the demolition of some facilities and construction of new facilities within the existing cantonment area. Minor land use impacts from construction and deconstruction at JBER are anticipated. No new range construction would occur as a result of this alternative. In addition, none of the current ranges would be expanded as described for the action alternatives. Therefore, no significant effects to land uses are anticipated.

Implementation of the JBER institutional programs, associated land management practices and coordination among Army, federal, state, and local land managers would continue. However, a reduction in live-fire and maneuver training may increase opportunities for recreational and hunting activities due to more training areas being opened.

Alternative 2: Installation gain of up to 1,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

There would be less than significant impacts from land use conflicts and compatibility anticipated as a result of this alternative. The gain of up to 1,000 Soldiers would require the additional use of training areas and qualification ranges. There may be short term and localized effects to land use compatibility from construction noise and activities that create dust. Construction projects would be located within areas of JBER-Richardson that are not currently used for recreational or hunting activities. Private properties bordering training areas/ranges 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 anticipated to be less than significant.

The additional live-fire training at JBER-Richardson 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 anticipated to be affected. The impacts from live-fire facilities would be localized to the vicinity around the ranges and are anticipated to be less than significant. 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.

The increase in maneuver training frequency may result in some restrictions on public access in some training areas. Impacts associated with public access closures are anticipated to be less than significant because alternate areas on JBER would still be available for recreational and hunting 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.

Less than significant impacts are anticipated; further analysis would be required to quantify these impacts.

4.10.14 Hazardous Materials and Hazardous Waste

4.10.14.1 Affected Environment

The ROI for this VEC is JBER and the Municipality of Anchorage facilities that handle the storage and/or disposal of hazardous materials/waste, which could be affected by this Proposed Action.

Resource Conservation and Recovery Act Hazardous Waste. Hazardous materials and wastes include ammunition, UXO, POLs, lead, asbestos, PCBs, pesticides, radon, and contamination found at ERP sites (U.S. Army, 2008a). The JBER Oplan 19-3 (Environmental Management Plan) governs the use, generation, accumulation, storage, transport, and disposal of non-hazardous, hazardous, RCRA hazardous wastes and hazardous materials on JBER (JBER, 2011b).

JBER is regulated as a Large Quantity Generator of RCRA hazardous waste (generates more than 2,200 pounds of hazardous waste or more than 2 pounds of acutely hazardous waste per month) (JBER, 2010a). There are about 100 waste accumulation points within JBER and within the cantonment area (JBER, 2010a). JBER has received an EPA hazardous waste permit to operate a Central Storage Facility located at Building 11735 Vandenberg Avenue (JBER, 2010a). JBER's EPA identification number is AK8570028649 (JBER, 2010a). TSCA regulated wastes may also be generated on JBER such as PCBs (JBER, 2010a).

Compliance with Oplan 19-3 would ensure proper identification, management and disposal of hazardous waste and hazardous materials with a policy of minimizing the generation of waste. All persons on JBER (military, civilian, contractor, and tenants) must comply with Oplan 19-3 and the laws and regulations for which it seeks to ensure compliance (JBER, 2011b).

In relevant part, Subtitle C of RCRA regulates hazardous wastes and includes solid wastes if they are hazardous. Otherwise, solid wastes (non-hazardous) are regulated as solid waste, which is usually a function of local government waste-management. Solid wastes are hazardous if they exhibit one of the following characteristics: ignitability, corrosivity, reactivity, or toxicity), or are specifically listed as a hazardous waste by the EPA under 40 CFR Subpart M, Sections 266.200 and 266.202, or a hazardous waste under 40 CFR 261 Part 261 Subpart C or D (Garrett, 2004).

The use of ranges and training areas on JBER involves the use of military munitions (e.g., propellants, explosives, mortar rounds, artillery ammunition, small arms ammunition, grenades, and demolition charges). However, it is estimated that approximately 99.8 percent of munitions are consumed during combustion, resulting in minimal deposition on ranges/training lands if munitions operate properly (high order detonation) (U.S. Army, 2008a).

Military munitions may be classified as a hazardous waste under RCRA and; therefore, would be regulated under RCRA. The Military Munitions Rule excludes and exempts from the definition of solid waste, military munitions if exposed to certain uses. In general, a military munition is not a solid waste when: (1) unused military munitions are in the military stockpile and storage; (2) used of fired munitions; and (3) munitions being used for their intended purpose (JBER, 2010b).

An unused military munition is a solid waste when the munition is: (a) abandoned by being disposed of, burned, detonated (except during intended use), incinerated, or treated prior to disposal; or (b) the munition is removed from storage for the purpose of being disposed of, burned, or incinerated, or treated prior to disposal; or (c) the munition is deteriorated or

damages to the point where it cannot be put back into serviceable condition, and cannot reasonably be recycled or used for other purposes, or (d) the munition has been declared a solid waste by an authorized military official. Further, a used or fired military munition is a solid waste when (i) transported off range or from the site of use (not a range) for purposes of storage, reclamation, treatment, disposal, or treatment prior to disposal; or (ii) is recovered, collected, and then disposed of by burial, or landfilling either on or off a range, or (iii) if it lands off range and is not promptly rendered safe and/or retrieved (62 *Federal Register* 56492 (November 8, 1995)).

Further guidance has also been established in DoD Directive 4715.11 Environmental and Explosives Safety Management on Operational Ranges within the U.S. (U.S. Army, 2008a).

Coordination with JBER Compliance program would ensure proper classification and handling of potential wastes generated at JBER.

Non-Resource and Recovery Act 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 JBER Oplan 19-3, and are centrally processed at the JBER Hazardous Waste Center located in Building 4314 on Kenney Avenue on JBER-Elmendorf for off-post disposal (JBER, 2010b). While previous years the installation generated a significant amount of hazardous waste (2001 for example saw a spike due to ERP restoration of PCB contaminated soil), the average for JBER-Richardson is less than 100,000 pounds per year (U.S. Army, 2008a). Very little biomedical waste is generated by the installation, and is stored in medical or dental facilities (U.S. Army, 2008a). The generation, transport, and disposal of waste is carried out in accordance with the JBER OPlan 19-3 (Environmental Management Plan).

Solid Waste Management. Municipal solid waste (e.g., residential) is collected on JBER-Richardson and hauled to the Municipality of Anchorage Landfill located adjacent to Eagle River, just north of JBER-Richardson along the Glenn Highway at Hiland Road (JBER, 2010a). The landfill capacity will allow for continued operation until 2043 (JBER, 2010a).

Demolition and construction waste from JBER is placed in special cells at the landfill (JBER, 2010a).

Unexploded Ordnance. The ERF Impact Area contains UXO and other potentially hazardous materials as it is an active military range, which is restricted to authorized personnel and where range clearance operations occur infrequently (e.g., as needed for access of authorized personnel/blow in place operations) (U.S. Army, 2008a). In addition to the ERF Impact Area, any range and training area within JBER has the potential to contain UXO even though not identified as a contaminated area on the ERP Atlas. For example, the southern portion of JBER-Richardson was historically used for training and may contain UXO.

Petroleum, Oils, Lubricants, and Storage Tanks. The installation has 22 ASTs ranging in capacity from 300 gallons to 50,000 gallons (U.S. Army, 2008a). These ASTs are located throughout the cantonment area; they generally contain fuels and fuel oil (U.S. Army, 2008a). 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 SPCC Plan for all storage areas (U.S. Army, 2008a). JBER-Richardson also has 42 USTs (U.S. Army, 2008a). Thirty-nine of these USTs are located on the main cantonment area (U.S. Army, 2008a). The other three are located at National Guard facilities located within JBER-Richardson's boundaries (U.S. Army, 2008a).

Petroleum-contaminated sites also exist within JBER and investigative and remediation efforts are carried out by the ERP program. The majority of these sites are within the cantonment area, although contamination of groundwater may lead to transport of such contamination.

Lead. On JBER-Richardson lead contaminated soil was found in housing areas developed prior to 1978 as a result of the exterior LBP (JBER, 2010a). Child play areas were also found to be contaminated with elevated levels of lead in the soil; these areas were subsequently capped to reduce lead exposure (JBER, 2010a). It is likely that LBP remains in older housing units (JBER, 2010a). Some/all of the buildings currently occupied by the 4/25 Airborne BCT may contain LBP. If managed in place, this does not present a serious risk.

Asbestos. Asbestos may be found in linoleum and floor tile, as part of adhesive, wallboard, pipe insulation, pipe-fitting insulation, and tarpaper (U.S. Army, 2008a). Activities (e.g., renovation and demolition) with the potential to encounter asbestos should be carried out in accordance with the JBER Asbestos Management and Operations Plan that is being developed. The majority of asbestos records for the JBER-Elmendorf were inadvertently destroyed and JBER is attempting to replace that documentation. Some/all of the buildings currently occupied by the 4/25 Airborne BCT may contain asbestos. If managed in place, this does not present a serious risk. However, demolition of such structures would have to comply with the Asbestos National Emissions Standards for Hazardous Air Pollutants (NESHAP). Coordination with JBER Compliance program would ensure proper classification and handling of potential wastes generated at JBER.

Pesticides and Herbicides. Pesticide and herbicide application is performed under contract by a private contractor (JBER, 2010a). Legally applied pesticides (chlordane) do not require remediation under CERCLA or RCRA and can be managed in place pursuant to 42 US 9607i (JBER, 2010a).

Radon. The EPA has designated Anchorage and the surrounding areas as Zone 2 for Radon – radon levels between 2 picocuries per liter (pCi/L) to 4 pCi/L (JBER, 2010a). In past surveys, radon has been detected above 4 pCi/L in housing areas. JBER-Richardson's radon records were inadvertently destroyed; however, many of the housing units were subsequently demolished (JBER, 2010a). All new facilities constructed at JBER-Richardson would undergo radon surveys (U.S. Army, 2008a).

ERP Sites. Soil and groundwater contamination has been identified at JBER, but is mostly confined to the cantonment areas with the exception of the ERF Impact Area (JBER, 2011c). Contamination includes PCBs, white phosphorus, petroleum products, and chlorinated solvents. Both former FRA and former Elmendorf Air Force Base have been listed on the National Priorities List under the CERCLA (EPA, 2012c).

In relevant part, the Federal Facility Agreement between the Army, EPA, and Alaska Department of Environmental Conservation divided former FRA into four OUs or cleanup sites: OU-A, OU-B, OU-C, and OU-D. RODs set forth investigation and/or remedial action objectives agreed to between the responsible parties and exist for OU-C (1998 ROD) and OU-A/ OU-B (1997 ROD). In relevant part, the ERF wetland area including OB/OD pads is OU-C. The ERF Impact Area (used for artillery and mortar training by the 4/25 Airborne BCT) was listed on the National Priorities List due to the presence of white phosphorus. A comprehensive remedial investigation was undertaken as part of the CERCLA process and white phosphorus was determined to be the only contaminant of concern at ERF (CH2M Hill, 1997). A comprehensive review of past investigations at the ERF Impact Area from 1980 to 1993 indicates that no net accumulation or contamination at the ERF Impact Area was shown from munitions constituents other than white phosphorus, although munitions residues were detected in low concentrations in either surface sediments, soils, or surface water including HMX, RDX, TNT, Tetra, PETN,

2,4-DNT, 2,6-DNT, 2-Am-4,6-DNT, 4-Am-2,6-DNT, DNB, Nitrates, and Phosphates. It appears that the ERF wetland complex may act as a filter that prevents contaminant loading at the ERF Impact Area. Active remediation efforts at ERF are complete; however, long-term monitoring continues at the ERF Impact Area with the next 5-year review set to occur in 2018 to evaluate the continued success of the CERCLA remedy per the terms of the CERCLA ROD.

4.10.14.2 Environmental Consequences

No Action Alternative

Overall, less than significant effects are anticipated as a result of the No Action Alternative. There would be no change in JBER's management of hazardous materials, toxic substances, hazardous waste, or contaminated sites. JBER would continue to manage existing sources of hazardous waste in accordance with the HWMP.

Cantonment Construction. Ongoing construction/maintenance activities have the potential to encounter hazardous waste and materials and other potential contaminants, although none of these activities would be anticipated to generate hazardous waste and materials. These activities would be conducted in accordance with the JBER Oplan 19-3, and other installation programs and plans, which are aimed at ensuring proper handling of any hazardous waste and material. Potential to encounter contaminated soils and/or groundwater is possible during subsurface work as the majority of contamination that exists on JBER is within the cantonment area. Coordination with JBER Restoration Program would ensure that contaminated sites are not disturbed, where such disturbance would trigger response and remedial action under RCRA or other laws and regulations.

Pesticides existing in soils at the JBER-Richardson may have adverse effects to nearby water bodies during construction due to stormwater runoff. Implementation of BMPs and mitigations to minimize runoff from construction sites would be required. Use of vehicles may generate POLs, which may enter the environment; however, implementation of BMPs would prevent significant impacts.

There is a potential to encounter LBP and asbestos during construction-related activities (e.g., demolition). Coordination with JBER Compliance Program would ensure compliance with the Asbestos NESHAP and proper disposal of construction debris.

Any new construction would involve the testing, recordation, and mitigation (if necessary) for radon. Solid waste would continue to be generated. Advance coordination with JBER environmental elements (Compliance and Restoration) would prevent inadvertent discoveries and/or improper handling of hazardous wastes and materials.

Range Maintenance. Ongoing maintenance activities have the potential to inadvertently encounter hazardous waste and materials, although none of these activities would be anticipated to generate such materials. Use of vehicles may generate POLs, which may enter the environment, but since maintenance occurs on an as needed basis, the potential for accidental spills of POLs is assumed to be low. Implementation of BMPs would prevent significant impacts.

A review of the 2011 ERP Atlas indicates that none of the identified ranges where the 4/25 Airborne BCT would train (excluding ERF Impact Area) are located within restoration sites. Maintenance work does not normally occur in the ERF Impact Area. Activities are not anticipated to trigger RCRA consistent with the Military Munitions Rule. Coordination with JBER Restoration Program would ensure that contaminated sites are not disturbed, where such disturbance would trigger response and remedial action under RCRA or other laws and regulations.

Live-Fire Training. The number of Soldiers stationed and training at JBER-Richardson would remain the same and continued use of existing ranges and training areas (including the ERF Impact Area) would occur under current restrictions and using permissible weapon systems. No changes are anticipated in the amounts of ammunition that would be used, or in the generation of UXO and lead contamination on training ranges. Activities are not anticipated to trigger RCRA consistent with the Military Munitions Rule.

Maneuver Training. The number of Soldiers stationed and training at JBER-Richardson would remain the same and; therefore, the intensity and frequency of maneuver training at JBER-Richardson would remain at current levels. Use of vehicles may generate POLs, which may enter the environment; however, implementation of BMPs would prevent significant impacts. Implementation of the USAG Alaska institutional programs, including its current BMPs, SPCC Plan, and SWPPP, would address the ongoing effects of maneuver training. Activities are not anticipated to trigger RCRA consistent with the Military Munitions Rule.

Less than significant impacts are anticipated, although the risks of generating and encountering hazardous or contaminated materials would continue at current levels. JBER programs are in place to prevent adverse impacts.

Alternative 1: Force Reduction (up to 4,300 Soldiers and Army Civilians)

Less than significant impacts regarding hazardous waste generation are anticipated as a result of the implementation of Alternative 1. In the short term, there would be an increase in the demolition of outdated and no longer needed facilities. This would increase the volume of solid waste generated. In addition, an increase in asbestos and LBP disposal is anticipated until facility reduction is completed as a result of this alternative. Construction workers and Army personnel would take measures to dispose materials in accordance with regulatory requirements installation management plans. With the implementation of the JBER institutional programs, BMPs and SOPs, impacts are anticipated to be negligible or minor.

Training Infrastructure Construction. No new training infrastructure construction would occur as a result of Alternative 1. In addition, none of the current ranges would be expanded as described for the No Action Alternative. Therefore, a reduction in hazardous materials and hazardous wastes are anticipated.

Live-Fire Training. The number of required live-fire user days per year at JBER would drop below current levels and no new types of weapons are anticipated to be introduced to training areas. Therefore, a reduction in the amounts of ammunition that would be used or in the generation of UXO and lead contamination on training ranges is anticipated.

Maneuver Training. The intensity and frequency of maneuver training at JBER would drop below current levels. In addition, no new maneuver areas would be required and maneuver training would be conducted in the footprint of existing ranges and trails at JBER. Therefore, a reduction in hazardous materials and hazardous wastes from maneuver training is anticipated.

Reduced long-term impacts are anticipated although the risks of generating and encountering hazardous or contaminated materials would continue below baseline conditions; however, JBER programs are in place to prevent adverse impacts. Further analysis would be required to quantify these impacts.

Alternative 2: Installation gain of up to 1,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

Less than significant impacts from hazardous materials and waste would be anticipated with an increased Soldier strength of up to 1,000 Soldiers and their Families. The storage, use, handling, and disposal of hazardous materials, toxic substances, and hazardous wastes would

not increase the risk to human health due to direct exposure, would not increase the risk of environmental contamination, and would not violate applicable federal, state, local, or DoD regulations. Existing management procedures, regulations, plans, and permits would be used to minimize risk.

Garrison Construction and Deconstruction. Construction and demolition of structures within the cantonment area 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.

The increase in Soldiers from all of these stationing alternatives would result in the generation of biomedical wastes from dental and medical facilities on post. These wastes would be processed in accordance with current SOPs and regulations. Because the installation is already considered a Large Quantity Generator no additional permitting or significant actions are likely to be required.

Training 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. Alternative 2 would increase the frequency of Soldier live-fire training, 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.

No new weapon types would be introduced to JBER training areas. 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 to the environment. BMPs would continue to be exercised throughout the garrison. JBER'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 Pamphlet 200-1.

Less than significant impacts are anticipated, although the risks of generating and encountering hazardous or contaminated materials would increase slightly above current levels. JBER programs are in place to prevent adverse impacts.

4.10.15 Traffic and Transportation

4.10.15.1 Affected Environment

The ROI for this VEC is JBER and Municipality of Anchorage transportation infrastructure that could be affected by the Proposed Action.

JBER-Richardson is accessible via air, road, rail, and sea and uses all four modes of transportation to support training and logistics requirements. The Anchorage International Airport is the nearest commercial airport and is located about 15 miles southwest of JBER with other civilian airports. JBER includes the JBER-Elmendorf Airfield and Bryant Army Airfield on JBER-Richardson (JBER, 2010a).

Anchorage has two primary highways, the Glenn Highway, and Seward Highway. Glenn Highway offers access from JBER-Richardson to the northeast/Fairbanks, and also to the Parks Highway, where it continues to Glenn Allen and ultimately connects to Richardson Highway offering a second means of access to Fairbanks. It connects to the ALCAN Highway that offers road access through Canada to the lower 48 (U.S. Army, 2008a). The Seward Highway offers access to the southern Alaskan ports of Whittier, Seward, and Homer (U.S. Army, 2008a).

The installation has five entrances. Three entrances are accessible from the Glenn Highway (at FRA and Arctic Valley Road (connecting to D Street/"Main Gate"), Muldoon, and Boniface), one in the industrial area of Anchorage (Post Road) and one from downtown Anchorage (Government Hill) (Gordon, 2012). There is also the Artillery Road gate (which is primarily an emergency and alternate entrance to JBER-Richardson north of Eagle River) (Gordon, 2012). The areas east of the Glenn Highway are not fully controlled by a manned gate (FRA and Arctic Valley Road and the Arctic Valley Road entrance-only exit off the Glenn Highway with access to the Moose Run Golf Course) (Gordon, 2012).

Major roads servicing JBER-Richardson include the Glenn Highway, Arctic Valley Road, Bear Run Lane Frontage Road, and D Street (JBER, 2010a). Richardson Drive turns into Davis Highway to the west as it connects to JBER-Elmendorf (PACAF, 2012).

On JBER, the main east-west arteries are Richardson Drive and D Street (Gordon, 2012). The secondary east-west corridors are the Davis Highway and Arctic Valley Road (Gordon, 2012). The main north and south arteries are 5th and 6th Streets, with secondary corridors being 1st Street (Gordon, 2012). The main artery to the North JBER-Richardson training areas is Otter Lake Road/Route Bravo (Gordon, 2012).

At the time of this PEA, LOS data was not readily accessible; however, information does exist as to the potential issues associated with traffic and congestion on JBER and in the immediate vicinity.

The installation periodically experiences traffic flow issues at the main gate on JBER-Richardson due to the morning and especially evening commute. Findings from a 2008 study have forecasted traffic conditions for the next 10 years at JBER-Richardson. Congestion during peak hours was noted at the Glenn Highway and D Street Interchange with the following traffic recommendations:

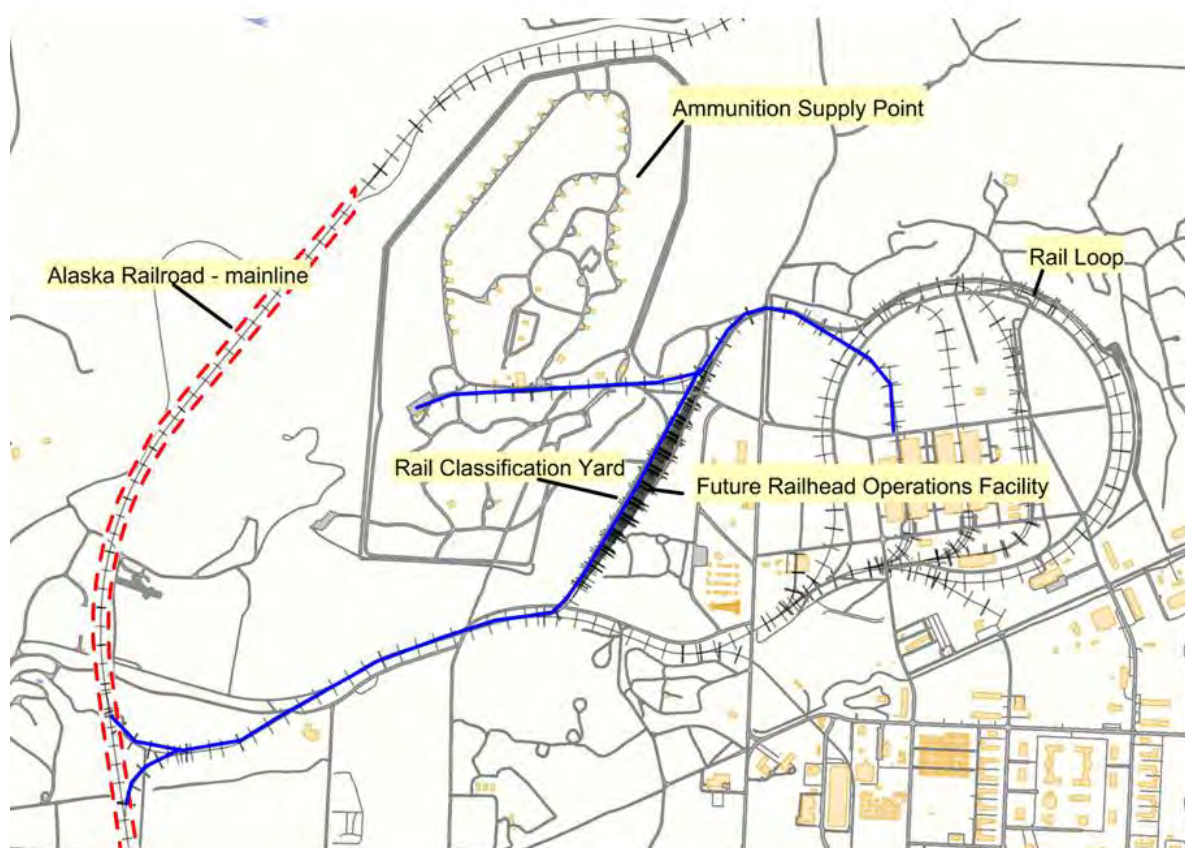
- Lengthening the north and southbound ramps to the Glenn Highway;
- Expanding the northbound on-ramp of the Glenn Highway to two lanes;
- Placement of signals at the northramps/Fort Access Road at the Glenn Highway interchange; and
- Placement of signals at 5th Street/Richardson Drive on JBER-Richardson.

In addition to the main gate at JBER-Richardson, the intersection of Vandenberg Avenue and the Richardson Highway and Davis Avenue experience traffic congestion (Rasmussen, 2012). JBER-Richardson is currently considering commissioning a traffic study to evaluate alternatives and mitigations, but is waiting funding (Dougan, 2011).

The Alaska Railroad travels through the installation and the cantonment area and offers access to FWA and central Alaska, and Seward and Whittier ports (U.S. Army, 2008a). JBER

Richardson has a rail classification yard (holding yard), located in an area to the east of the main Alaska Railroad rail line on JBER-Richardson, and is currently constructing a Railhead Operations facility adjacent to it (U.S Army, 2008a). The Alaska Railroad owns the main line running from the Port of Anchorage to FWA and central Alaska; however, JBER owns the rail lines that run to the rail classification yard from the main line. Under agreement, JBER currently allows the Alaska Railroad use of the rail classification yard for storage.

Location of the rail facilities are provided in Figure 4.10-7. The rail outlined in blue indicates rail lines that are presently existing/in use and owned by JBER; the rest of the rail lines, e.g., within the Rail Loop are demolished/no longer in use. The location of the extension that was the subject of past discussions would extend north from the Rail Classification Yard, past the ASP, until it reaches the Alaska Railroad main line to the north. The current Railhead Operations facility project seeks to increase railcar handling capacity and; therefore, improving the efficiency of future deployments.



Source: PACAF, 2012.

Figure 4.10-7. Joint Base Elmendorf-Richardson Rail Facilities

JBER rail shipments can be primarily summed up into heavy vehicle and rolling equipment movements and occasional ammunition shipments (Gordon, 2012). Railways allow for mobilization of tactical vehicles in addition to being a staging point for FWA rail movements (Gordon, 2012). Additionally, the Port of Anchorage is used by the military to ship a variety of types of cargo. The Port is accessible directly from JBER or by road via the Glenn Highway to downtown Anchorage (JBER, 2010a). When the Port of Anchorage is closed due to ice,

supplies may be shipped through the Ports of Seward and Whittier which are ice-free year-round and accessible by road and rail (JBER, 2010a).

4.10.15.2 Environmental Consequences

No Action Alternative

Less than significant impacts are anticipated under the No Action Alternative. Surveys and studies conducted on the existing transportation system determined that it is sufficient to support the current traffic load. However, continued traffic patterns and congestion within and at major traffic control points leading into and away from the base would persist at current levels. Noticeable traffic exists at the main gate at JBER-Richardson during rush hours and can impact traffic on major highways during peak rush hour.

Alternative 1: Force Reduction (up to 4,300 Soldiers and Army Civilians)

Beneficial long-term effects would be anticipated from the decrease in military fleet vehicles and private vehicles, likely alleviating the traffic flow issues at the Main Gate entrance to the installation. Under Alternative 1, the Soldier and civilian population of JBER would decrease and the reduced traffic would no longer compete with seasonal (summertime and spring) traffic conditions associated with tourism. A reduction in military use of range roads or trails within JBER training areas would occur. In addition, impacts to local highways associated with military convoys would also be considerably reduced. Potential conflicts between civilian use and military use of local roadways would be reduced proportionately with the reduction in overall military population at JBER.

Alternative 2: Installation gain of up to 1,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

There would be less than significant, short and long-term impacts on traffic and transportation systems.

Cantonment Construction. Alternative 2 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 JBER's primary and secondary streets. While traffic flow may have minimal impacts to Glenn Highway, there could be back-ups at the main gate entering the installation, driving the possible redistribution of traffic to the secondary gate entering the installation from Elmendorf Air Force Base, or altering flow at the main gate.

Long-term effects would be anticipated to general traffic conditions in the cantonment area. There would be an anticipated shortfall of organizational and motor pool 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 motor pool and parking facilities to accommodate this level of growth. The increase in base population would likely put more demand on the intersection of Vandenberg and Richardson Highway.

Range Maintenance. 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.

Significant impacts are not anticipated to traffic and transportation from increased Soldiers and dependents, although traffic would continue to be an issue at the main gate during rush hour. Less than significant impacts would be anticipated. Further analysis would be necessary to quantify these impacts.

4.10.16 Cumulative Effects

Region of Influence

The ROI for this cumulative impact assessment of Army 2020 realignment at JBER encompasses the Municipality of Anchorage in the State of Alaska to the extent of potential direct and indirect impacts noted in prior sections, unless otherwise stated in the analysis below. The Municipality of Anchorage is Alaska's largest and most populated city. JBER is a key component of the economy within the ROI. JBER has been supporting the Army since 2010; however, the Army has been present at former FRA since the 1940s.

For the purpose of this analysis, cumulative effects analysis considers reasonable foreseeable Army, DoD, and other federal agency actions that are funded and in the planning process for moving forward. This analysis also includes past or present projects not already included for consideration as part of the direct and indirect impacts analysis in the previous sections. Reasonably foreseeable projects are considered those projects which are funded or zoned, and therefore there is a high likelihood of project completion.

There are numerous planned or proposed actions within the ROI that have the potential to cumulatively add impacts to Army Force 2020 alternatives. These actions are either in progress or reasonably could be initiated within the next 5 years. A list of projects below presents some of the projects which may add to the cumulative impacts of the implementation of Army 2020 realignment alternatives.

Joint Base Elmendorf-Richardson Projects (DoD and non-DoD) Actions (Past, Present, and Reasonable Foreseeable):

- *Transformation EIS* (Past);
- *Grow the Army EA* (Past);
- *Range Upgrade and Expansion EA* (Past);
- *F-22 Plus Up EA* (Past/Present);
- *Demolition Training EA* (Past/Present/Future);
- *Resumption of Year-Round Firing EIS* (Future);
- Proposed Relocation of F-16 (Future);
- Proposed Runway Extension at Runway 16-34 (north-south) (Future);
- Otter Lake and Sixmile Conservation Projects (Future); and
- Land Swap (Future).

Other Agency (DoD and non-DoD) Actions (Past, Present, and Reasonable Foreseeable):

- North End Runway Material Extraction and Transport EA (Past);
- Port of Anchorage Intermodal Expansion Project (Past/Present/Future);
- Fire Island Wind Project (Present/Future);

- Knik Arm Bridge and Toll Authority (KABATA) (Future); and
- Joint Pacific Alaska Range Complex (JPARC) EIS (Future).

No Action Alternative

Beneficial through significant but mitigable adverse cumulative impacts would be anticipated from implementing the No Action Alternative. Under the No Action Alternative, no changes in military authorizations, or local environmental conditions would be anticipated. Installation facility shortages and excesses would remain at their currently planned levels without additional stationing or force reductions. The Army would continue to implement some facilities reductions of outdated/unused facilities. Under the No Action Alternative, cumulative impacts to the following VECs would be beneficial to minor only and are not carried forward for detailed discussion in this section. These VECs are: airspace, noise, water resources, facilities, energy demand and generation, and land-use conflict and compatibility. Cumulative impacts under the No Action Alternative that would be more than minor are: air quality, cultural resources, soil erosion, biological resources, wetlands, hazardous material and hazardous waste, and traffic and transportation. Potential cumulative impacts are discussed below.

Air Quality. The ROI for this cumulative impacts analysis is the same as Section 4.10.2 above. There exists the potential for cumulative impacts to air quality in the form of mobile emissions, stationary emissions, fugitive dust, training-related fires, and prescribed burns from projects within JBER and in the surrounding areas. On a regional level, this Proposed Action would tend to contribute to cumulative air quality impacts, but the data suggests that this action would be unlikely to lead to a violation of NAAQS or cause surrounding communities to violate the NAAQS.

The No Action Alternative would have the potential to result in the generation of CAPs that would be dispersed into the surrounding environment, both within and outside of JBER; however it is likely that such impacts would remain with baseline conditions explained in Section 4.10.2.

Cultural Resources. The ROI for this cumulative impacts analysis is the same as Section 4.10.4 above. There exists the potential for cumulative impacts to cultural resources in the form of disturbance or destruction of known and/or unknown cultural resources. On a regional level, this Proposed Action would tend to contribute to cumulative cultural resource impacts to the same extent as other projects that are carried out in areas where cultural resources may exist. The risk of losing unknown cultural resources seems to exist with any project being carried out in areas that have not been surveyed and where inadvertent discoveries of cultural resources could occur based on history of the area even if best efforts to avoid such impacts are implemented.

Under the No Action Alternative, it is possible to inadvertently encounter unknown cultural resources. However, this Proposed Action is within the scope of past actions that have occurred in both developed and undeveloped areas. For example, no significant individual or cumulative effects were anticipated in the *Range Upgrade and Expansion EA*, which analyzed actions that occurred in relatively undeveloped parts of the base where the potential for existence of cultural resource tends to be greater as compared to the cantonment area (USARAK, 2002). Future actions listed above, along with this Proposed Action, seem to hold the possibility of the inadvertent disturbance or destruction of cultural resources based on the cultural history of the Cook Inlet area. Although inadvertent discoveries are possible in this Proposed Action, it is not anticipated that loss of known or unknown cultural resources would occur in conjunction with the implementation of JBER's cultural resource management measures. Since the Proposed Action involves continued use of existing ranges and training areas and assumes proper procedures would be followed, e.g., consultations and surveys, it is

unlikely that the Proposed Action would not tend to result in significant cumulative impacts. Therefore, although the potential exists for inadvertent discovery of unknown cultural resources under this alternative, the Proposed Action is not anticipated to result in significant cumulative impacts. Cumulative impacts would be projected to be significant but mitigable.

Soil Erosion. The ROI for this cumulative impacts analysis is the same as Section 4.10.6 above. There exists the potential for cumulative impacts in the form of soil compaction, soil erosion, soil contamination, and/or loss of soil productivity. Impacts to soil are also interrelated to impacts to vegetation and/or water resources. On a regional level, impacts to soil resources alone on JBER would not likely represent a significant cumulative impact as the soil resources on JBER are not of special importance as compared to soil in areas designated to support farmland. On the other hand, impact to soil resources may result in indirect impacts to vegetation and/or water resources, which may tend to indirectly impact other sensitive resources, e.g., wetlands and the critical habitat of the beluga whale adjacent to JBER.

Under the No Action Alternative, impacts to soil would continue and largely be contained within the boundaries of areas that already experience use. However, there still remains the possibility that impacts would occur despite best efforts of the existing ITAM program. There exists a potential to contribute to cumulative impacts to soil quality and stability under the No Action Alternative.

Biological Resources. The ROI for this cumulative impacts analysis is the same as Section 4.10.7 above. There exists the potential for cumulative impacts to biological resources in the form of noise, soil resource impacts, vegetation impacts, and water resource impacts. Cumulative impacts are also likely to result because they all have the potential to affect the health of the ecosystem upon which specific species may depend. On a regional level, impacts to biological resources on JBER would not likely represent a significant cumulative impact to biological resources because adherence to natural resource programs and plans, BMPs, and management measures for other resource areas (e.g., soil resources) would tend to mitigate against potentially significant impacts. However, it is possible that continued and future impacts to various VECs could contribute to cumulative impacts to the beluga whale. Despite the continued issuance of no-Jeopardy Biological Opinions to projects in the Cook Inlet area it is possible that the continued decline in the population of the species is a result of cumulative impacts of at least all past and present actions within Cook Inlet. It is possible that future actions may eventually present a significant cumulative impact to the species.

There exists a potential to contribute to cumulative impacts to biological resources because training does occur in habitat areas on JBER and other indirect impacts may also affect the health of the ecosystem (e.g., runoff from cantonment area construction) as a result of implementation of all alternatives. For example, continued development in developed and undeveloped areas may encroach on wildlife corridors and habitat. However, JBER is bound by Chugach State Park to the south and southeast, which may act as a refuge to displaced terrestrial species. However, it is not anticipated that this Proposed Action would not likely result in impacts that would result in any significant impact to biological resources, e.g., declines of any population of a threatened and endangered species; fisheries; terrestrial mammals; and/or waterfowl and eagles. On the other hand, management of natural resources on JBER may result in loss of individuals of a species in the case of depredation permits along the flight line to avoid BASH-related accidents. But since this Proposed Action is within the scope of past-larger actions, it is unlikely that this Proposed Action would result in significant cumulative impacts with the implementation and enforcement of BMPs to avoid impacts (e.g., SWPPP). One caveat to this discussion is potential impacts to the beluga. Since it is not known what is the cause of their population decline, it is possible that impacts to the beluga directly (e.g.,

noise) and/or indirectly (e.g., biological resources, soil resources, wetlands, and water resources) may be, in part, a reason for their decline.

Future actions listed above that may affect the beluga whale are the *Draft EIS for Resumption of Year-Round Firing*, the Ports of Anchorage projects, the relocation of F-16 from Eielson to JBER, and the Fire Island Wind Project. These projects involve work within and/or impacts to the marine environment that have the potential to affect the beluga and/or its critical habitat. A review of the Port of Anchorage Biological Opinion indicates that no jeopardy to the beluga is anticipated. The continued issuance of Biological Opinions indicates that cumulative effects are not yet at a level where development should be halted to preserve the continued existence of the species. However, current information suggests a continued downward trend in the beluga population. Given the continuing decline of the beluga population, it is possible that future projects may result in significant impacts even if the anticipated impacts are within the scope of past actions for which a no Jeopardy Opinion was issued. JBER carries out restoration activities to repair and/or prevent damages to biological resources. For example, future projects at Otter Lake and Sixmile Creek/Lake are intended to increase salmon populations in these waterways, primarily for the benefit of the beluga whale as salmon are a PCE of the belugas' critical habitat. Resource management actions at JBER should continue to emphasize sensitive areas such as the Ship Creek Riparian Area, ERF Impact Area and associated tidal wetlands, Alpine tundra in the adjacent Chugach Mountains, and old growth forest to ensure the continued survival of any species relying on such habitats as biodiversity seems to be an indication of general ecosystem health. Therefore, although the potential exists for cumulative impacts to biological resources, the Proposed Action is not anticipated to result in significant cumulative impacts. However, consultation under this NEPA effort should occur to ensure that this Proposed Action would not jeopardize the continued existence of threatened and endangered species and/or its critical habitat.

Wetlands. The ROI for this cumulative impacts analysis is the same as Section 4.10.8 above. There exists the potential for cumulative impacts to wetlands in the form of training at the ERF Impact Area (largely a wetland), loss of wetlands due to construction in areas where wetlands are present, site runoff from construction into surrounding environment that may contain wetlands (indirect impacts), and impacts from the use of existing ranges and training areas adjacent to wetlands (indirect impacts). On a regional level, cumulative impacts to wetlands may occur if wetlands are lost; however, the U.S. Air Force is required to prepare an environmental assessment to evaluate cases in which wetlands may be lost. But, in general, JBER aims to avoid impacts to wetlands by siting projects outside of areas where wetlands may be present. In addition, the rate of new construction may decline in the near future with decreases in federal spending and corresponding decreased need for new construction, which would further reduce the potential for impacts to wetlands. Some potential impacts, however, are unavoidable (e.g., using the ERF Impact Area, which is largely a wetland).

As to continued use of the ERF Impact Area, there is no data available to indicate that training at the ERF Impact Area has actually resulted in loss of wetlands and/or loss in function as the ERF Impact Area experiences high tidal flows that are believed to repair damage from mortar and artillery impacts to the wetland. The ERF Impact Area has been used as an impact area since the 1940s and despite the contamination of white phosphorus that occurred in the 1980s, the ERF Impact Area continues to be viable habitat for migratory birds and beluga whales. Additionally, the success of the CERCLA cleanup process at the ERF Impact Area shows that waterfowl mortality is below the levels set forth in the CERCLA ROD's remedial action objectives. Despite the impacts from white phosphorus, the past CERCLA investigations indicate that other potential contaminants in the ERF Impact Area are not accumulating and; therefore, do not present a risk to human health and/or the environment.

Future actions listed indicate that the proposed extension of the JBER-Elmendorf North-South Runway has the potential to affect wetlands similar to the North End Runway Material Extraction and Transport Environmental Assessment that resulted in a FNSI/Finding of No Practicable Alternative.

Therefore, although the potential exists for cumulative impacts to biological resources, the Proposed Action is not anticipated to result in significant cumulative impacts.

Hazardous Material and Hazardous Waste. The ROI for this cumulative impacts analysis is the same as Section 4.10.14 above. There exists the potential for cumulative impacts as a result of hazardous material and/or waste generation.

Pollution prevention efforts at JBER are aimed at minimizing the generation of hazardous material and waste. Despite these efforts, waste streams would continue to exist on JBER, generally speaking, and would require access to facilities for proper storage, transport, treatment and/or disposal. In the event of its generation, these hazardous materials and wastes would be handled in accordance with the law. This Proposed Action and/or future actions listed above do not appear to present a possibility of generating large amounts of materials and waste and/or affecting known contaminated sites in violation of the law. Continued use of available landfills both within and outside of Alaska for proper treatment and/or disposal would likely occur. The landfill used by JBER and non-federal entities appears to have capacity that would not be an issue until 2043. The continued use of the ERF Impact Area does not present a concern at this time since white phosphorus is banned and also since the JBER ERP continues to meet its remedial action objectives under the CERCLA ROD.

There is always some degree of risk that contaminants may inadvertently enter the environment and/or activities may result in the inadvertent discovery or generation of such materials/waste. However, following proper protocol and coordination with appropriate JBER offices would eliminate concerns over the improper handling, storage, generation, transport, and/or disposal of hazardous materials and waste.

Therefore, although the potential exists for cumulative impacts to hazardous material and/or waste, the Proposed Action is not anticipated to result in significant cumulative impacts.

Traffic and Transportation. The ROI for this cumulative impacts analysis is the same as Section 4.10.15 above. There exists the potential for cumulative impacts to traffic and transportation within JBER and along the Glenn Highway that connects the Municipality of Anchorage with the outlying areas where commuters live.

The No Action would not likely lead to overcapacity of transportation routes within and/or outside of JBER, as certain roads are normally congested during rush hour. Congestion is not solely a function of JBER activities, but more due to the fact that there is only one main Highway connecting the Municipality of Anchorage with the outlying areas. Future actions listed above would reduce impacts to traffic (e.g., Knik Arm bridge), and would partially offset current congestion issues.

Therefore, although the potential exists for cumulative impacts to traffic and transportation the Proposed Action is not anticipated to result in significant cumulative impacts.

Alternative 1: Force Reduction (up to 4,300 Soldiers and Army Civilians)

Cumulative impacts as a result of the implementation of Alternative 1 range from beneficial impacts to significant impacts which are anticipated for socioeconomics. Under Alternative 1, cumulative impacts to the following VECs would be beneficial or minor only and are not carried forward for detailed discussion in this section. These VECs are: air quality, airspace, noise, soil erosion, wetlands, water resources, facilities, energy demand and generation, land-use conflict

1 and compatibility, and traffic and transportation. Cumulative impacts under Alternative 1 that
2 would be projected to have more than minor adverse impacts are: cultural resources, biological
3 resources, socioeconomics, and hazardous material and hazardous waste. Potential
4 cumulative impacts are discussed below.

5 **Cultural Resources.** Cumulative impacts to cultural resources under Alternative 1 would be
6 significant but mitigable for the same reasons as the No Action cumulative effects.

7 **Biological Resources.** Alternative 1 is anticipated to result in less than significant cumulative
8 impacts to biological resources. Alternative 1 would result in similar cumulative impacts to those
9 discussed as a result of the No Action Alternative cumulative effects analysis, however, impacts
10 would occur at reduced levels attributable to less Army training and construction.

11 **Socioeconomics.** The ROI for this cumulative impacts analysis is the same as Section 4.10.11
12 above. Significant impacts to socioeconomics (employment and population) are anticipated with
13 the implementation of this alternative. On a regional level, these impacts would be felt by those
14 that rely directly and indirectly on federal spending. This would be compounded by any losses
15 or reductions in service member numbers by the U.S. Air Force, Coast Guard, Navy or Marine
16 Corps within the ROI. Future cuts in federal spending may cause further economic impacts in
17 Alaska. The current trend of decreased federal spending would may contribute to cumulative
18 socioeconomic impacts in Alaska and reduced state tax income. The implementation of
19 Alternative 1 is likely to result in significant cumulative impacts to socioeconomics.

20 No environmental justice impacts are anticipated as a result of this Proposed Action in regards
21 to socioeconomics and/or other effects, e.g., noise impacts, under Alternative 1.

22 **Hazardous Material and Hazardous Waste.** Less than significant cumulative impacts are
23 anticipated for the same reasons discussed under the No Action Alternative cumulative effects
24 discussion.

25 **Alternative 2: Installation gain of up to 1,000 Combat/Combat Support Soldiers resulting** 26 **from Brigade Combat Team Restructuring and Unit Realignments**

27 Cumulative impacts as a result of the implementation of Alternative 1 range from beneficial
28 impacts to significant but mitigable. Under Alternative 2, cumulative impacts to the following
29 VECs would be beneficial to minor only and are not carried forward for detailed discussion in
30 this section. These VECs are: airspace, socioeconomics, and energy demand and generation.
31 Cumulative impacts under the Alternative 2 that would result in more than minor adverse
32 impacts are: air quality, cultural resources, noise, soil erosion, biological resources, wetlands,
33 water resources, facilities, hazardous material and hazardous waste, land-use conflict and
34 compatibility, and traffic and transportation. Potential cumulative impacts are discussed below.

35 **Air Quality.** The ROI for this cumulative impacts analysis is the same as Section 4.10.2 above.
36 There exists the potential for cumulative impacts to air quality in the form of mobile emissions,
37 stationary emissions, fugitive dust, training-related fires, and prescribed burns from projects
38 within JBER and in the surrounding areas. On a regional level, this Proposed Action would tend
39 to contribute to cumulative air quality impacts, but the data suggests that this action would be
40 unlikely to lead to a violation of NAAQS or cause surrounding communities to violate the
41 NAAQS.

42 Alternative 2 would have the potential to result in the generation of CAPs that would be
43 dispersed into the surrounding environment, both within and outside of JBER. However, as
44 compared to the other alternatives, Alternative 2 would likely have the potential to increase
45 impacts to air quality to above baseline conditions. For example, Alternative 1 would likely

1 result in air quality impacts at a reduced level (compared to baseline explained in Section
2 4.10.2), which may act as an offset for other actions resulting in air quality impacts.

3 As to Alternative 2, a review of past military NEPA documents affecting JBER indicate that this
4 Proposed Action would not exceed the potential impacts anticipated in projects of larger scope
5 that have occurred at JBER. For example, the Grow the Army EA did not find significant
6 individual or cumulative impacts to air quality as a result of a 1,773 increase of Soldiers at
7 JBER-Richardson. It is unlikely that this Proposed Action would result in significant cumulative
8 impacts where these past larger actions have not resulted in noticeable impacts to air quality as
9 indicated by the current information presented in Section 4.10.2.1. Section 4.10.2.1 sets forth
10 the affected environment, which can be viewed as the result of all past actions. Future actions
11 listed above, along with this Proposed Action, seem likely to result in air quality impacts would
12 occur during new construction associated with the Port of Anchorage, for example, and also as
13 a result of potential increases in aircraft use at JBER. However, construction would result in
14 temporary impacts and F22 analysis indicates that recent relocation of aircraft to JBER does not
15 have the potential for significant impacts to air quality.

16 Therefore, although the potential exists for cumulative impacts to air quality, this Proposed
17 Action is not anticipated to result in significant adverse cumulative impacts. However, the
18 emerging data and knowledge about GHG emissions and climate change may result in the need
19 for further analysis of potential air quality impacts.

20 **Cultural Resources.** Cumulative cultural resource impacts would be significant but mitigable
21 for the same reasons discussed as part of the No Action Alternative.

22 **Noise.** The ROI for this cumulative impacts analysis is the same as Section 4.10.5 above.
23 There exists the potential for cumulative impacts in the form of noise generation and impacts on
24 the surrounding environment and communities. On a regional level, noise impacts would be
25 consistent with the continued operation of JBER and no new areas within JBER or the
26 communities along its border would experience increased intensity of noise per training events,
27 although increase frequency may occur. However, noise has the potential to impact the
28 endangered Cook Inlet beluga whale and consultation for the Proposed Action may be required
29 for noise impacts pursuant to the ESA and MMPA.

30 Under Alternative 2, the duration of noise events may be prolonged, but the intensity is
31 anticipated to remain within baseline conditions. As to community impacts, the recent F22 Plus-
32 Up EA indicates that noise impacts are within acceptable limits to human hearing. The F22
33 Plus-Up did not indicate environmental justice impacts as a result of increased noise. Thus
34 future projects increasing noise impacts to adjacent communities would likely remain within
35 acceptable levels and not affecting low income and/or minority communities disproportionately.

36 But, there exists a potential to contribute to cumulative impacts as to the impact of noise on the
37 beluga whale. Many of the past and future projects noted above have the potential to generate
38 noise and/or involve work in the waters of the Cook Inlet, the location of critical habitat for the
39 beluga. For example, the *Draft EIS for the Resumption of Year-Round Firing Opportunities*
40 (RYFO) in addition to the civilian projects in the Cook Inlet (Port of Anchorage Intermodal
41 Expansion) indicates potential impacts to the beluga whale. A review of the NMFS's Biological
42 Opinion for the Port of Anchorage expansion indicates that the project would not jeopardize the
43 continued existence of the beluga, although the action would result in take by harassment. The
44 same is true for the Draft EIS for RYFO. However, new information published by NMFS
45 indicates that the population of the beluga continues to decline from 340 animals in 2010 to 284
46 animals in 2011. This may be attributable to the cumulative impacts various actions in the
47 region are having on the species. Nevertheless, consultation under the ESA and MMPA would
48 ensure that this Proposed Action would not likely jeopardize the continued existence of any

endangered or threatened species and/or its critical habitat. In addition, JBER is currently evaluating baseline noise-producing operations (e.g., demolition training) adjacent to the ERF Impact Area in addition to proposing conservation projects aimed at benefiting the beluga whale (e.g., Otter Lake and Sixmile Conservation projects aimed at salmon habitat enhancement).

Therefore, although the potential exists for cumulative impacts from noise, this Proposed Action is not anticipated to result in significant adverse cumulative impacts. However, this determination would be subject to future consultation findings under the ESA and MMPA if Alternative 2 were selected.

Soil Erosion. The ROI for this cumulative impacts analysis is the same as Section 4.10.6 above. There exists the potential for cumulative impacts in the form of soil compaction, soil erosion, soil contamination, and/or loss of soil productivity. Impacts to soil are also interrelated to impacts to vegetation and/or water resources. On a regional level, impacts to soil resources alone on JBER would not likely represent a significant cumulative impact as the soil resources on JBER are not of special importance as compared to soil in areas designated to support farmland. On the other hand, impact to soil resources may result in indirect impacts to vegetation and/or water resources, which may tend to indirectly impact other sensitive resources, e.g., wetlands and the critical habitat of the beluga whale adjacent to JBER.

Under Alternative 2, impacts to soil would continue and largely be contained within the boundaries of areas that already experience use under the No Action. However, increased training as a result of the implementation of Alternative 2 may result in increased impairment to soil resources, which would require more focused attention from the ITAM program that exists to conserving and managing soil resources impaired by training and annual RTLA reports provide the needed information from which to assess and address soil impacts.

However, past and future projects indicate that this Proposed Action is within the scope of past analyses and that future action's appears to contemplate larger projects that would disturb soil to a greater extent than this Proposed Action. For example, the Range Upgrade and Expansion projects resulted in construction of new training areas in undeveloped parts of the base, however, this Proposed Action only contemplates continued use of existing ranges and training areas at continued levels, slightly increased levels (within the scope of the increase analyzed in Grow the Army Force Structure Realignment), and at substantially decreased levels (equivalent to the scope of analysis presented in the *EIS for Transformation of U.S. Army Alaska*). Since this Proposed Action contemplates continued use of these areas with the continuation of the ITAM/RTLA program, it is unlikely that this Proposed Action would exceed the anticipated impacts in these prior analyses. Future actions listed above do not indicate any potentially significant project(s) in regards to soil resources that would cause this Proposed Action to rise to a level of significant impact. For example, the proposed North-South Runway Extension at JBER-Elmendorf would occur largely within an area that has already experienced gravel extraction (see *North End Runway Material Extraction and Transport Environmental Assessment*). Therefore, although the potential exists for soil resources impacts under this alternative, the Proposed Action is not anticipated to result in significant cumulative impacts.

Biological Resources. Increased training under Alternative 2 would be projected to have significant but mitigable cumulative impacts. Alternative 2 may require further NEPA analysis and consultations with the NMFS for ESA and MMPA compliance.

Wetlands. The implementation of Alternative 2 would be anticipated to result in less than significant cumulative impacts to wetlands as is discussed in the No Action Alternative cumulative effects analysis of this PEA. However, increased use of the ERF Impact Area as a result of the implementation of Alternative 2 of this Proposed Action may require further NEPA analysis.

Water Resources. The ROI for this cumulative impacts analysis is the same as Section 4.10.9 above. There exists the potential for cumulative impacts to water resources in the form of indirect impacts from construction sites including stormwater runoff, soil impacts and loss of vegetation that may contribute to erosion and sedimentation affecting waterways, and potential impacts to groundwater as a result of any spills that may occur. On a regional level, this Proposed Action would tend to contribute to non-point source pollution, which has the potential to result in impairment of waterways and drinking water as can be seen in the case of Eagle River, Ship Creek, Chester Creek, and Campbell Creek.

Alternative 2 would result in the continuation of impacts from baseline and/or slightly increased training at ranges and training areas. However, the continued implementation and enforcement of BMPs, SWPPPs, the SPCC Plan, and JBER Oplan 19-3 in addition to other measures indicated for impacts to soil resources, vegetation, and wetlands would ensure that any potential impacts to water resources remain at acceptable levels.

The Proposed Action is within the scope of past analyses that anticipated larger scope of work and; therefore, it would be unlikely for this action to exceed the potential impacts of past actions and present a significant cumulative impact to water resources. A review of future actions listed above do not indicate any potentially significant project(s) in regards to water resources would cause this Proposed Action to rise to a level of significant impact assuming that standard BMPs are implemented for the in-water work apparent for many of the civilian projects. As to military projects, the proposed Otter Lake and Sixmile conservation projects are aimed at increasing and restoring salmon runs, although removal of invasive pike would require the application of Rotenone, which is a common practice for removal of pike. Measures would be implemented to ensure that Rotenone does not impact water quality and/or other species not targeted for removal. This process has been used in other areas of Alaska.

Therefore, although the potential exists for cumulative impacts to water resources, this Proposed Action is not anticipated to result in significant adverse cumulative impacts.

Facilities. The ROI for this cumulative impacts analysis is the same as Section 4.10.10 above. There exists the potential for cumulative impacts to facilities that include the potential for a shortage of space and/or increased need to demolish unused spaces. On a regional level, this Proposed Action would not result in shortages of housing within the surrounding community, but may result in increased renters and home construction.

Alternative 2 could lead to facility shortages within the cantonment area; however, JBER would continue to adjust its operations to meet the changing mission.

A review of past military NEPA documents indicates that this Proposed Action would not exceed the potential impacts anticipated in projects of larger scope. For example, the *Transformation EIS* analyzed impacts of relocating 4,000 Soldiers (similar to Alternative 1) and the *Grow the Army EA* analyzed impacts of relocating 1,773 Soldiers to JBER-Richardson (similar to Alternative 2). Space management efforts at JBER-Richardson ensured continuation of the mission despite the constant change. Future actions listed above would not be anticipated to cause significant impacts to facilities management at JBER.

Hazardous Material and Hazardous Waste. In spite of the fact that increased generation of hazardous material and waste is anticipated as a result of the implementation of Alternative 2, less than significant cumulative impacts are anticipated for the same reasons discussed under the No Action Alternative cumulative effects discussion.

Land Use Conflict and Compatibility. The ROI for this cumulative impacts analysis is the same as Section 4.10.13 above. There exists the potential for cumulative impacts to land use conflict and compatibility in the form of noise impacts to the surrounding community and the

environment. However, efforts are made by JBER to avoid noise impacts during certain hours and days.

The recent *F22 Plus-Up EA* indicates that increased noise generated from increased aircraft use does not hold the potential for significant individual or cumulative impacts to the surrounding community.

Alternative 2 is not anticipated to result in significant adverse cumulative impacts to land use.

Traffic and Transportation. Future actions listed above would reduce cumulative impacts to traffic (e.g., Knik Arm bridge), and would partially offset current congestion issues and potential increase in traffic at JBER caused by the implementation of Alternative 2, so that impacts to traffic remain cumulatively less than significant.

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4.11 JOINT BASE LANGLEY-EUSTIS, VIRGINIA

4.11.1 Introduction

The Fort Eustis part of Joint Base Langley-Eustis (JBLE) is located adjacent to the City of Newport News, Virginia; a very small portion of the installation lies across Skiffes Creek in James City County. It encompasses approximately 8,250 acres and approximately 12 miles northwest of downtown Newport News. The installation lies on a peninsula (Mulberry Island) located at the confluence of the James and Warwick rivers (Figure 4.11-1). For the purposes of this analysis, the portion of JBLE that will be evaluated is what used to be Fort Eustis prior to implementation of joint basing. Therefore, this analysis will still utilize “Fort Eustis” when referring specifically to the areas that may be affected within JBLE.

The surrounding land area to the north of Fort Eustis is primarily suburban with low-to-medium-density residential neighborhoods lying in the upland areas above the wetland and marsh areas of the tidal creeks that flow into the James and Warwick rivers. A four-lane divided highway provides primary access to and from the installation (Fort Eustis Boulevard/VA Route 105), connecting the post to Warwick Boulevard (U.S. Route 60), I-64, Jefferson Avenue (VA Route 143) and U.S. Route 17. There is a secondary gate off of Warwick Boulevard. The installation is served by an active rail spur connecting to a CSX rail siding in the vicinity of Lee Hall. There is a 3,020 foot airfield on the installation.

The installation mission is to host Headquarters TRADOC as well as the Atlantic Region of the Installation Management Command. The 7th SUSBDE (Forces Command [FORSCOM]) is the major Combat Support Unit on post. Specialized Parts of the U.S. Army Transportation Center & School are on Fort Eustis due to the unique facilities available here; primarily railhead, watercraft and cargo specialist operations. The 128th Aviation Brigade is also located here. Other major tenant units include the Aviation Applied Technology Directorate, Joint Task Force – Civil Support, the Army Training Support Center and the McDonald Army Health Center.

For alternatives the Army is considering as part of Army 2020 force structure realignments, Fort Eustis does not anticipate any significant adverse environmental impacts as a result of the implementation of Alternative 1 (Force reduction of up to 2,700 Soldiers and Army Civilians); however, significant socioeconomic impacts to regional population and economic activity are anticipated. As Fort Eustis does not have an Active Component BCT, it is not being considered for growth as part of Alternative 2 which involves BCT restructuring. Table 4.11-1 summarizes the anticipated impacts to VECs for each alternative.

4.11.1.1 Valued Environmental Components Dismissed from Detailed Analysis

For the VECs discussed below in this section, no more than a beneficial or negligible impact would be anticipated. Therefore, these VECs are not being carried forward for detailed analysis, as no potential for significant impacts exists.



Figure 4.11-1. General Location of Military Bases in Southeastern Virginia

Table 4.11-1. Fort Eustis Valued Environmental Component Impact Ratings

Valued Environmental Component	No Action Alternative	Alternative 1: Force Reduction of up to 2,730
Air Quality	Minor	Beneficial
Airspace	Negligible	Negligible
Cultural Resources	Minor	Minor
Noise	Negligible	Beneficial
Soil Erosion	Negligible	Beneficial
Biological Resources	Minor	Minor
Wetlands	Minor	Beneficial
Water Resources	Negligible	Negligible
Facilities	Minor	Beneficial
Socioeconomics	Minor	Significant
Energy Demand and Generation	Minor	Beneficial
Land Use Conflict and Compatibility	Negligible	Negligible
Hazardous Materials and Hazardous Waste	Minor	Minor
Traffic and Transportation	Less than Significant	Beneficial

- **Airspace.** The Felker Army Airfield contains a 3,020 foot by 75 foot asphalt runway. It services various military rotor-wing aircraft from the U.S. Army and U.S. Navy. Additionally, certain U.S. Army fixed-wing aircraft (twin engine turbo propeller) utilize the Airfield. The proposed force reduction of Combat Support Soldiers at Fort Eustis would have no impact on installation airspace usage, operations or airspace utilization.
- **Noise.** Neither the Felker Army Airfield nor the firing range noise contours extend off post into residential areas (USACHPPM, 2007). The Proposed Action does not involve substantial changes in noise sources. The proposed downsizing should have a slight beneficial effect on noise levels due to a decreased use of the firing ranges and a reduction in noise from military vehicles. No changes in aviation or the use of Felker Army Air Field would be projected under the No Action Alternative or Alternative 1. Overall, noise impacts would be projected to be negligible.
- **Soil Erosion.** The soil associations on Fort Eustis fall into two general groups: (1) low river terrace and marsh soils and (2) low coastal plain soils. These soils are often poorly drained and subject to rutting and compaction (Fort Eustis, 2008). The implementation of Alternative 1 would not involve activities or projects that would result in more than negligible changes of soil resources. The proposed downsizing would be projected to have a slight beneficial effect on soil erosion due to a decreased use of training ranges.
- **Water Resources**
Surface Water. Fort Eustis is located on a small area of the southwest side of the Virginia peninsula on the eastern shore of the James River approximately 30 miles

upstream of its confluence with the Chesapeake Bay. Fort Eustis has over 20 miles of open tidal shoreline located along the James River to the west, the Warwick River to the east, and Skiffes Creek to the north. Fort Eustis is well drained by numerous streams and creeks and water flows have cut deep ravines in many places. Marshy conditions are frequently encountered in low-lying areas of the installation, particularly on Mulberry Island. There are two lakes on the installation, Browns Lake and Eustis Lake (Fort Eustis, 2008).

Groundwater. The hydrogeologic framework in the Fort Eustis area consists of a system of aquifers separated by intervening semi-confining units. Ground water moves under the influence of gravity to discharge areas such as streams, rivers and lakes. Recharge occurs primarily as infiltration of precipitation (Fort Eustis, 2008).

Water Supply. The installation's water system has been privatized. Old Dominion Utility Services owns the distribution system and water is purchased from Newport News Waterworks.

Wastewater. The installation's wastewater system has been privatized. Old Dominion Utility Services owns the distribution system and the wastewater is pumped to the Hampton Roads Sanitation District.

Stormwater. Stormwater runoff on Fort Eustis is controlled and directed by storm sewers and drainage ditches. The stormwater collection system discharges directly to the James and Warwick rivers or to nearby creeks, lakes, and canals that discharge to the rivers (Fort Eustis, 2008).

Neither Alternative would have more than a negligible impact to the water resources or wastewater streams at the installation. Given the current level of system support, the reduction of Soldiers would not have significant impacts to water demand and associated treatment. There would be additional water and wastewater treatment capacity generated as a result of the implementation of Alternative 1.

With current management practices, it is unlikely that an unpermitted deposition of sediment into waters would occur. A reduction in installation training activities would be projected to lead to reduced sediment run-off and impacts to surface waters.

- **Land Use Conflicts and Compatibility.** Fort Eustis is located adjacent to the City of Newport News, Virginia; a very small portion of the installation lies across Skiffes Creek in James City County. The installation lies on a peninsula (Mulberry Island) located at the confluence of the James and Warwick rivers (Figure 4.11-1). Land use conflicts and compatibility issues are not anticipated from the implementation of Alternative 1. Less training would be conducted as a result of Alternative 1, which could potentially allow more time for natural resource management or recreational land use.

4.11.2 Air Quality

4.11.2.1 Affected Environment

The ROI is the Hampton Roads Metropolitan Area and it is currently in attainment for all national and state standards. It is, however, an O₃ Maintenance Area due to high O₃ levels in previous years. The Fort Eustis Virginia Air Permit only regulates stationary sources.

4.11.2.2 Environmental Consequences

No Action Alternative and Alternative 1

Although there would continue to be minor short- and long-term air impacts from Fort Eustis operations they would not exceed threshold levels. Permit conditions would continue to be monitored and met, but no changes to emission sources are anticipated, other than those

mandated by maintenance, replacement, or elimination of sources as they age or are removed from service.

The implementation of Alternative 1 would have little effect on stationary sources, but would be beneficial to air quality in general because of reduced traffic and mobile source emissions. There would be less combustion and generation of CAPs and HAPs associated with military training and emissions. CO and NO_x emissions would be anticipated to decrease from reduced vehicular traffic and shorter wait times at ACPs.

4.11.3 Cultural Resources

4.11.3.1 Affected Environment

The affected environment for Fort Eustis, relating to cultural resources, is the installation footprint. Fort Eustis contains 229 known historic sites ranging from the early archaic period up to the 20th Century. Fort Eustis has two sites which are on the NRHP: the Matthew Jones House, a post-in-ground house; and Fort Carford, a Civil War earthen fort. Fort Eustis has an ICRMP, currently under revision, to help insure proper management of these resources. Cultural resources are managed by a full-time staff dedicated to supporting the military mission while protecting cultural resources found on Fort Eustis (Barry, P., et. al., 2012).

4.11.3.2 Environmental Consequences

No Action Alternative

Impacts to cultural resources under the No Action Alternative would be minor. Activities with the potential to affect cultural resources are monitored and regulated when anticipated through a variety of preventative and minimization measures.

Alternative 1: Force Reduction (Up to 2,700 Soldiers and Army Civilians)

As a result of the implementation of Alternative 1, minor impacts are anticipated at Fort Eustis. Removal of temporary facilities would have a very low potential for adverse effects to historic buildings and/or archeological resources. Most of the buildings that would be considered for demolition would fall under the Nationwide Programmatic Agreements for World War II Wooden Buildings or for Cold War Era Unaccompanied Personnel Housing. If the undertaking has the potential to adversely affect historic properties, consultation with the SHPO would occur per 36 CFR 800 as required. There is a low potential for any unique or potentially eligible historic structures to be affected as a result of this action, and if such an action is proposed, full consultation with the SHPO would occur, as required.

4.11.4 Biological Resources (Vegetation, Wildlife, Threatened and Endangered Species)

4.11.4.1 Affected Environment

There currently are no identified federal or state threatened or endangered species known to exist on Fort Eustis; however, there are six bald eagle nesting sites on post. These must be protected under the Bald and Golden Eagle Protection Act and the MBTA, particularly during eagle nesting seasons (USATC, 2004).

4.11.4.2 Environmental Consequences

No Action Alternative and Alternative 1

Neither alternative involves major changes to installation operations and both alternatives would be anticipated to have only minor impacts to biological resources. Under each of these alternatives, negligible or minor impacts are anticipated with regard to Bald Eagles and other

species recorded as occurring on the installation. There would not be a change in the types of activities conducted on Fort Eustis as a result of either alternative, only a decrease in the frequency of training activities associated with Alternative 1. The installation would continue to manage its natural resources and potential habitat in accordance with the installation INRMP and any conservation measures identified in any ESA, Section 7 consultation documents.

4.11.5 Wetlands

4.11.5.1 Affected Environment

Fort Eustis contains one of the largest principally intact wetlands systems in the lower James River. Approximately 36 percent of the post acreage consists of various types of wetlands, some of them tidal (Fort Eustis, 2008).

4.11.5.2 Environmental Consequences

No Action Alternative

The No Action Alternative would have a minor impact to wetlands on Fort Eustis. Wetlands impacts from projects already under construction (or for which NEPA is complete and construction pending) have been assessed and, if required, appropriate mitigation and permitting have occurred. Additionally, training, personnel operations, and routine maintenance and monitoring activities on Fort Eustis would continue to occur, resulting in minimal impacts to wetlands. These are minimized by BMPs and regular maintenance of roads, ranges, training lands, and developed areas, although traffic through wetlands is avoided and activities in wetland restoration areas monitored to ensure restoration is not compromised.

Alternative 1: Force Reduction (up to 2,700 Soldiers and Army Civilians)

Beneficial impacts to wetlands as a result of the implementation of Alternative 1 are anticipated. A reduction in forces at Fort Eustis would mean roads, ranges, and training areas would be less utilized. Less vegetation would be denuded and less sediment would run off into wetlands to impair their ecological function. As such, the loss or degradation of wetland systems would occur less frequently or to a decreased extent. Increased demolition of outdated facilities on the installation could result in short-term exposure of soils and lead to some indirect sedimentation impacts to the installation's wetlands. Implementation of BMPs and measures required by SWPPPs would ensure containment and reduction of these minor short-term impacts.

4.11.6 Facilities

4.11.6.1 Affected Environment

The cantonment area is the urbanized portion of Fort Eustis, and has been developed into a wide variety of land uses that comprise the elements necessary for a complete community. This includes the installation Post Exchange, commissary, housing and Family support services, an elementary school, medical, and mission-support facilities. The environmental impact ratings for utilities, energy, and traffic and transportation are addressed in separate sections of this PEA.

4.11.6.2 Environmental Consequences

No Action Alternative

There would be minor impact anticipated under the No Action Alternative. Fort Eustis would continue to operate their current facilities. Upgrading and removal of facilities would occur as funds become available.

Alternative 1: Force Reduction (Up to 2,700 Soldiers and Army Civilians)

Alternative 1 is anticipated to have a beneficial effect on facilities, allowing the release of temporary, relocatable buildings and the demolition of some older, energy inefficient buildings. With the implementation of Alternative 1, some permanent facilities may be able to be redesignated to support units remaining at Fort Eustis to provide more space and facilities better able to meet tenant unit needs.

4.11.7 Socioeconomics

4.11.7.1 Affected Environment

The ROI includes JBLE and the surrounding communities, and consists of the cities of Hampton, Newport News, Poquoson, Williamsburg, and Gloucester, James City, and York counties. JBLE was established as a result of the 2005 BRAC. Air Force and Army installation management functions were combined into a newly designated joint base, with the Air Force assuming funding and operations support of the entire joint base.

Population and Demographics. The Fort Eustis population is measured in three different ways. The daily working population is 7,399, and consists of full-time Soldiers and Army civilian employees working on post. The population that lives on Fort Eustis consists of 2,405 Soldiers and 2,234 dependents, for a total on-post resident population of 4,639. Finally, the portion of the ROI population related to Fort Eustis is estimated to be 12,542, and consists of Soldiers, Army civilian employees, and their dependents living off post. There are also several thousand Air Force and other service members and civilian employees who work on JBLE. It is not yet known what the Air Force's plans for its workforce are. For purposes of this analysis, the PEA will focus on the changes that could be experienced by the Army military and civilian work force. More is discussed in cumulative economic effects in Section 4.11.10.

The ROI county population is approximately 515,150. Compared to 2000, the 2010 population increased in Gloucester, James City, and York counties (Table 4.11-2). The racial and ethnic composition of the ROI is presented in Table 4.11-3.

Table 4.11-2. Population and Demographics

Region of Influence Counties and Towns	Population 2010	Population Change 2000-2010 (Percent)
Gloucester	37,000	+ 6.1
James City	67,000	+ 39.3
York	65,000	+ 15.6
Hampton	140,000	- 6.1
Newport News	180,000	+ 0.5
Poquoson	12,150	+ 5.0
Williamsburg	14,000	+ 17.3

Table 4.11-3. Racial and Ethnic Composition

State and Region of Influence Counties and Towns	Caucasian (Percent)	African American (Percent)	Native American (Percent)	Hispanic (Percent)	Asian (Percent)	Multiracial (Percent)	Other (Percent)
Virginia	65	19	1	8	6	2	0
Gloucester	86	9	0	3	1	2	0
James City	78	13	0	5	2	2	0
York	74	13	0	4	5	3	0
Hampton	41	49	0	5	2	3	0
Newport News	46	40	0	8	3	3	0
Poquoson	94	1	0	2	2	1	0
Williamsburg	71	14	0	7	6	3	0

Employment, Income, and Housing. Compared to 2000, the 2009 employment (private nonfarm) increased in Gloucester, James City, and York counties and increased in the State of Virginia (Table 4.11-4). Employment, median household value, household income, and poverty levels are presented in Table 4.11-4.

Table 4.11-4. Employment, Housing, and Income

State and Region of Influence Counties and Towns	2009 Total Nonfarm Employment (Employees)	Employment Change 2000-2009 (Percent)	Median Home Value 2005-2009 (Dollars)	Median Household Income 2009 (Dollars)	Population Below Poverty Level 2009 (Percent)
Virginia	3,061,186	+ 5.4	255,100	61,406	10.3
Gloucester	7,254	+ 15.4	228,100	59,331	9.3
James City	24,181	+ 95.80	348,600	73,903	7.0
York	18,384	+ 31.80	324,800	81,055	3.9
Hampton	63,021 ¹	NA ²	191,500	49,815	12.6
Newport News	82,583 ¹	NA ²	198,500	49,562	13.5
Poquoson	5,776 ¹	NA ²	326,200	84,315	4.9
Williamsburg	5,698 ¹	NA ²	344,800	50,794	16.5

¹Non-farm employment derived from 2006-2010 American Community Survey 5-Year Estimates.

²Employment change not available for cities in 2006-2010 American Community Survey 5-Year Estimates.

4.11.7.2 Environmental Consequences

No Action Alternative

There would be no change or minor impacts anticipated under the No Action Alternative. This alternative is anticipated to provide a steady-state contribution of economic and social benefits and costs. No additional impacts to housing, public and social services, public schools, public safety, or recreational activities are anticipated.

Alternative 1: Force Reduction (up to 2,700⁴ Soldiers and Army Civilians)

Economic Impacts. Alternative 1 would result in the loss of approximately 2,700 military employees (Soldier and Army civilian employees), each with an average annual income of \$41,830. In addition, this alternative would affect an estimated 1,523 spouses and 2,620 dependent children, for a total estimated potential impact to 4,143 dependents. The total population of military employees and their dependents directly affected by Alternative 1 is projected to be 6,873.

Based on the EIFS analysis, there would be significant socioeconomic impacts for population in the ROI for this alternative. There would be no significant impacts for sales volume, income, or employment. The range of values that represents a significant economic impact in accordance with the EIFS model is presented in Table 4.11-5, along with the predicted percentages for Alternative 1. Table 4.11-6 presents the projected economic impacts to the region for Alternative 1 as assessed by the Army's EIFS model.

Table 4.11-5. Economic Impact Forecast System and Rational Threshold Value Summary of Implementation of Alternative 1

Region of Influence Economic Impact Significance Thresholds	Sales Volume (Percent)	Income (Percent)	Employment (Percent)	Population (Percent)
Economic Growth Significance Value	10.81	10.06	2.96	3.28
Economic Contraction Significance Value	- 8.18	- 6.52	- 2.88	- 1.00
Forecast Value	- 0.94	- 0.96	- 1.71	- 1.34

Table 4.11-6. Economic Impact Forecast System: Summary of Projected Economic Impacts of Implementation of Alternative 1

Region of Influence Impact	Sales Volume	Income	Employment	Population
Total	- \$140,162,900	- \$137,924,300	- 3,106 (Direct) - 567 (Indirect) - 3,673 (Total)	- 6,873
Percent	- 0.94	- 0.96	- 1.71	- 1.34

The total annual loss in direct and indirect sales in the ROI represents an estimated -0.94 percent reduction. State tax revenues would decrease by approximately \$5.6 million as a result of decreased sales. Some counties within the ROI supplement the state sales tax of 4.0 percent by varying percentages, and these additional local tax revenues would be lost at the county and local level. Regional income would decrease by an estimated 0.96 percent. While approximately 2,700 direct Soldier and Army government civilian positions would be lost within the ROI, EIFS estimates another 376 military contract jobs would be lost as a direct result of Alternative 1, and an additional 567 job losses would occur indirectly as a result of reduced demand for goods and services in the ROI. The total estimated reduction in employment within the ROI is projected to lead to a loss of 3,673 non-farm jobs, or a -1.71 percent change in regional non-farm employment. The total number of employed non-farm positions in the ROI is estimated to be 214,296. A significant population reduction of -1.34 percent within the ROI is

⁴ Socioeconomic calculations used a number of 2,730 Soldiers and civilians for estimating socioeconomic impacts. This number was derived by assuming the loss of up to 35 percent of the installation's Active Duty Soldier population up to 15 percent of the civilian workforce. As discussed in Chapter 3, this number is rounded to the nearest hundred personnel when discussing impacts of Alternative 1.

anticipated as a result of this alternative. Of the approximately 515,150 people (including those residing on Fort Eustis) that live within the ROI, 6,873 military employees and their dependents would no longer reside in the area following the implementation of Alternative 1. This would lead to a decrease in demand for housing, and increased housing availability in the region. This could lead to a slight reduction in median home values. It should be noted that this estimate of population reduction includes Army civilian and military members and their dependents. This number likely overstates potential population impacts, as some of the people no longer employed by the military would continue to work and reside in the ROI, working in other economic sectors; however, this would in part be counterbalanced by the fact that some of the indirect impacts would include the relocation of local service providers and businesses to areas outside the ROI.

Table 4.11-7 shows the total projected economic impacts, based on the RECONS model, that would occur as a result of the implementation of Alternative 1.

Table 4.11-7. Regional Economic System: Summary of Projected Economic Impacts of Implementation of Alternative 1

Region of Influence Impact	Sales Volume	Income	Employment
Total	- \$124,832,269 (Local) - \$187,380,275 (State)	- \$138,766,089	- 3,084 (Direct) - 393 (Indirect) - 3,477 (Total)
Percent	- 0.83	- 0.96	- 1.62

The total annual loss in direct and indirect sales in the region represents an estimated -0.83 percent change in ROI sales volume according to the RECONS model, an impact that is approximately 0.11 percentage points less than projected by EIFS; however, it is estimated that gross economic impacts at the state level would be greater. Extrapolating from sales volume numbers presented in the RECONS model, state tax revenues would decrease by approximately \$7.5 million as a result of the loss in revenue from sales reductions, which would be \$3.21 million more in lost state sales tax revenue than projected by the EIFS model. Regional income is projected by RECONS to decrease by 0.96 percent, which would be equivalent to the reduction projected by EIFS. While up to 2,700 direct Soldier and Army civilian employee positions would be lost within the ROI, RECONS estimates another 354 military contract and service jobs would be lost, and an additional 393 job losses would occur indirectly as a result of reduced demand for goods and services in the ROI. The total estimated reduction in demand for goods and services within the ROI is projected to lead to a loss of 3,477 jobs, or a -1.62 percent change non-farm employment within the ROI, which would be 0.09 percentage points more than projected by the EIFS model.

When assessing the results together, both models indicate that the economic impacts of the implementation of Alternative 1 would lead to a net reduction of economic activity within the ROI of approximately the same order of magnitude.

Population and Demographics. Fort Eustis anticipates a substantial reduction in military population and training load as a result of the implementation of Alternative 1.

Housing. Alternative 1 would increase the availability of barracks space for unaccompanied personal and increase the availability of Family quarters. This reduction along with the completion of the new AIT barracks complex would allow the demolition of four 1950 era barracks. The reduction would also increase the availability of Family quarters which are currently running over 96 percent occupancy. These outcomes will likely decrease the off-post

demand for rentals and purchases of housing; however, this decrease would be spread over the entire ROI and should not affect any one area too severely. The City of Newport News would be affected the most, but the impact would be less than significant.

Schools. The impact to schools would not be spread evenly throughout the ROI. While the upper grade dependents are more evenly spread throughout the ROI, the elementary grade dependents are concentrated in the City of Newport News mostly because the General Stanford Elementary School is located on Fort Eustis proper and its enrollment is entirely made up of Fort Eustis dependents. Also the Lee Hall Elementary School, which is the closest elementary school off post, has an enrollment of 42 percent military dependents. Alternative 1 has the potential for a significant adverse economic effect on the City of Newport News Public School system.

Public Health and Safety. As a result of the implementation of Alternative 1, Fort Eustis would likely reduce the demand for law enforcement services, fire and emergency services, and medical services both on- and off-post. The reduction in demand should have a less than significant impact to public health and safety.

Family Support Services. As a result of Alternative 1, Fort Eustis anticipates a reduced demand for Force Support Squadron (Air Force equivalent to DFMWR) programs on post. The demand for Family support services off-post will likely decrease also. The reduction in demand should have a less than significant impact to Family support services.

Recreation Facilities. Use of recreation facilities on-post would likely decline somewhat as a result of Alternative 1. Fort Eustis anticipates that the utilization decreases would be less than significant.

Environmental Justice. As a result of the implementation of Alternative 1, Fort Eustis does not anticipate a disproportionate adverse impact to minorities, economically disadvantaged populations, or children would occur in the ROI. Fort Eustis anticipates that job loss would be felt across economic sectors and at all income levels and spread geographically throughout the ROI. The proposed force reduction in military authorizations on Fort Eustis would not have disproportionate or adverse health effects on low-income or minority populations in the ROI. The racial and ethnic composition of the ROI differs from that of the Commonwealth as a whole. There are slightly fewer Hispanic and Asian people in the ROI, but a larger African American population in some affected areas. The City of Hampton is 49 percent African American and the City of Newport News 40 percent, compared with 19 percent for the Commonwealth as a whole. Seen at the state-wide level, adverse impacts in the ROI represent a disproportionate adverse impact to African Americans, with marginally less-than-expected impact to Hispanic and Asian populations. Impacts to schools and housing would affect Newport News, a city with African-American population higher than the state average. In this respect, the impact has a disproportionate adverse impact on minority populations.

4.11.8 Energy Demand and Generation

4.11.8.1 Affected Environment

Utilities are generally connected across the cantonment area and along defined utility corridors and; therefore, contribute collectively to the overall capacity, use, and storage as a unit. As such, the ROI for this resource is the cantonment area of Fort Eustis and the various utility ROW that connect Fort Eustis with the regional systems.

Electric power is provided by Dominion Virginia Power and is distributed via overhead lines to Fort Eustis and the surrounding communities. Natural Gas is supplied by Virginia Natural Gas.

4.11.8.2 Environmental Consequences

No Action Alternative and Alternative 1

Under the No Action Alternative, energy demand and consumption would have negligible impacts. As a result of the implementation of Alternative 1, the installation would anticipate a reduction in energy consumption. The loss of up to 2,700 Soldiers and civilians compared with the installations full-time military and civilian population of approximately 11,000 personnel represents a loss of approximately one quarter of the full-time military and civilian population. Such a reduction could lead to up to a 15 percent decrease in energy demand to support installation operations. Fort Eustis' pursuit of energy efficiency and conservation measures would also contribute to reduced energy usage and energy demand reductions. The proposed force reduction would also allow the Air Force to demolish older less energy efficient structures to improve installation's energy efficiency. Overall, Alternative 1 would result in minor beneficial impacts.

4.11.9 Hazardous Materials and Hazardous Waste

4.11.9.1 Affected Environment

The affected environment includes the use, storage, transport, and disposal of hazardous materials and wastes at Fort Eustis. Fort Eustis has both a Hazardous Waste Facility and a Solid Waste, Recycling, and Pollution Prevention Center to handle all types of waste from units and facilities on Fort Eustis. Hazardous materials and wastes are handled, stored and transported in accordance with Transportation Center Fort Eustis (TCFE) Regulation 200-6, Environmental Management (to be replaced by JBLEI 32-101, Environmental Management).

4.11.9.2 Environmental Consequences

No Action Alternative

There would be minor impacts anticipated under the No Action Alternative. Fort Eustis would continue dispose of waste and store and manage hazardous materials in accordance with installation hazardous waste and material management plans.

Alternative 1: Force Reduction (up to 2,700 Soldiers and Army Civilians)

There would be a moderate, short-term increase in the amount of hazardous waste handled and turned-in to the hazardous waste facility by departing or phased out units, and resulting from the demolition of buildings which may contain asbestos or LBPs. This short-term increase in hazardous waste as a result of the implementation of Alternative 1, would be a minor impact at Fort Eustis. Over the long term, force reduction would result in the generation of less solid and hazardous waste produced.

4.11.10 Traffic and Transportation

4.11.10.1 Affected Environment

A four-lane divided highway provides primary access to and from the installation (Fort Eustis Boulevard/VA Route 105), connecting the post to Warwick Boulevard (U.S. Route 60), I-64, Jefferson Avenue (VA Route 143) and U.S. Route 17. There is a secondary gate off of Warwick Boulevard.

4.11.10.2 Environmental Consequences

No Action Alternative

There has been an increase in traffic on the installation from the BRAC 2005 organizations that moved on post as well as the increases in manning that resulted from Grow the Army actions.

Under No Action Alternative, there would be no additional unit stationing or force reduction. Current traffic conditions would remain the status quo with less than significant impacts.

Alternative 1: Force Reduction (up to 2,700 Soldiers and Army Civilians)

Alternative 1 is anticipated have a beneficial effect on the traffic both on and off post. The reduction of up to 2,700 Soldiers, Army civilians and their dependents would considerably reduce traffic moving into and out of Fort Eustis, particularly during peak hours through the main ACP. Overall impacts of the implementation of force reduction would be beneficial to traffic and the capacity of existing transportation systems.

4.11.11 Cumulative Effects

The activities and missions at Fort Eustis continue to evolve over time. There are plans to extend the runway at Felker Army Airfield and to build a new facility for the Flight Concepts Division. The No Action Alternative and Alternative 1 would have very minor impacts on the Fort Eustis environment when compared to such major infrastructure improvements. As part of any developments at Fort Eustis the impacts would be assessed as required by NEPA and the results furnished to the decision makers prior to a decision. The region surrounding Fort Eustis has a high density of military, DoD contractor and government jobs, one of the highest concentrations of government employment in the Nation. Although the direct and indirect effects of force reduction at Fort Eustis would be considered significant only in terms of population loss within the ROI, the Hampton Roads area, in which Fort Eustis is located has a very large military population that could experience a greater cumulative socioeconomic impact from other military service reductions in the region when combined with the Army's proposed force reductions. The full extent of military service reductions on the ROI is as of yet not known. Thus, cumulative impacts of combined military service reductions and private defense contractor employment reductions, when considered in conjunction with proposed Army reductions, may have a much larger significant impact on the ROI than just the direct significant impacts to ROI population that is estimated by EIFS. Government hiring freezes and cuts could have significant adverse cumulative socioeconomic impacts to employment, income, sales volume and other economic parameters within the ROI when all reductions are cumulatively considered. Additionally, cumulative employment reduction could lead to considerable reduction in state and local tax revenue.

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4.12 JOINT BASE LEWIS-McCHORD, WASHINGTON

4.12.1 Introduction

Joint Base Lewis-McChord (JBLM), is located in Pierce and Thurston counties of Western Washington and has approximately 65,000 acres of maneuver area suited for vehicle and non-vehicular military training (Figure 4.12-1). In the past it has been the home of light infantry, armored, and motorized division level units. Presently, it is home base for I Corps, 62nd Airlift Wing, Special Operations Forces, Madigan Army Medical Center, and Reserve Officers Training Corps summer camp. JBLM supports the training and administrative requirements of 3 SBCTs stationed at the installation. In October of 2010, McChord Air Force Base and Fort Lewis combined to form JBLM with the Army taking over base operations for the Air Force.⁵

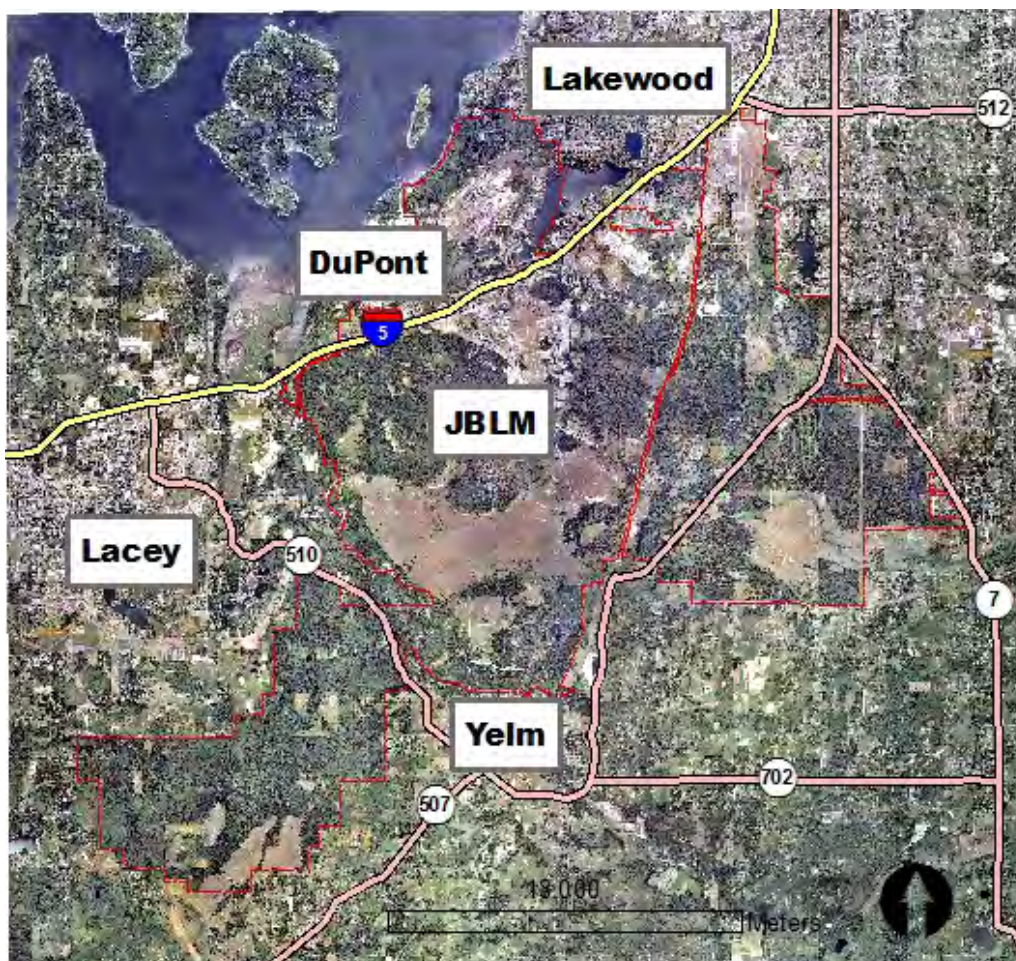


Figure 4.12-1. Joint Base Lewis-McChord

JBLM has a well-developed range infrastructure that supports individual and crew-served weapons live-fire training. Larger weapons systems training (e.g., Stryker Mobile Gun System) and large-scale maneuver training occur at the Yakima Training Center in Central Washington.

⁵References produced prior to October 2010 will retain their Fort Lewis designation. References after 2010 are JBLM reference materials.

4.12.1.1 Valued Environmental Components

JBLM does not anticipate any significant adverse environmental impacts as a result of the implementation of Alternative 1 (Force reduction of 8,000 Soldiers and Army Civilians). Table 4.12-1 summarizes the anticipated impacts to VECs from each alternative.

Table 4.12-1. Joint Base Lewis-McChord Valued Environmental Component Impact Ratings

Valued Environmental Component	No Action Alternative	Alternative 1: Force Reduction of up to 8,000
Air Quality	Less than Significant	Minor
Airspace	Less than Significant	Negligible
Cultural Resources	Less than Significant	Minor
Noise	Significant	Less than Significant
Soil Erosion	Negligible	Negligible
Biological Resources	Less than Significant	Beneficial
Wetlands	Negligible	Negligible
Water Resources	Significant but Mitigable	Beneficial
Facilities	Less than Significant	Beneficial
Socioeconomics	Significant but Mitigable	Less than Significant
Energy Demand and Generation	Negligible	Beneficial
Land Use Conflict and Compatibility	Minor	Beneficial
Hazardous Materials and Hazardous Waste	Minor	Less than Significant
Traffic and Transportation	Significant	Beneficial

4.12.1.2 Valued Environmental Components Dismissed from Detailed Analysis

For the VECs discussed in this section, no more than a negligible impact would be anticipated. Therefore, these VECs are not being carried forward for detailed analysis, as no potential for significant impacts exists.

- Soil Erosion.** The topography of JBLM is typically flat to gently rolling, with localized areas of moderately sloping lands. The slopes are generally less than 15 percent, except along the steep escarpments along the Nisqually River and Puget Sound. The geological units underlying JBLM are primarily the result of glacial and alluvial processes; therefore, the soils are coarsely textured, loose and highly permeable. Due to the high percolation rate and the flat layout of JBLM, as well as the quick regeneration of vegetative soils cover at JBLM, soils are not prone to high levels of erosion.

Negligible impacts would result as part of the implementation of both alternatives considered. Military training has limited effect on soils at JBLM because of the installation's soils, geography, vegetation and ecology.

- **Wetlands.** JBLM contains approximately 4,500 acres of wetlands spread over 91,000 installation acres. Wetland types include emergent, scrub-shrub, and forested. JBLM limits the types of activities that can occur within 164 feet of all wetlands on the installation (Fort Lewis, 2007). Off-road vehicle traffic, bivouacking, digging, and assembly areas are prohibited within the 164-foot buffer area that the installation designates around wetlands. Refueling, gray water sumps, and vehicle decontamination activities are prohibited within 164-foot of wetlands and water bodies. Trainers are provided an Environmental Coordination Map that delineates all sensitive resources on the installation including wetlands and water bodies and their associated restrictions and prohibitions. This information is provided to ensure Soldiers are aware both of sensitive areas to avoid and the installation's training restrictions. The anticipated impact to JBLM under both alternatives is negligible.
- **Energy Demand and Generation.** The anticipated impact to JBLM would be negligible to beneficial in terms of energy use and generation under the No Action Alternative. The existing energy infrastructure at the installation has sufficient capacity to support the implementation of the No Action Alternative. Energy demand would be considerably reduced with the loss of up to 8,000 Soldiers, civilians and their Families. This reduction in demand would result in beneficial impacts to energy demand and additional capacity for other uses.

Joint Base Lewis-McChord anticipates that the implementation of any of the alternatives would result in negligible impacts for those VECs discussed above. The following provides a discussion of the VECs requiring a more detailed analysis, as they are anticipated to have the potential of a higher level of impact as a result of the implementation of the Proposed Action alternatives.

4.12.2 Air Quality

4.12.2.1 Affected Environment

The affected environment for this Proposed Action includes air emissions associated within the Puget Sound region. Air quality regulation is carried out by the Puget Sound Clean Air Agency in Pierce County, and by the Olympic Region Clean Air Agency in Thurston County. The existing air quality in the JBLM area is good. The major sources of air pollution are PM and vehicular emissions, which contribute to the formation of O₃. The Washington Department of Ecology has designated the entire State of Washington as in attainment with the NAAQS for O₃. In addition, the entire western Washington region is either in attainment for CO or is unclassified for attainment. These areas are treated as attainment areas by the Washington Department of Ecology. JBLM is located in an unclassifiable area for PM₁₀, and in an area that was previously designated as a nonattainment area for both O₃ and CO. As part of the redesignation process, the state submitted a maintenance plan under which JBLM can continue to maintain attainment standards for a 10-year period.

Opacity is regulated at JBLM under the jurisdiction of the local air pollution control agencies. The closest PSD Class I area to JBLM is Mount Rainier National Park, which is located approximately 50 miles to the east.

The primary emission sources at JBLM are motor vehicles and industrial sources. Industrial sources include aerospace maintenance and rework operations, fuel burning, fuel storage and dispensing, degreasing, woodworking, and painting operations.

Currently, JBLM maintains a “Synthetic Minor” operating permit which means that any increase in stationary source emissions could require the transition back to major source status. Additional thresholds are pollutant-specific for nonattainment and maintenance areas. Portions of JBLM (northern half) are partially within an O₃ (a product of VOCs and NO_x reacting in the atmosphere) and CO maintenance area. Actions at JBLM resulting in an increase of 100 tpy of O₃ or CO would trigger a conformity analysis.

4.12.2.2 Environmental Consequences

No Action Alternative

There would continue to be less than significant environmental impacts under the No Action Alternative. Dust and exhaust emissions, including pollutants, would be generated from soil-disturbing activities, such as; demolition at construction sites, operation of heavy equipment, and vehicular traffic. Dust and vehicle emissions would continue to be generated during training maneuvers with military vehicles and aircraft. No change to the type or frequency of training events would occur. Although there would continue to be minor short- and long-term fugitive dust impacts from training, these impacts would not exceed threshold levels. Permit conditions would continue to be monitored and met, but no changes to or increases in emission sources are anticipated, other than those mandated by maintenance, replacement, or elimination of sources as they age or are removed from service. Therefore, impacts to air quality under the No Action Alternative would be less than significant.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

Alternative 1 would have both minor short-term and beneficial long-term impacts. Alternative 1 would result in some beneficial impacts to air quality resulting from the reduction in unit training events and the accompanying reduction in the combustion of fuels resulting in lower emissions from stationary and mobile sources. Conditions identified in air permits would continue to be monitored and may require changes as a result of this alternative. Permits may require modification to reflect the lowered emission levels resulting from less combustion and generation NAAQS pollutants and HAPs associated with the reduction in the number of Soldiers engaged in military training. In addition, there would be less fugitive dust generated from fewer unit training events. Short-term minor adverse impacts to air emissions would be anticipated in conjunction with increased use of construction equipment for the demolition of outdated facilities. When both the short-term minor increase and long-term reduction of emissions are considered together, the overall impact would be minor.

4.12.3 Airspace

4.12.3.1 Affected Environment

JBLM has 55 square miles of FAA-designated SUA, up to 14,000 feet. The installation has access to this airspace in area R6703, Sub-Areas A, B, and D from 7:00 a.m. to 11:00 p.m. daily Mondays through Fridays. Sub-Area C is scheduled by Notice to Airmen (JBLM, 2012).

The primary purpose for R6703 is live-fire training with artillery, mortars, small arms, and demolitions. The airspace also supports helicopter and U.S. Air Force aircraft training. FAA has designated portions of JBLM airspace as SUA. Restricted areas within the SUA may be activated, in which case nonmilitary and unauthorized military aircraft are prohibited from entering the airspace.

4.12.3.2 Environmental Consequences

No Action Alternative

The No Action Alternative would be projected to have less than significant impacts at JBLM. Current airspace use is heavy for both civilian and military airspace requirements. The use of airspace on the installation is scheduled through Gray Army Airfield. The activities competing for use of the airspace are gunnery, pilot training, and UAS training. With the stationing of a CAB and the increased use of UASs, JBLM is anticipating a less than significant impact to airspace. Use of this airspace would continue to be managed through scheduling and balancing training requirements with airspace availability. The No Action Alternative would not produce any additional conflicts with overlying restricted airspace, as no proposed change to existing conditions would occur.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

Alternative 1 would have negligible impacts to airspace, as military airspace requirements would not change substantially with the loss of ground units. Aviation and UAS units would continue to require airspace to support training, but at a marginally lower utilization level. Aviation support activities in the form of joint helicopter operations with the SBCT would be slightly reduced. Within the context of the total aviation training requirement of all aviation assets on JBLM, this would be a very small reduction of the installation's training requirements load.

4.12.4 Cultural Resources

4.12.4.1 Affected Environment

JBLM represents the affected environment or area of effect for potential impacts to cultural resources. Planning level surveys have been completed for all but approximately 20 percent of the installation. JBLM has almost 350 recorded archaeological sites, including: American Indian villages, camps, and households dating from 8,500 years ago to the Nisqually Reservation period (1854-1917); British farms operated by the Hudson's Bay Company (1832-1869); American pioneer homesteads (1846-1942); and World War I, World War II, Korean War, and Vietnam-era military training features. Planning-level surveys to characterize the types of archaeological resources that might be present have been completed for most areas of JBLM. More detailed sub-surface archaeological inventories are needed on a case-by-case basis to determine whether new construction or military training activities would affect presently unidentified archaeological resources. Most recorded archaeological sites have not been evaluated for NRHP eligibility.

JBLM has three NRHP-eligible historic districts including more than 400 contributing historic buildings, structures and objects built between 1917 and 1948. The JBLM Museum, built in 1919 as the Salvation Army Red Shield Inn, has been listed on the NRHP since 1979.

JBLM lies within the traditional homelands of the Nisqually Indian Tribe, and the Tribe exercises treaty-reserved rights to hunt, fish, and gather at all their usual and accustomed places. More than two-thirds of the Nisqually Indian Reservation was condemned by Pierce County and donated to the U.S. Government for the purpose of establishing Camp Lewis in 1918. The remaining Nisqually Indian Reservation lands lie immediately adjacent to the JBLM boundary. The Squaxin Island Tribe and the Puyallup Tribe of Indians also exercise treaty-reserved rights to hunt, fish, and gather at all their usual and accustomed places on JBLM. All three Tribes recognize sacred sites and TCPs on JBLM lands. The DoD American Indian and Alaska Native Policy establishes principles for interacting and working with federally-recognized Tribes on matters that may affect these or other protected tribal resources.

4.12.4.2 Environmental Consequences

No Action Alternative

The No Action Alternative would have a less than significant effect on cultural resources. Potential impacts to archaeological sites from the failure of site protection measures could result in the eventual loss of important archaeological data. Mitigation identified in the JBLM Grow the Army ROD (Fort Lewis, 2011) would continue to be implemented to offset this loss and result in environmental impacts that are less than significant. Activities with the potential to affect cultural resources are monitored and regulated when anticipated through a variety of preventative and minimization measures. JBLM has a Programmatic Agreement in place to facilitate the management of historic and prehistoric resources on the installation. The SHPO periodically reviews the effectiveness of the Programmatic Agreement to deal with cultural resource management on the installation.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

Alternative 1 would have a minor impact to cultural resources. Removal of temporary facilities vacated by departing units would have a very low potential for adverse impacts to archeological resources due to the minimal amount of ground disturbance associated with such actions. Removal of outdated and under-utilized infrastructure has the potential to affect historic structures, but would be conducted in accordance with the current cultural resource management procedures. If an undertaking does not fall within the Programmatic Agreement and has the potential to adversely affect historic properties, consultation with the SHPO would occur, per 36 CFR 800, as required. Currently, few historic structures are not pre-mitigated for future demolition and modification via the Programmatic Agreement, stand-alone/group Memorandums of Understanding, or other installation and SHPO agreements. Thus, there is a low potential for potentially eligible historic structures to be affected as a result of this action.

The reduction of Soldier training requirements could potentially reduce off-road heavy and light vehicle maneuvers. This could have a beneficial effect on archaeological sites and protected tribal resources. Overall, the impact on cultural resources would be a minor impact.

4.12.5 Noise

4.12.5.1 Affected Environment

The main sources of noise from JBLM training activities include aviation, munitions detonations; and gunnery (artillery, mortars, and small arms) (Fort Lewis, 2004). Aviation is presently conducted by units flying Chinook, Blackhawk, Kiowa, and Apache helicopters. Air Force C-17 aviation training is conducted by two units on JBLM. Gunnery includes 105mm and 155mm howitzers; 60mm, 81mm, and 120mm mortars; and .50 caliber machine guns. Demolition training is limited to specific ranges and poundage per charge. Noise receptors predominantly include residents of several small towns near the installation and the Nisqually Tribe (Fort Lewis, 2005). The number of noise complaints received by the installation over the last 15 years averages approximately 170 per year.

4.12.5.2 Environmental Consequences

No Action Alternative

The current noise impacts from JBLM's training represents a significant adverse impact (Fort Lewis, 2010). Main sources of noise at JBLM impacting the regional acoustic environment include aircraft (rotary- and fixed-wing) flyovers from Gray Army Airfield and McChord Field, munitions detonations, and artillery, mortar, and small arms live fire.

Other activities, such as ground maneuver training and exercises resulting in noise created by personnel and vehicles, would continue to contribute noise on JBLM, to the same levels and intensity as historically experienced. Noise from small arms weapons fire, such as the .50 caliber machine gun and other weapons systems, does travel off post and is routinely heard off the installation by nearby residents. JBLM strives to mitigate noise impacts through restrictions in aviation training and scheduling of training activities to reduce noise complaints. In spite of these measures, noise impacts would continue to be significant. Noise mitigation recommendations for the protection of biological resources are found within the installation's IONMP. These mitigation measures would continue to be implemented in accordance with available funding.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

Alternative 1 would have an anticipated decrease in noise impacts. Existing ranges would still be utilized for firing the same types of weapons systems and conducting the same types of training. JBLM's BCTs would also continue to conduct maneuver and live-fire training in the field; however, there would be a reduction in the frequency of noise generating training events, which would be in proportion with the number of Soldiers stationed at the installation. A reduction of up to 8,000 Soldiers and Army civilians would result in a decrease in the size of annual noise contours, as the frequency of noise generating events would decrease; though, peak noise contours and the types of noise generating impacts would remain the same. Aviation on JBLM would not be impacted by these decisions; therefore, the current frequency and activities of aviation training activities, a contributor of noise at the installation, would not be anticipated to change. Some short-term noise impacts from facilities demolition and removal would be anticipated. Overall, impacts to noise would be less than significant.

4.12.6 Biological Resources (Vegetation, Wildlife, Threatened and Endangered Species)

4.12.6.1 Affected Environment

Vegetation. Forests are the largest ecosystem type on JBLM predominately consisting of coniferous forests dominated by Douglas-fir. A significant portion of the JBLM complex contains native grasslands. These represent some of the last remaining grasslands in western Washington. Oak woodlands occur predominantly on grassland margins and provide important transitional wildlife habitat between grassland and forest ecosystems. Approximately 4,500 acres of wetlands are found on JBLM.

Wildlife. JBLM has a mosaic of plant community distributions and productive wildlife habitats utilized by approximately 20 species of reptiles and amphibians, 200 species of birds, 50 species of butterflies, and 50 species of mammals.

Threatened and Endangered Species. There is one threatened plant species found on JBLM. The species is water howellia and it is a marshland plant. Threatened and endangered fish species, including Puget Sound Chinook, Steelhead, and Bull Trout, are found in the Nisqually River, which borders the installation and feeds into Puget Sound.

Candidate Species. Four candidate species occurring on JBLM have the potential to become listed in the near future. These species are the Mardon Skipper butterfly, Mazama Pocket Gopher, Taylor's Checkerspot butterfly, and the Streaked Horned Lark. On October 11, 2012, the USFWS published an announcement in the Federal Register proposing that the Taylor's Checkerspot butterfly be listed as endangered and the Streaked-horned Lark be listed as threatened under the ESA. Critical habitat was proposed for both species in the same announcement, with a substantial portion proposed to be on JBLM. JBLM currently has an

ACUB program that is designed to protect off-post habitat for these and two other candidate species.

4.12.6.2 Environmental Consequences

No Action Alternative

The growth of JBLM under the Grow the Army was expected to result in significant impacts to biological resources at JBLM (Fort Lewis, 2010). Mitigation to reduce these impacts has occurred since the Grow the Army action, thus implementation of the No Action Alternative is anticipated to result in less than significant impacts. At this level of troop strength, use of training areas and ranges remains high. JBLM would continue to adhere to its existing natural resource management plans and to further minimize and monitor any potential impacts. Units are briefed prior to training events regarding sensitive areas on post, such as protected species habitat, and what training is and is not allowed within certain areas where sensitive species may be found. Range capabilities and timber management activities on JBLM are ongoing and would continue as a result of this alternative, as outlined in the installation's Forest Management Strategy, to support troop training, endangered species management, the Army's timber program, and sustainable forest health.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

The impact for biological resources would be beneficial as a result of the implementation of Alternative 1. Scheduling conflicts for training area access to conduct resource monitoring would be reduced. Proactive conservation management practices and mitigations would be more easily accomplished with reduced training, including having easier access to training areas to implement wildlife management activities. Impacts to vegetation in prairies would occur less frequently and prairie vegetation would have longer rest and recovery periods between training events. Even though damage to prairie vegetation takes several years to fully recover, any and all rest periods are helpful. As the number of vehicles decreases, reduced impacts to candidate species on the installation would be anticipated. The decrease in vehicular and Soldier foot traffic could potentially improve reproductive success for ground nesting birds. Decreased disturbance to vegetation at the installation may result in better ground cover and reduction of non-native species with an overall increase in the native species diversity.

4.12.7 Water Resources

4.12.7.1 Affected Environment

Water Supply and Demand. JBLM operates five public water systems that are served entirely by groundwater sources. The primary water system provides potable water to over 50,000 people in the Lewis Main and Lewis North areas. The four other potable water systems (McChord Field, Golf Course, ASP and Range 17) serve other areas of the installation. There are no inter-ties between any of these five sources.

There are eleven wells and a protected spring source, Sequalitchew Springs. There are twelve water storage reservoirs that serve the system and have a total storage capacity of 6.8 million gallons. The total supply capacity of Sequalitchew Springs and the nine active wells is 15,450 gpm. For the 2004 to 2010 timeframe, the average daily demand was 3.89 mgd and the maximum daily demand was 8.86 mgd. The system supporting Lewis Main and Lewis North has adequate source and storage capacity to serve an effective population of over 63,000, as described in Section 3 of the Water System Plan. This action is not anticipated to have an effect on the McChord Field water system, which is separate from the Lewis Main/North system.

Wastewater. The wastewater treatment system on JBLM collects industrial and domestic wastewater from all of JBLM to include McChord Field, the Veterans Administration American Lake Hospital, and Washington Army National Guard's Camp Murray. There are no combined sewer overflows on JBLM; all wastewater collection lines on the installation are separate from the stormwater drainage system.

The installation's wastewater treatment system has a permitted capacity of 7.0 mgd and a hydraulic capacity of 15 mgd. In FY 2011, the WWTP treated a total of 1,491 million gallons of wastewater, for an average daily flow of 4.08 mgd. As mitigation for the Grow the Army action, the Army would construct a new WWTP. This plant would eliminate any future violations of water quality standards JBLM has been receiving as a result of the failure of the existing facility to adequately treat JBLM effluent going to Puget Sound. The new plant would also address the ability of JBLM to stay in compliance with the new, more stringent EPA thresholds for effluent discharge.

Surface Water. Four major source water drainage basins occur on JBLM: The Nisqually River basin, the Sequelitchew Creek basin (including American Lake), the Deschutes River basin, and the Chambers-Clover Creek basin. The Nisqually River crosses through the installation and empties into Puget Sound. The installation has six lakes or marshes that are over 100 acres in size. The main bodies of water in the cantonment area of JBLM include American Lake, American Lake Marsh, Bell Marsh, Elliot Marsh, Hamer Marsh, Kennedy Marsh, Lynn Lake, McKay Marsh, Murray Creek, Muck Creek, Sears Lake, Sequelitchew Creek, Sequelitchew Lake, Carter Lake, Morey Pond, Morey Creek and Clover Creek.

Stormwater. On JBLM, stormwater is discharged to waters of the U.S. in accordance with the NPDES. Current permit coverage includes the Multi-Sector General Permit for Industrial Processes and the Construction General Permit. A JBLM MS4 Permit is pending (2012). Stormwater drains to treatment facilities which remove solids and oil and provide for infiltration. These facilities overflow to a system of marshes. The marshes overflow to the JBLM stormwater canal on Lewis North which conveys stormwater from Lewis Main and Lewis North into Puget Sound at Solo Point. The JBLM stormwater collection and conveyance system is currently at or near capacity for most of the cantonment area. On-site infiltration is required for most new construction. Significant areas of development within the cantonment have incorporated onsite-infiltration. The remaining cantonment areas, mostly encompassing residential communities, drain to surface waters through a number of small stormwater systems.

4.12.7.2 Environmental Consequences

No Action Alternative

Under the No Action Alternative, there is the potential for water quality violations from wastewater effluent leaving the installation that contributes to a potentially significant water quality impact. This would remain a significant but a mitigable impact. The Army has planned the construction of a new WWTP at Solo Point to improve sewage treatment and effluent quality to minimize impacts. Currently, the upgrade of the WWTP is in design and it is anticipated that construction would proceed in 2013. There are minor impacts associated with water supply and demand, surface water, or stormwater as a result of this alternative. No change from existing conditions or previously proposed projects would occur. As discussed above, the installation is pursuing a NPDES permit which should be granted in 2012 to cover discharged effluent from the outflow of the WWTP. JBLM would adhere to the requirements of the permit. Training activities would continue, both on ranges and training lands, with minor impacts mitigated via the ITAM land rehabilitation program. Mitigations would result in a less than significant impact to water resources under the No Action Alternative.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

Alternative 1 would have an anticipated beneficial impact to water resources. A loss of up to 8,000 Soldiers would reduce traffic in JBLM's training areas, roads, and ranges, decreasing the chance of potential surface water impacts and sedimentation. The demand for potable water would also be diminished, and implementation of Alternative 1 would create additional treated wastewater capacity for other uses at the installation. Reduced motorpool activities and less frequent washing of field-driven Stryker and wheeled support vehicles would produce a decrease on water demand and associated treatment. The beneficial impact would further increase when the WWTP becomes operational.

4.12.8 Facilities

4.12.8.1 Affected Environment

There are approximately 4,400 buildings on JBLM, about half of which are used for Family housing. The other half are for administrative, dining, recreation, emergency services, vehicle and aviation maintenance, and garrison maintenance shops. The road system on the installation is in the process of receiving upgrades to major arterials consistent with the installation master plan. Water treatment and distribution systems are discussed in Section 4.12.7.1.

4.12.8.2 Environmental Consequences

No Action Alternative

There would be less than significant impacts to the facilities at JBLM under the No Action Alternative. The installation is in the process of building additional Family housing units to accommodate Soldiers and their Families. JBLM's current facility shortfalls have been prioritized and are seeking or have received Army funding. The installation would continue to implement the Army's FRP at JBLM. Environmental analyses of the projects that result from these programs are conducted prior to implementation.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

Alternative 1 would have an anticipated beneficial impact on facilities. The reduction of up to 8,000 Soldiers and their dependents would alleviate some of the on-post military housing shortfalls at JBLM. An increase in the FRP and facilities demolition at JBLM would occur as a result of this alternative. Older, less efficient facilities nearing the end of their life-cycle would be demolished to save the Army money on maintenance and energy requirements. Remaining units with inadequate facilities could occupy facilities that better support unit administrative requirements. Training areas would also have less scheduling conflicts from reduced training load.

4.12.9 Socioeconomics

4.12.9.1 Affected Environment

JBLM is located about 9 miles south-southwest of Tacoma, Washington. It was established as a result of the 2005 BRAC. Air Force and Army installation management functions were combined into a joint base, with the Army assuming funding and operations support of the entire joint base. The ROI consists of Pierce and Thurston counties. Twenty three school districts provide educational services to JBLM school children.

Population and Demographics. The JBLM population is measured in three different ways. The daily working population is 36,323, and consists of full-time Soldiers and Army civilians working on post. The population that lives on JBLM consists of 27,765 Soldiers and dependents. Finally, the portion of the ROI population living off post directly related to JBLM is 47,215 and

consists of Soldiers, civilian employees, and their dependents. There are also about 3,145 Air Force service members and 1,415 Air Force civilian employees who work on JBLM. The Army does not yet know the Air Force's plans for its workforce. For purposes of this analysis, the changes that could be experienced by the Army military and civilian work force will be discussed. Additional discussion on cumulative economic effects is in Section 4.12.13.

The ROI population is almost 1,050,000. Compared to 2000, the 2010 population increased in Pierce and Thurston counties by more than 10 percent in each county (Table 4.12-2). The racial and ethnic composition of the ROI is presented in Table 4.12-3.

Table 4.12-2. Population and Demographics

Region of Influence Counties	Population 2010	Population Change 2000-2010 (Percent)
Pierce	800,000	+ 13.5
Thurston	250,000	+ 21.7

Table 4.12-3. Racial and Ethnic Composition

State and Region of Influence Counties	Caucasian (Percent)	African American (Percent)	Native American (Percent)	Hispanic (Percent)	Asian (Percent)	Multiracial (Percent)	Other (Percent)
Washington	73	3	7	11	1	4	1
Pierce	70	6	1	9	6	6	1
Thurston	79	3	1	7	5	4	1

Employment and Income. Compared to 2000, the 2009 employment (private nonfarm) increased the State of Washington and Pierce and Thurston counties (Table 4.12-4). Employment, median home value, and median household income, and poverty levels are presented in Table 4.12-4.

Table 4.12-4. Employment, Housing, and Income

State and Region of Influence Counties	2009 Total Nonfarm Employment (Employees)	Employment Change 2000-2009 (Percent)	Median Home Value 2005-2009 (Dollars)	Median Household Income 2009 (Dollars)	Population Below Poverty Level 2009 (Percent)
Washington	2,385,282	+ 5.21	277,600	56,479	12.30
Pierce	228,905	+ 9.90	262,400	55,941	12.30
Thurston	64,807	+ 22.30	257,800	60,930	10.30

Housing. JBLM has 4,936 privatized Family housing units for military Families with a planned end-state inventory of 4,994 units by 2018: 520 for officers and 4,474 for enlisted personnel. Barracks (Army) and dormitory (Air Force) spaces for unaccompanied personnel total 12,008 and 604, respectively.

Schools. Children of military personnel attend school at numerous ROI communities. The 2010 Final Environmental Impact Statement for Fort Lewis Army Growth and Realignment found that there are 23 school districts in the ROI, which had a total combined enrollment of 239,164

in 2008. Clover Park School District operates the five on-post elementary schools at JBLM, as well as a total of 20 other schools (elementary, middle school, and high school) in the City of Lakewood, adjacent to the installation. In 2008, 36 percent of the CPSD's average daily attendance consisted of federally-connected students; and smaller, yet noticeable, concentrations of federally-connected students were evident in the Steilacoom Historical School District (17 percent of average daily attendance) and Yelm School District (7 percent of average daily attendance). These numbers represent a 9 percent Clover Park School District and 13 percent Steilacoom Historical School District increase in student enrollment. Many of the ROI's school districts' facilities are currently at or over capacity, which was considered a significant impact of the GTA population increase at JBLM (Fort Lewis, 2010).

Public Health and Safety

Police. The JBLM Police Department, a part of the Directorate of Emergency Services, provides law enforcement and property protection for the installation. Police functions include protecting life and property, enforcing criminal law, conducting investigations, regulating traffic, providing crowd control, and performing other public safety duties. City, county, and state police departments provide law enforcement in the ROI.

Fire. The JBLM Fire Division, a part of the Directorate of Emergency Services, has emergency response teams capable of providing emergency medical, hazardous material, fire rescue, fire suppression, and consequence management to mitigate the effects of both natural and manmade disasters at JBLM. In part because JBLM straddles several miles of I-5, the JBLM Fire Division is often called upon to provide first responder assistance for vehicle collisions and other incidents on I-5 as well. Non-emergency services are also provided on the installation, including code enforcement, loss prevention, effective fire prevention, and public education programs.

Medical. JBLM supports a range of medical services both on and off the installation. The Madigan Healthcare System is a network of Army medical facilities located throughout Washington, Oregon, and California that serves more than 109,000 Active Duty service members, their Families, retirees and their Families, and is headquartered at Madigan Army Medical Center (MAMC) on JBLM. MAMC is the Army's second largest Military Treatment Facility (MTF). It includes a Level II Trauma Center, and 240 inpatient beds. The Trauma Center serves non-military personnel from the surrounding community as needed. MAMC has a staff of over 5,000 and is the fifth largest employer in Pierce County. MAMC services include allergy-immunology, behavioral health, emergency services, family medicine, internal medicine, OB/GYN, optometry, pediatrics, pharmacy, preventive medicine, surgery, and substance abuse. There are four additional smaller health clinics on Lewis Main, Lewis North, and McChord Field, as well as a community clinic in the City of Puyallup for Family members living off the installation to the east. A second community clinic is scheduled to open in south Puget Sound in late 2012. This clinic will serve Family members residing in Olympia, Lacey, and Yelm. JBLM also provides dental services and supports a Warrior Transition Battalion.

Family Support Services. The JBLM FMWR and Army Community Service provide programs, activities, facilities, services, and information to support Soldiers and Families. Services provided include child care, youth programs, deployment readiness for Families, employment readiness, financial readiness, relocation readiness, Exceptional Family Member Program (EFMP) support, Warrior in Transition support, and survivor outreach.

Recreation Facilities. JBLM facilities or programs for recreation include fitness centers, swimming pools, athletic fields, golf course, bowling center, skeet range, outdoor recreation opportunities, sports teams, and a Warrior Zone.

4.12.9.2 Environmental Consequences

No Action Alternative

The No Action Alternative would result in significant but mitigable impacts to existing socioeconomic resources. JBLM's continuing operations represent a beneficial source of regional economic activity. With the present housing market conditions, it is estimated that there would be no shortage of units for either home ownership or rental units. There is presently an initiative to build two new elementary schools on the installation which should help to mitigate school crowding within the ROI. These new schools would have approximately double the capacity of existing on-post schools. Several off-post school districts are coping with the influx of the additional school-aged children as a result of the "Grow the Army" action. No additional impacts to housing, public and social services, public schools, public safety, recreational activities, or environmental justice are anticipated.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

Overall impacts to socioeconomics under Alternative 1 are considered to be less than significant. Minor impacts are anticipated to economics and off-post housing while beneficial impacts are anticipated for on-post housing. There is the potential for schools to be impacted both adversely and beneficially. Other support services and facilities are anticipated to have negligible impacts.

Economic Impacts. Alternative 1 would result in the loss of up to 8,000 Army Soldier and government civilian employees, each with an average annual income of \$41,830. In addition, this alternative would affect an estimated 4,464 spouses and 7,680 dependent children, for a total estimated potential impact to 12,144 dependents. The total population of military employees and their dependents directly affected by Alternative 1 is 20,144.

Based on the EIFS analysis, there would be no significant impacts for sales volume, income, employment, or population. The range of values that would represent a significant economic impact in accordance with the EIFS model is presented in Table 4.12-5, along with the estimated percentages for alternative 1. Table 4.12-6 presents the projected economic impacts to the region for Alternative 1 as assessed by the Army's EIFS model.

Table 4.12-5. Economic Impact Forecast System and Rational Threshold Value Summary of Implementation of Alternative 1

Region of Influence Economic Impact Significance Thresholds	Sales Volume (Percent)	Income (Percent)	Employment (Percent)	Population (Percent)
Economic Growth Significance Value	8.95	9.02	2.56	2.36
Economic Contraction Significance Value	- 6.14	- 5.88	- 8.09	- 2.77
Forecast Value	- 2.61	- 1.37	- 3.19	- 1.92

Table 4.12-6. Economic Impact Forecast System: Summary of Projected Economic Impacts of Implementation of Alternative 1

Region of Influence Impact	Sales Volume	Income	Employment	Population
Total	- \$528,553,900	- \$403,002,900	- 8,786 (Direct) - 1,753 (Indirect) - 10,539 (Total)	- 20,144
Percent	- 2.61	- 1.37	- 3.19	- 1.92

The total annual loss in direct and indirect sales in the ROI represents an estimated -2.61 percent change from the total current sales volume of \$20.25 billion within the ROI. It is estimated that state tax revenues would decrease by approximately \$34.32 million as a result of the loss in revenue from sales reductions. Some counties within the ROI supplement the state sales tax of 6.5 percent by varying percentages, and these additional local tax revenues would be lost at the county and local level. Regional income would decrease by 1.37 percent. While 8,000 Army Soldier and government civilian positions would be lost within the ROI, EIFS estimates another 786 military contract service jobs would be lost, and an additional 1,753 job losses would occur indirectly as a result of reduction in demand for goods and services in the ROI. The total estimated reduction in demand for goods and services within the ROI is projected to lead to a loss of 10,539 jobs, or a -3.19 percent change in regional non-farm employment. The total number of employed positions (non-farm) in the ROI is estimated to be 330,035. A population reduction of -1.92 percent within the ROI would be anticipated as a result of this alternative. Of the approximately 1.05 million people (including those residing on JBLM) that live within the ROI, 20,144 military employees and their dependents would no longer reside in the area following the implementation of Alternative 1. This would lead to a decrease in demand for housing, and increased housing availability in the region. This could lead to a slight reduction in median home values. It should be noted that this estimate of population reduction includes civilian and military employees and their dependents. This number likely overstates potential population impacts, as some of the people no longer employed by the military would continue to work and reside in the ROI, working in other economic sectors; however, this would in part be counterbalanced by the fact that some of the indirect impacts would include the relocation of local service providers and businesses to areas outside the ROI.

Table 4.12-7 shows the total projected economic impacts, based on the RECONS model, that would occur as a result of the implementation of Alternative 1.

Table 4.12-7. Regional Economic System: Summary of Projected Economic Impacts of Implementation of Alternative 1

Rational Threshold Value	Sales Volume	Income	Employment
Total	- \$365,808,847 (Local) - \$549,099,706 (State)	- \$406,640,553	- 9,037 (Direct) - 1,152 (Indirect) - 10,189 (Total)
Percent	- 1.80	- 1.38	- 3.09

The total annual loss in direct and indirect sales in the region would represent an estimated -1.80 percent change in total regional sales volume according to the RECONS model, an impact that is approximately 0.81 percentage points less than projected by EIFS; however, it is estimated that gross economic impacts at the state level would be greater. Extrapolating from sales volume numbers presented in the RECONS model, it is anticipated that state tax revenues would decrease by approximately \$35.7 million as a result of the loss in revenue from sales reductions, which would be \$1.38 million more in lost state sales tax revenue than projected by the EIFS model. Regional income is projected by RECONS to decrease by 1.38 percent, slightly more than the 1.37 percent reduction projected by EIFS. While 8,000 Army Soldier and government civilian positions would be lost within the ROI, RECONS estimates another 9,037 military contract and service jobs would be lost, and an additional 1,152 job losses would occur indirectly as a result of reduced demand for goods and services in the ROI. The total estimated reduction in demand for goods and services within the ROI is projected to

lead to a loss of 10,189 jobs, or a -3.09 percent change in regional non-farm employment, which would be 0.10 percentage points less than projected by the EIFS model.

When assessing the results together, both models predict similar economic impacts for the implementation of Alternative 1. Estimates from the models predict that Alternative 1 would lead to a net reduction of economic activity, with similar levels of impacts to non-farm employment (-3.09 and -3.19 percent) within the ROI.

Population and Demographics. JBLM anticipates a substantial reduction in military population and training throughput as a result of the implementation of Alternative 1.

Housing. Alternative 1 would increase the availability of barracks space for unaccompanied personnel, but some Soldiers would still be housed in barracks that fail to meet current Army standards due to the wide variety of barracks types currently spread throughout the different units' footprints on Lewis Main, Lewis North, and McChord Field. Alternative 1 would potentially increase the availability of Family housing units. Those outcomes would likely decrease the off-base demand for rentals and purchases of housing. JBLM anticipates some adverse effects to the rental housing markets in Olympia, Lacey, Yelm, DuPont, Lakewood, Puyallup, and Tacoma and in the smaller communities of the ROI, but it would not be a significant impact.

Schools. As a result of Alternative 1, reduction in student enrollment is expected to alleviate the overcrowding in ROI schools, which would be a beneficial impact. However, since school districts receive federal funding based on the installation's military authorizations and their dependents, an 8,000 Soldier and civilian reduction would be expected to have minor to less than significant impacts to school districts in the ROI. JBLM and DoD's Office of Economic Adjustment (OEA) have a plan to replace all five on-post elementary schools based on an age and condition study, and this plan is not expected to be changed under Alternative 1. Overall, impacts to schools are considered to be less than significant.

Public Health and Safety. As a result of Alternative 1, the anticipated population decrease at JBLM would likely reduce the demand for law enforcement services, fire and emergency services, and medical care services on and off post. JBLM anticipates negligible impacts to public health and safety under the Proposed Action.

Family Support Services. As a result of Alternative 1, JBLM anticipates a reduced demand for FMWR and Army Community Service programs on post, and a reduced demand for Family support services off post also. JBLM anticipates negligible impacts to Family support services under the Proposed Action.

Recreation Facilities. Use of recreation facilities on post would likely decline as a result of the implementation of Alternative 1. JBLM anticipates that utilization decreases would have negligible impacts, as demand for these resources already exceeds capacity in many cases.

Environmental Justice. As a result of the implementation of Alternative 1, JBLM anticipates no disproportionate adverse impact to minorities, economically disadvantaged populations, or children. Job losses would likely be felt across the ROI, affecting all income levels and many economic sectors.

4.12.10 Land Use Conflicts and Compatibility

4.12.10.1 Affected Environment

JBLM consists of approximately 91,000 acres of land. Areas on the installation are classified into residential, commercial, and industrial categories. Area development plans have been completed for 11 sites within the cantonment area of JBLM. The major areas for which area development plans have not been completed are training and impact areas.

4.12.10.2 Environmental Consequences

No Action Alternative

Under the No Action Alternative, no changes to land use conditions would occur. Activities and land use off-post under the No Action Alternative would continue to be compatible with existing and/or planned land uses within the ROI. Impacts would therefore be minor.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

Alternative 1 would result in a beneficial impact to the installation. This loss of troops would alleviate the need for additional Family housing over and above what is already planned for and is presently being built. The implementation of Alternative 1 would allow JBLM to selectively demolish outdated, less efficient facilities to open up land for construction or other best uses. A reduction in training land use would be anticipated that roughly correlates to a 20-30 percent decrease as a result of the implementation of Alternative 1. Land use would continue to be compatible with existing and/or planned land uses within the ROI.

4.12.11 Hazardous Materials and Hazardous Waste

4.12.11.1 Affected Environment

The affected environment for the Proposed Actions include the storage, transport, and disposal of hazardous materials and waste at JBLM. This includes hazardous materials and waste from USTs and ASTs, pesticides, LBP, asbestos, PCBs, radon, and UXO.

Units and activities on JBLM typically use hazardous materials such as fuels, paints, solvents, lubricants, coolants, and sanitation chemicals. Hazardous waste is generated as a result of facility and equipment maintenance, medical care activities, and Soldier training. JBLM operates as a large quantity hazardous waste generator. JBLM has several plans in place to help manage hazardous materials and waste including a Pollution Prevention Plan; Installation Spill Contingency Plan; SPCC Plan; and Pest Management Plan.

4.12.11.2 Environmental Consequences

No Action Alternative

Overall, it is anticipated that there would be minor impacts under the No Action Alternative. There would be no change in JBLM's management of hazardous materials, toxic substances, hazardous waste, or contaminated sites. JBLM would continue to manage existing sources of hazardous waste in accordance with the HWMP. Currently planned clean-up actions at JBLM would continue in an effort to restore areas contaminated by hazardous wastes.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

Alternative 1 would have an overall anticipated less than significant impact to hazardous materials and waste. In the short term, if funding was available through the Facilities Reduction Program, there would likely be a spike in overall waste generation due to an increase in the demolition of outdated and no longer needed facilities, which would increase the volume of solid waste generated. In addition, an increase in asbestos containing materials and LBP disposal is anticipated until facility reduction is completed. Construction workers and Army personnel would take measures to dispose of materials in accordance with regulatory requirements and installation management plans. It is anticipated that JBLM would experience long-term beneficial impacts from a reduction in hazardous materials purchases, storage, and use; and the resulting hazardous waste generation, as a result of having up to 8,000 fewer Soldiers' vehicles, weapons, and other equipment that requires the presence of hazardous materials on the installation in the first place.

4.12.12 Traffic and Transportation

4.12.12.1 Affected Environment

The ROI for the affected environment for traffic and transportation aspects include areas of Pierce and Thurston counties, including the communities of DuPont, Lacey, Steilacoom, and Lakewood. Major routes in the region include I-5, a north-south interstate highway that separates Lewis North from Lewis Main and McChord Field. Other arterials used by JBLM personnel and connected to the Interstate are Washington State Routes 507, 510, and 512. Along with non-military related growth in the ROI over the last decade, JBLM traffic (military and civilian) negatively affects traffic flow on I-5 and LOS ratings at numerous intersections both on and off the installation.

4.12.12.2 Environmental Consequences

No Action Alternative

The 'Grow the Army' proposal determined that there would be significant impacts to traffic flows and increased delays at key intersections on and near JBLM. This impact may be reduced through the funding of road projects already planned but not yet funded. The No Action Alternative represents a significant impact to traffic and transportation at JBLM along the I-5 corridor (Fort Lewis, 2010).

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

There would be a beneficial impact to traffic from Alternative 1. The decrease in off-post traffic would have a slight beneficial impact on traffic in the community overall and could improve the LOS rating at intersections close to the installation, particularly during peak morning and afternoon travel periods where traffic is more congested. This level of decrease in population could also improve traffic flows on major roads travelling through the installation. As fewer Soldiers and their Family members commute to the installation, it is anticipated that traffic congestion would be diminished and travel time would decrease. Delays at key ACPs would also decrease. As traffic volumes decrease, LOS for on- and off-post commuters would improve. Therefore, under Alternative 1, the overall impacts to traffic will be beneficial.

4.12.13 Cumulative Effects

Region of Influence

The ROI for this cumulative impact analysis of Army 2020 realignment at JBLM encompasses two counties in Washington State: Pierce and Thurston. Tacoma in Pierce County and the three communities of Lacey, Olympia, and Tumwater in Thurston County are the largest cities within the ROI. Tacoma is the center for commercial manufacturing and transportation in the metropolitan area. JBLM has long been a key component of the economy of the metropolitan area, employing tens of thousands of Soldiers and civilian employees combined. For the purposes of this analysis, cumulative effects analysis considers reasonably foreseeable Army, DoD, and other federal agency actions that are funded and in the planning process for moving forward. This analysis also includes past or present projects not already included for consideration as part of the direct and indirect impact analysis. Reasonably foreseeable projects are considered those projects which are in the Army's Program Objective Memorandum encompassing FY 2013 to FY 2017 at JBLM.

There are numerous planned or proposed actions within the ROI that have the potential to cumulatively add impacts to Army 2020 alternatives. These actions are either in progress or reasonably could be initiated within the next 5 years. A number of the Army's proposed projects have been previously identified in the installation's Real Property Master Plan and are

programmed for future execution. The list below presents some of the projects which may add to the cumulative impacts of the implementation of Army 2020 realignment alternatives.

Joint Base Lewis-McChord Projects

- WWTP;
- BCT Complex Phase 3;
- BCT Complex Phase 4;
- BCT Complex Phase 5;
- Enlisted Unaccompanied Personnel Housing;
- Army Reserve Center;
- Aviation Unit Complex phases 2A, B, and C;
- Operational Readiness Training Complex Battalion phases 2 & 3;
- Corps Headquarters;
- Battle Command Training Center Upgrade; and
- U.S. Air Force Stationing at JBLM.

Other Agency (DoD and non-DoD) Actions (Past, Present, and Reasonably Foreseeable)

- Nisqually National Wildlife Refuge Comprehensive Conservation Plan. 2005;
- High Speed Rail Corridor (Vancouver, BC to Eugene, Oregon); and
- Planned expansion of Cal Portland's gravel mining operation, DuPont, Washington.

No significant adverse cumulative environmental impacts are anticipated when considering this Proposed Action in addition to other regional actions.

No Action Alternative

No significant adverse cumulative impacts are anticipated to occur when evaluating the implementation of the No Action Alternative in conjunction with the activities discussed above.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

When viewed in conjunction with other past, present, and reasonably foreseeable projects, the overall cumulative effects of Alternative 1 are projected to be either beneficial or less than significant adverse impacts for all VECs, except socioeconomics, which would be anticipated to have cumulatively minor adverse impacts.

The following VECs are expected to have cumulative beneficial impacts under Alternative 1: Air quality, noise, biological resources, water resources, energy demand and generation, facilities, land use conflict and compatibility, traffic and transportation. The loss of up to 8,000 Soldiers and civilians would have a beneficial cumulative impact to traffic both on and off JBLM. Alternative 1 would reduce the morning and evening traffic flow slowdowns on I-5 and should reduce waiting times for motorists at traffic signals. The implementation of high speed rail would also be anticipated to further reduce traffic levels within the ROI by eliminating the volume of POVs utilizing I-5 and other major roadways.

Socioeconomic impacts are anticipated to be cumulatively less than significant. County-wide, off-post unemployment has risen from 5.6 percent from March 2008 to 9.5 percent in March 2012 in Pierce County and 5.0 percent to 8.3 percent in Thurston County over the same timeframe (Employment Security Department, Washington State.) The force reduction proposed under Alternative 1 would further increase unemployment within the ROI, but not to significant levels.

1 There are currently no programmed U.S. Air Force force structure changes for JBLM that have
2 been coordinated through JBLM Garrison. However, force reductions by the Air Force could
3 intensify socioeconomic impacts of Army decisions to implement Alternative 1. Because of the
4 large and diverse economy within the ROI that surrounds JBLM, cumulative socioeconomic
5 impacts would still be projected to remain less than significant.

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4.13 FORT KNOX, KENTUCKY

4.13.1 Introduction

Fort Knox, located in northeastern Kentucky has approximately 46,000 acres of maneuver area suited for vehicle and non-vehicular military training (Figure 4.13-1). Until September 2011, it had been home to the Armor School and was primarily a training platform for armor/mechanized training. However, the Armor School relocated to Fort Benning, GA in 2011 to become part of the Army's MCoE.



Figure 4.13-1. Fort Knox

Fort Knox's major organizations are the U.S. Army Cadet Command, Human Resources Command, Army Recruiting Command, the 3rd Brigade of the 1st Infantry Division, the 3rd Expeditionary Sustainment Command and the 84th Training Command.

Fort Knox has a well-developed range infrastructure and maneuver area to support Soldier training, and is continuing to develop training range infrastructure to support its resident units.

4.13.1.1 Valued Environmental Components

For alternatives the Army is considering as part of Army 2020 force structure realignments, Fort Knox does not anticipate any significant adverse environmental impacts as a result of the implementation of Alternative 1 (Force reduction of up to 3,800 Soldiers and Army Civilians) or Alternative 2 (Installation gain of up to 1,000 Soldiers). As a result of the implementation of Alternative 1, the Army does anticipate significant impacts to regional population, employment,

economic activity, and school systems. Table 4.13-1 summarizes the anticipated impacts to VECs from each alternative.

Table 4.13-1. Fort Knox Valued Environmental Component Impact Ratings

Valued Environmental Component	No Action Alternative	Alternative 1: Force Reduction of up to 3,800	Alternative 2: Growth of up to 1,000
Air Quality	Minor	Beneficial	Minor
Airspace	Negligible	Negligible	Negligible
Cultural Resources	Negligible	Minor	Negligible
Noise	Negligible	Beneficial	Minor
Soil Erosion	Minor	Beneficial	Minor
Biological Resources	Negligible	Negligible	Negligible
Wetlands	Negligible	Negligible	Negligible
Water Resources	Minor	Beneficial	Minor
Facilities	Negligible	Minor	Less than Significant
Socioeconomics	Minor	Significant	Beneficial
Energy Demand and Generation	Negligible	Negligible	Negligible
Land Use Conflict and Compatibility	Negligible	Negligible	Minor
Hazardous Materials and Hazardous Waste	Negligible	Minor	Negligible
Traffic and Transportation	Negligible	Beneficial	Minor

4.13.1.2 Valued Environmental Components Dismissed from Detailed Analysis

For the VECs discussed in this section, no more than a negligible impact would be anticipated. Therefore, these VECs are not being carried forward for detailed analysis, as no potential for significant impacts exists.

- **Airspace.** Fort Knox does not anticipate impacts to airspace under any of the alternatives. The use of airspace would not change significantly under Alternative 1 with the loss of ground units. Aviation and UAS would continue to require airspace to support training. This implementation of Alternative 1 would result in a slight and marginally lower utilization rate of existing military airspace as some units with UAS may be inactivated and no longer require activation and use of the airspace.

The increased use of airspace would likely remain unchanged or could change with a negligible increase under Alternative 2. Additional airspace would not be required, and scheduling, activation, and utilization of existing military airspace (SUA) would proceed as it currently does without change.

- **Biological Resources (Vegetation, Wildlife, Threatened and Endangered).** There are 18 special status species of flora and fauna known to occur on Fort Knox; however, Fort Knox currently records only two federally endangered species, the Indiana bat (*Myotis sodalis*) and the gray bat (*Myotis grisescens*) as occurring on the installation.

There are also several Kentucky state-listed species and species of concern found on Fort Knox, though, as a federal installation management to protect these species is not required. The Fort Knox INRMP (Fort Knox, 2008a), prescribes a regime of ecosystem management that benefits all species, however. Tables 4.13-2 and 4.13-3 lists these species.

Table 4.13-2. Rare, Threatened, or Endangered Plants

Common Name	Scientific Name	Confirmed on Fort Knox	KSNPC Status
Butternut/White walnut	<i>Juglans cinerea</i>	Yes	S
Blue mud-plantain	<i>Heteranthera limosa</i>	Yes	S
Eggleston's violet	<i>Viola septemloba</i> var. <i>egglestonii</i>	Yes	S
Alleghany stonecrop	<i>Sedum telephioides</i>	Yes	T
Compass plant	<i>Silphium laciniatum</i> var. <i>laciniatum</i>	Yes	T
Great plains ladies'-tresses	<i>Spiranthes magnicamporum</i>	Yes	T
Large sedge	<i>Carex gigantea</i>	Yes	T
Drooping bluegrass	<i>Poa saltuensis</i>	Yes	E
Tall beaked-rush	<i>Rhynchospora macrostachya</i>	Yes	E

KSNPC = Kentucky State Nature Preserve Commission Status Listing

Table 4.13-3. Rare, Threatened, or Endangered Animals

Common Name	Scientific Name	State Status	Federal Status
Gray bat	<i>Myotis grisescens</i>	Endangered	Endangered
Indiana bat	<i>M. sodalis</i>	Endangered	Endangered
Bald eagle	<i>Haliaeetus leucocephalus</i>	Threatened	—
Henslow's sparrow	<i>Ammodramus henslowii</i>	Special Concern Species	Species of Concern
Cerulean warbler	<i>Dendroica cerulea</i>	—	Species of Concern
Sharp-shinned hawk	<i>Accipiter striatus</i>	Special Concern Species	—
Northern cavefish	<i>Amblyopsis spelaea</i>	Special Concern Species	—
Cave crayfish	<i>Orconectes inermis</i>	Threatened	Species of Concern
Gray treefrog	<i>Hyla versicolor</i>	Special Concern Species	—

Negligible adverse effects would occur at Fort Knox under the No Action Alternative. Fort Knox would continue to adhere to its existing resource management plans and INRMP to further minimize and monitor any potential effects. Units are briefed prior to each training event regarding sensitive areas on post, such as protected species habitat, and what is and is not allowed within certain areas. During sensitive times of potential Indiana and Gray Bat breeding, training areas and activities are adjusted to limit disturbance. Negligible impacts to biological resources are anticipated as a result of the implementation of Alternative 1. Scheduling conflicts for training area access to conduct resource monitoring would be reduced. Proactive conservation management practices

and species monitoring would be more easily accomplished with reduced training. Negligible adverse impacts are anticipated as a result of the implementation of Alternative 2. The increase in the number of Soldiers is less than 15 percent above the current Soldier stationing levels. While this moderate force augmentation would increase traffic in the training lands and ranges, it would not cause significant degradation or destruction of threatened or endangered species or rare species habitats. Fort Knox has recently supported much higher levels of training and disturbance when it supported the Armor School, and biological impacts from an additional 1,000 Combat and support Soldiers as part of BCT restructuring would be anticipated to be negligible; however, access to training lands and ranges for the purpose of threatened and endangered species monitoring and habitat management would become more difficult with increased training.

Implementation of this level of Soldier strength would have a negligible impact on the two federally-listed species and other sensitive species of concern at Fort Knox. Sensitive species recorded on the installation would be managed in accordance with the installation's INRMP and ESMP, terms and conditions identified within biological opinion(s) issued by the USFWS and any conservation measures identified in ESA, Section 7 consultation documents.

- **Wetlands.** Negligible impacts to wetlands are anticipated as a result of all alternatives carried forward for consideration.
- **Energy Demand and Generation.** Negligible impacts would result from all alternatives. Regardless of the alternative selected, energy would be available to support Fort Knox operations without the need for additional power infrastructure.

Fort Knox anticipates that the implementation of any of the alternatives would result in negligible impacts for those VECs discussed above. The following provides a discussion of the VECs requiring a more detailed analysis, as they are anticipated to have the potential of a higher level of impact as a result of the implementation of the Proposed Action alternatives.

4.13.2 Air Quality

4.13.2.1 Affected Environment

Fort Knox is located in the North Central AQCR and in the Kentucky portion of the southeast air quality transport zone. All construction or demolition associated with the cantonment area would be within Hardin County Attainment Zone. Ambient air quality at Fort Knox is in attainment for all criteria pollutants and within EPA's NAAQS guidelines for acceptable air quality.

Fort Knox holds a Title V operating permit. The permit covers all known point sources located at Fort Knox. Emission sources include storage and use of gasoline, distillate fuel, jet fuel (JP-8), paint booth operations, oil and gas fired boilers, and degreaser tanks. The permit requirements include an annual inventory update on each of these sources. No problems are anticipated in continuing to obtain air quality permits.

The Fort Knox cantonment area is not located in a nonattainment or maintenance area and is not subject to a conformity analysis; however, the "major source" designation does trigger the provisions of 40 CFR 52.21, PSD. The PSD provisions require Fort Knox to assess all new emission units to determine if their operation constitutes a major modification.

4.13.2.2 Environmental Consequences

No Action Alternative

Although there would continue to be minor short- and long-term fugitive dust and emissions impacts from training and installation operations, these impacts would not exceed threshold levels. Permit conditions would continue to be monitored and met, but no changes to emission sources are anticipated, other than those mandated by maintenance, replacement, or elimination of sources as they age or are removed from service.

Alternative 1: Force Reduction (up to 3,800 Soldiers and Army Civilians)

There would be a beneficial impact to regional air quality from reduced mobile source emissions. There would be less combustion and generation of NAAQS pollutants and HAPs associated with military training and few emissions from a smaller number of POVs. In addition, there would be less fugitive dust generated from fewer training events.

Alternative 2: Installation gain of up to 1,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

There would be a minor (low) impact on air quality in the airsheds surrounding Fort Knox as a result of implementing Alternative 2. There would be an anticipated minor increase in air emissions from both mobile and stationary sources that would be generated to support additional Soldiers and their Families. Though Fort Knox can anticipate increased emissions from military vehicles and generators used to support training events as well as increase in fugitive dust, the increase of up to 1,000 Soldiers would have only minor impacts to regional air quality. Fort Knox would not be anticipated to exceed the emissions limits of its Title V permit or to engage in activities causing any change in attainment status or exceedance of NAAQS. Activities that generate air emissions would not qualitatively change though they could be anticipated to increase marginally to support additional Soldiers.

4.13.3 Cultural Resources

4.13.3.1 Affected Environment

In relation to cultural resources, the footprint of Fort Knox defines the affected environment, or Area of Potential Effect. Fort Knox features a broad assortment of cultural resources. The Fort Knox Cantonment Historic District contains 182 buildings constructed during the 1930s and 1940s. Four other buildings, Cavalry Chapel, Hanger 1, Landing Ship Tank Building, and the Old Guest House are eligible for the NRHP. One property, a 1-mile segment of the Louisville and Nashville Turnpike (Bridges to the Past) is listed on the NRHP. A total of 948 archaeological sites have been identified at Fort Knox. Two of these are eligible for the NRHP and another 82 are potentially eligible.

These cultural resources are managed in accordance with the Fort Knox ICRMP, FY 2010 to FY 2014 (Fort Knox, 2010c). Guidance for managing historic buildings is specified in the Fort Knox Standards for the Treatment of Historic Buildings (Fort Knox, 2008b).

4.13.3.2 Environmental Consequences

No Action Alternative

Impacts to cultural resources from this alternative would be negligible. Activities with the potential to affect cultural resources are routinely monitored and regulated in accordance with the Fort Knox ICRMP, FY 2010 to FY 2014.

Alternative 1: Force Reduction (up to 3,800 Soldiers and Army Civilians)

Minor impacts are anticipated with this alternative at Fort Knox. Removal and release of temporary facilities would have low potential for adverse effects to historic buildings and/or archeological resources. Removal of outdated infrastructure has some potential to affect historic structures, but such actions to demolish older structures would be conducted in accordance with the Fort Knox ICRMP, FY 2010 to FY 2014. If the undertaking has the potential to adversely affect historic properties, consultation with the SHPO would occur per 36 CFR 800 as required. There is a low potential for any historic structures to be affected as a result of this action. If such an action is proposed, full consultation with the SHPO would occur.

Alternative 2: Installation gain of up to 1,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

This level of growth on Fort Knox is anticipated to have a negligible impact to cultural resources. Measures are in place to accommodate training to prevent adverse impacts to cultural resources. The types of training conducted by the additional Soldiers would not change, though some training areas on Fort Knox might be used with marginally more frequency or intensity compared with current baseline conditions. The Fort Knox CRM would continue to follow the procedures outlined in the ICRMP in order to protect cultural resources.

No historic buildings would need to be demolished or reconfigured to accommodate more Soldiers under this alternative. The installation has facilities space and capacity to accommodate additional growth with limited new construction. Negligible impacts to cultural resources from construction would be anticipated.

4.13.4 Noise

4.13.4.1 Affected Environment

Noise, on and adjacent to Fort Knox, includes aircraft noise (from fixed- and rotary-winged aircraft) mainly from the Northern Training Area, of which weapons firing and maneuver on Wilcox Range also occurs. The Yano Multi-Purpose Tank Range has a NZ II, classified as normally incompatible, that extends beyond the installation boundary into an area that has some residential development (USACE, 2006). Other noise is from small caliber weapons training.

4.13.4.2 Environmental Consequences

No Action Alternative

Negligible impacts from noise are anticipated under the No Action Alternative. The acoustic environment of Fort Knox would continue to be effected by small- and large-caliber weaponry, artillery, and aircraft overflight. Other activities, such as ground maneuver training and exercises resulting in noise created by personnel and vehicles, would continue to contribute noise on and around Fort Knox, to the same levels and intensity as historically experienced.

Alternative 1: Force Reduction (up to 3,800 Soldiers and Army Civilians)

Impacts from noise are anticipated to be slightly beneficial. Existing ranges would still be utilized for firing the same types of weapons systems and conducting the same types of training; however, under this alternative, Fort Knox would have an anticipated reduction in the frequency of noise generating training events. The number of weapons qualifications and maneuver training events would be anticipated to decrease. Noise impacts would likely remain comparable to current conditions, though noise generating events would be less frequent leading to a reduced risk of noise complaints. The current frequency of aviation training activities, a contributor of noise at the installation, would not be anticipated to change more than marginally, as aviation units would not be impacted by these decisions.

Alternative 2: Installation gain of up to 1,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

There would be an anticipated minor impact on the installation and surrounding communities by the restationing of up to 1,000 Combat/Combat Support Soldiers. Noise modeling has indicated that the frequency of training and live-fire events would need to dramatically increase to result in a change in noise contours that would result in changes in noise contours that would affect sensitive receptor populations. Given that there are no new types of activities that would occur as a result of stationing of these Soldiers, just an increase in the types of existing noise generating activities, only minor impacts are anticipated to occur as a result of implementing this alternative. Sensitive wildlife populations would not be impacted by the implementation of Alternative 2.

4.13.5 Soil Erosion

4.13.5.1 Affected Environment

The major portion of Fort Knox is located on the eastern Pennyroyal Plateau, which has rolling to steep topography underlain by limestone and shale. There are three separate flats originating from the Ohio, Salt and Rolling Rock rivers. The latter two rivers run through Fort Knox and their floodplains are generally located in the range impact area. There are also numerous caverns and sinkholes on Fort Knox.

Most of the soils at Fort Knox are rated as having slight to moderate erosion limitations (U.S. Army, 1990). Heavy use of tracked vehicles in long-term training areas can result in extensive sheet erosion and severe gully erosion.

4.13.5.2 Environmental Consequences

No Action Alternative

Minor adverse impacts are anticipated under the No Action Alternative. Fort Knox would continue its infantry and mechanized training, that would continue to result in impacts to soils from removal of or damage to vegetation, digging activities, ground disturbance from vehicles, and ammunition or explosives used in training events. The installation's ITAM program conducts monitoring, rehabilitation, and maintenance/repair on areas of high use such as drop zones, artillery firing positions, observation points, and ranges to prevent extensive erosion and mitigate maneuver and live-fire impacts to soils.

Alternative 1: Force Reduction (up to 3,800 Soldiers and Army Civilians)

Impacts from soil erosion are anticipated to be negligible and potentially beneficial. Alternative 1 includes the reduction of no longer needed facilities that could result in short-term adverse impacts from demolition and temporary exposure of bare soils to rain and water and wind erosion; however, these impacts would be short term in duration. Overall, there would be anticipated beneficial long-term impacts from reduced training and more opportunities for land rehabilitation and natural rest and recovery of the landscape. It is anticipated that there would be less soil erosion and sedimentation attributable to training activities.

Alternative 2: Installation gain of up to 1,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

There are anticipated minor impacts to soil resources at Fort Knox resulting from the implementation of Alternative 2. Fort Knox, previously home of the Armor school until BRAC 2005 decisions realigned the school to Fort Benning, supported the mechanized training by more than 400 tanks and associated support vehicles. The impacts of IBCT training and an additional 1,000 Soldiers remain well under past soil disturbance regimes experienced at Fort

Knox. Additional Soldiers and training, however, would expose more soils that would become susceptible to erosion, and soil productivity (i.e., the capacity of the soil to produce vegetative biomass) may decline in disturbed areas. With the potential addition of another maneuver battalion, engineer units and other support units to a BCT, more vehicles would impact Fort Knox's training areas, though to a lesser extent than by comparison to recent historical training levels when the Armor school was stationed at Fort Knox. More vegetation would be denuded from the training areas by vehicular traffic and more bare soils would be exposed to water and wind erosion. A greater amount of sedimentation would be anticipated to occur in the regional surface waters. Fort Knox's ITAM program would continue to monitor training lands for disturbance, and would plan and implement rehabilitation and erosion control measures in areas of high use.

4.13.6 Water Resources

4.13.6.1 Affected Environment

Surface Water. Surface waters on Fort Knox include both streams and lakes. There are more than 25 water bodies that serve multiple purposes. In the vicinity of the cantonment area, there are several creeks and two ponds. Mill Creek, the nearest major body of water, is classified as "water quality limited" by Kentucky, due to metals, ammonia, and low dissolved oxygen concentrations.

Water Supply. Potable water at Fort Knox is provided by two different sources: West Point Well Field in the Ohio River alluvial aquifer and surface water from McCracken Springs near Otter Creek. Groundwater used for the Fort Knox drinking water supply is from 15 deep wells.

Currently, Fort Knox owns and operates two drinking water plants. Ownership and operation of the drinking water treatment and supply system will be privatized on February 1, 2012. The Fort Knox Central Water Plant treats both groundwater and surface water while the Muldraugh Water Plant treats only groundwater. The two plants serve a daytime, on-installation population of approximately 26,000. Together, the plants treat an average of 3.065 mgd and are designed for a maximum capacity of 13 mgd. Treated water is supplied to the installation and sold to the City of Muldraugh and Hardin County Water District #1.

Wastewater. The Fort Knox WWTP was designed for an average wastewater flow of 6 mgd, a maximum hydraulic capacity of 14 mgd, and a peak wastewater flow of 18 million gallons. The facility handles flow from the installation and the City of Muldraugh and treats an average domestic flow of about 2.5 mgd.

Ownership and operation of the Fort Knox wastewater system was transferred to Hardin County Water District No. 1 (District) in partnership with a private water utility contractor. The wastewater system at Fort Knox is generally adequate to convey and treat wastewater from all existing and future development.

Stormwater. The Hardin County Water District also owns and operates the stormwater collection system at Fort Knox. The stormwater drainage system at Fort Knox is generally able to meet the demands of normal rainfall conditions.

Fort Knox has a permit that allows the installation to discharge stormwater from industrial areas and from construction activities disturbing more than 1 acre.

4.13.6.2 Environmental Consequences

No Action Alternative

The No Action Alternative would have minor adverse effects to water resources. No change from existing conditions would occur and all construction, operation, and maintenance projects already under way have obtained the NPDES permit and other applicable permits and are operating in adherence to their guidance. Training activities would continue, both on ranges and training lands, with adverse impacts mitigated via the ITAM land rehabilitation program.

Alternative 1: Force Reduction (up to 3,800 Soldiers and Army Civilians)

Minor beneficial impacts are anticipated as a result of the implementation of Alternative 1. A loss of up to 3,800 Soldiers and civilians would reduce training area use, and decrease the chance of potential surface water impacts. The demand for potable water would also be diminished, and implementation of Alternative 1 would create additional treated wastewater capacity for other uses at the installation.

Alternative 2: Installation gain of up to 1,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

Overall, minor impacts are anticipated as a result of the implementation of Alternative 2.

Surface Water. No new major construction would occur as a result of this alternative; however, an increase in training would require using existing road, trail, and training areas with greater intensity. This could lead to increased sedimentation and surface water impacts attributable to soils compaction, increased vegetation loss, and increased sheet flow during rain events. Any new construction/land disturbance over 1 acre would require a stormwater construction permit, which would entail identification and implementation of mitigation strategies to reduce impacts associated with stormwater runoff during and after construction.

Water Supply. Based on the average of 100 gpd of potable water use per person, it is anticipated that 1,000 additional Soldiers would increase potable water demand by approximately 100,000 gpd. This figure could be assumed to more than double to almost 250,000 gpd conservatively, if most Soldiers and dependents were assumed to live on post. The demand created by this increase in personnel is readily available and would not adversely impact Fort Knox's water supply. Fort Knox is currently using only a fraction of its potential water supply.

Wastewater Treatment. Based on an average daily use of 109 gpd per person, it is anticipated that wastewater would increase by 109,000 gpd for Soldiers, and potentially by up to 275,000 gpd when considering both Soldiers and their dependents, which well within the permitted limits and capacity of the WWTP.

4.13.7 Facilities

4.13.7.1 Affected Environment

Fort Knox is divided into two general areas: The cantonment area and the portions of the installation used as maneuver training facilities, ranges, and range impact areas. The cantonment occupies approximately 6,902 acres (approximately 6.3 percent) of the installation. Fort Knox's cantonment is the portion of the installation that has been developed into a variety of urban land uses that together comprise the elements necessary for a complete community. It includes but is not limited to, commercial and service support facilities similar to those associated with a civilian community. The commercial facilities include a commissary and Post Exchange that would make up the commercial aspects of a community center. The service support facilities include educational, post office, library, childcare center, youth center, and

chapel and religious education functions. The U.S. Bullion Depository is located at Fort Knox on a 30-acre tract of land completely surrounded by the installation. The Depository is a restricted area.

Within the cantonment area, a Wounded Warrior in Transition Complex is currently under construction and a new hospital complex is planned within the next 5 years. Fort Knox currently has a number of excess barracks and administrative facilities that can be used to support additional Soldier stationing. These facilities were vacated as part of the Armor school's BRAC directed move to Fort Benning, Georgia. Excess facilities include the 2300, 5900, 6000, and 6500 block barracks and administrative areas. All areas are readily available and require minimum investment to prepare them for re-purposing and reuse.

4.13.7.2 Environmental Consequences

No Action Alternative

Impacts to facilities would be negligible under the No Action Alternative. Fort Knox currently has an excess of facilities available to support its Soldiers, Families and missions. Facilities are available as a result of the departure of the Armor school to Fort Benning. The installation would continue to implement the Army's FRP at Fort Knox. Environmental analyses of the projects that result from these programs are conducted prior to implementation.

Alternative 1: Force Reduction (up to 3,800 Soldiers and Army Civilians)

Minor impacts are anticipated as a result of the implementation of Alternative 1. An increase in the FRP and facilities demolition at Fort Knox would occur as a result of this alternative. Older, less efficient facilities nearing the end of their life-cycle would be demolished when no longer needed to support Soldiers or their Families to save the Army on maintenance and energy requirements. Facility usage and availability for the remaining population would not be affected.

Alternative 2: Installation gain of up to 1,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

There would be less than significant impacts to facilities. A gain of up to 1,000 Soldiers would be reflected through increased usage throughout the cantonment area. Increased activities within the training and range areas would be anticipated to cause long-term facility impacts due to increased human presence. Given the existence of facilities readily available for use, negligible facilities impacts are anticipated from this alternative.

4.13.8 Socioeconomics

4.13.8.1 Affected Environment

The ROI consists of Hardin and Meade counties. The affected environment includes Fort Knox, surrounding communities, and Hardin and Meade counties. Fort Knox's population and workforce have long been an essential element of the demography and economy of the surrounding counties. The average income of personnel working at Fort Knox is approximately \$41,830. The primary communities impacted on a daily basis by Fort Knox are Radcliff and Elizabethtown. Fort Knox is estimated to input more than \$2.5 billion into the regional economy.

Population and Demographics. The Fort Knox population is measured in three different ways. The daily working population is 13,136, and consists of Soldiers and Army civilians working on post. The population that lives on Fort Knox consists of 4,221 Soldiers and 5,912 dependents, for a total of 10,133. Finally, the portion of the ROI population related to Fort Knox is 22,444 and consists of Soldiers, civilian employees, and their dependents living off post.

The ROI county population is approximately 135,000. This does not include the 10,133 residents of Fort Knox. Compared to 2000, the ROI's 2010 population increased in Hardin and Meade counties (Table 4.13-4). The racial and ethnic composition of the ROI is presented in Table 4.13-5.

The transient military and civilian workforce population supported by Fort Knox also directly impact the surrounding ROI and communities. These demographic areas may or may not reside on Fort Knox during their temporary stay based on barracks/housing availability and mission priorities/requirements. These transient groups generate demand for hotels, dining, and other supporting services both on and off the installation. In FY 2011, Fort Knox supported over 25,000 transient personnel and estimates that over 30,000 transient personnel will be supported in FY 2012.

Table 4.13-4. Population and Demographics

Region of Influence Counties	Population 2010	Population Change 2000-2010 (Percent)
Hardin	105,549	+ 12.1
Meade	28,601	+ 8.6

Table 4.13-5. Racial and Ethnic Composition

State and Region of Influence Counties	Caucasian (Percent)	African American (Percent)	Native American (Percent)	Hispanic (Percent)	Asian (Percent)	Multiracial (Percent)	Other (Percent)
Kentucky	86	8	3	1	0	1	0
Hardin	78	11	<1	5	2	3	<1
Meade	91	3	<1	3	1	2	<1

Employment, Income, and Housing. Compared to 2000, the 2009 employment (private nonfarm) increased in Hardin and Meade counties, but decreased overall in the State of Kentucky (Table 4.13-6). Employment, medium home value and household income, and poverty are presented in Table 4.13-6.

Table 4.13-6. Employment, Housing, and Income

State and Region of Influence Counties	2009 Total Nonfarm Employment	Employment 2000-2009 (Percent)	Medium Home Value 2005-2009 (Dollars)	Medium Household Income 2009 (Dollars)	Population Below Poverty Level 2009 (Percent)
Kentucky	1,486,545	- 1.80	113,100	40,061	18.40
Hardin	33,747	+ 3.20	126,600	45,358	14.70
Meade	3,270	+ 8.20	104,500	42,922	12.40

Fort Knox Family housing can currently accommodate 2,563 Families of the permanent party Soldier population with dependents who are assigned to Fort Knox. There are currently 2,419 Family housing units on Fort Knox which are managed through an RCI partnership that has been in place since 2006. At any given time, Fort Knox personnel occupy approximately 2,216 units in Family housing. As of July 2012, 2,326 military and 5,912 military dependents reside in Fort Knox Family housing. The number of dual military households living on post is currently 35. At this time, there is a waiting list for on-post housing that averages 45 days.

Family housing occupancy rates for 2010 and 2011 were 92.2 percent and 91.75 percent, respectively. Under the RCI phased construction program, 100 units are awaiting demolition, 88 of those units are currently vacant. New construction will include 434 new units with completion estimated no earlier than 18 months after all parties approve the plan and demolition is complete.

Unaccompanied Personnel Housing on Fort Knox has space for 11,016 unaccompanied personnel; 8,734 spaces reserved for transient personnel (students, trainees, and support cadre); 2,282 spaces for permanent party Soldiers, 491 spaces for the Wounded Warriors; and 168 spaces for geographical bachelors. The current permanent party occupancy rate is 71 percent.

Off-post housing consists predominately of single-family dwellings. The lack of new multi-family construction has placed pressure on this segment of the market. In 2000, approximately 17,300 single-family homes, or 12 percent of all occupied units in the ROI, were rental properties.

Schools. Fort Knox has approximately 2,200 students that attend DoD Education Activity schools on the installation. Off-post enrollment in districts around Fort Knox includes approximately 3,500 students. Student enrollment is 14,394 in Hardin County schools, 5,181 in Meade County schools, and 2,509 in Elizabethtown Independent schools. Table 4.13-7 shows the overall gain/loss projections of student dependents at Fort Knox and the surrounding ROI from 2006-2013.

Table 4.13-7. Soldier Dependents (School Aged)

Fiscal Year	Children (Total)	Infant and Pre-school	K-1	2-3	4-5	6-7	8-9	10-11	12	School age (Total)
07	283	105	35	32	30	27	23	18	13	178
08	43	16	5	5	5	4	3	3	2	27
09	889	333	113	102	96	85	73	57	40	566
10	-286	-148	-36	-32	-31	-27	-23	-18	-13	-180
11	-515	-191	-65	-58	-55	-49	-42	-32	-23	-324
12	3773	14	8	7	6	6	5	4	3	39
13	3566	1	1	0	0	0	0	0	0	1
Total Net Gain	7753	130	61	56	52	46	39	32	22	307

Public Health and Safety.

- **Police Services.** The Fort Knox Police Department oversees police operations, patrols, gate security, training, traffic accident, and criminal investigations.
- **Fire and Emergency Services.** The Fort Knox Fire Department responds to emergencies involving structures, facilities, transportation equipment, hazardous materials, and natural and man-made disasters, and directs fire prevention activities; and conducts public education programs.
- **Medical Facilities.** Fort Knox's on-post medical services are administered at Ireland Army Community Hospital. This facility services all permanent party, Active Duty personnel and their dependents, as well as retirees and their dependents.

Family Support Services. Fort Knox ACS is a human service organization with programs and services dedicated to assisting Soldiers and their Families under FMWR.

Child, Youth and School Services. Fort Knox's Child, Youth & School Services is a division of FMWR. It provides facilities and care for children ages 6 weeks to 5 years; School Age Care for ages 6 to 10 years, a middle school and teen program for ages 11 to 18 years, as well as sports and instructional classes for children of Active Duty military, DoD civilian, and DoD contractor personnel. Children of retired military members are eligible to participate in the Middle School and Teen, Youth Sports and SKIES programs. Members of the local community can participate in the Youth Sports program. There were 2,594 Families, with 3,792 children registered for Fort Knox's child care, middle school, teen, sports, and SKIES programs in FY 2011.

Recreation and Leisure Program. Fort Knox has an award winning recreation and leisure program that offers its military community, Families, and civilians a Youth and adult Sports Complex, miniature golf course, auto crafts shop, outdoor water park, bowling center, 18-hole golf course, fitness centers, outdoor recreation opportunities, intramural sports program, entertainment and special events, Better Opportunity for Single Soldiers Program, leisure travel program, library and Java Café coffee shop, and a Sports Zone through FMWR.

4.13.8.2 Environmental Consequences

No Action Alternative

There would be no change or minor impacts anticipated from the No Action Alternative. This alternative is anticipated to provide a steady-state contribution of economic and social benefits and costs. No additional impacts to housing, public and social services, public schools, public safety, or recreational activities are anticipated.

Alternative 1: Force Reduction (up to 3,800⁶ Soldiers and Army Civilians)

Economic Impacts. Alternative 1 would result in the loss of approximately 3,800 military (uniformed Soldier and DoD civilian) positions, each with an average annual income of \$41,830. In addition, this alternative would affect an estimated 2,142 spouses and 3,686 dependent children for a total estimated potential impact to 5,828 dependents. The total population of military employees and their dependents directly affected by Alternative 1 is projected to be 9,668. Based on the EIFS analysis, there would be no significant socioeconomic impacts to sales volume or income in the ROI for this alternative. There would be significant impacts for population and employment. The range of values that would represent a significant economic impact in accordance with the EIFS model are presented in Table 4.13-8. Table 4.13-9 presents the estimated economic impacts to the region for Alternative 1 as assessed by the Army's EIFS model.

⁶ Calculations used a number of 3,840 Soldiers and civilians for estimating socioeconomic impacts. This number was derived by assuming the loss of Fort Knox's IBCT, as well as 30 percent of the installation's non-BCT Soldiers and up to 15 percent of the civilian workforce. As discussed in Chapter 3, this number is rounded to the nearest hundred personnel when discussing impacts of Alternative 1.

Table 4.13-8. Economic Impact Forecast System and Rational Threshold Value Summary of Implementation of Alternative 1

Region of Influence Economic Impact Significance Thresholds	Sales Volume (Percent)	Income (Percent)	Employment (Percent)	Population (Percent)
Economic Growth Significance Value	9.11	9.23	7.08	6.62
Economic Contraction Significance Value	- 7.48	- 6.42	- 6.99	- 4.53
Forecast Value	- 6.48	- 6.05	- 9.66	- 6.67

Table 4.13-9. Economic Impact Forecast System: Summary of Projected Economic Impacts of Implementation of Alternative 1

Region of Influence Impact	Sales Volume	Income	Employment	Population
Total	- \$172,017,300	- \$180,354,300	- 4,299 (Direct) - 547 (Indirect) - 4,846 (Total)	- 9,668
Percent	- 6.48 (Annual Sales)	- 6.05	- 9.66	- 6.67

The total annual loss in sales volume from direct and indirect sales reductions in the ROI represents an estimated -6.48 percent change in total sales volume from the current sales volume of \$2.65 billion within the ROI. It is estimated that state tax revenues would decrease by approximately \$10.32 million as a result of the loss in revenue from sales reductions. Some counties within the ROI supplement the state sales tax of 6 percent by varying percentages, and these additional local tax revenues would be lost at the county and local level. Regional income would decrease by 6.05 percent. While approximately 3,800 direct military and government civilian positions would be lost within the ROI, EIFS estimates another 459 direct contract service jobs would be lost, and an additional 547 jobs losses would occur as a result of a reduction in demand for goods and services in the ROI as a result of the indirect impacts of force reduction. The total estimated reduction in demand for goods and services within the ROI is projected to lead to a loss of 4,846 jobs, or a -9.66 percent change in regional employment. The total number of employed positions (military and private employment) in the ROI is estimated to be approximately 50,153. A significant population reduction of 6.67 percent within the ROI would be anticipated as a result of this alternative. Of the approximately 144,200 people (including those residing on Fort Knox) that live within the ROI, 9,668 military employees and their dependents would no longer reside in the area following the implementation of Alternative 1. This could lead to a decrease in demand for housing, and increased housing availability in the region. This would lead to a reduction in median home values. It should be noted that this estimate of population reduction includes civilian and military employees and their dependents. This number likely overstates potential population impacts, as some of the people no longer employed by the military would continue to work and reside in the ROI, working in other economic sectors; however, this would in part be counterbalanced by the fact that some of the indirect impacts would include the relocation of local service providers and businesses to areas outside the ROI.

Table 4.13-10 below shows the total projected economic impacts, based on the RECONS model, that would occur as a result of the implementation of Alternative 1.

Table 4.13-10. Regional Economic System: Summary of Projected Economic Impacts of Implementation of Alternative 1

Region of Influence Impact	Sales Volume	Income	Employment
Total	- \$152,490,489 (Local) - \$271,702,897 (State)	- \$205,530,486	- 4,176 (Direct) - 417 (Indirect) - 4,592 (Total)
Percent	- 5.73	- 6.80	- 9.16

The total annual loss in sales volume from direct and indirect sales reductions in the region represents an estimated -5.73 percent change in total regional sales volume according to the RECONS model, an impact that is approximately 0.75 percentage points less than estimated by EIFS; however, it is estimated that gross economic impacts at the state level would be greater. Extrapolating from sales volume numbers presented in the RECONS model, it is anticipated that state tax revenues would decrease by approximately \$16.3 million as a result of the loss in revenue from sales reductions, which is \$6.02 million more in lost state sales tax revenue than projected by the EIFS model. Regional income is projected by RECONS to decrease by 6.8 percent, slightly more than the 6.05 percent reduction projected by EIFS. While approximately 3,800 direct military and government civilian positions would be lost within the ROI, RECONS estimates another 336 direct contract and service jobs would be lost, and an additional 417 jobs losses would occur as from indirect reduction in demand for goods and services in the ROI as a result of force reduction. The total estimated reduction in demand for goods and services within the ROI is projected to lead to a loss of 4,592 jobs, or a -9.16 percent change in regional employment, compared to the EIFS estimate of 9.66 percent.

When assessing the results together, both models seem to indicate that the economic impacts of the implementation of Alternative 1 would lead to a significant net reduction of economic activity within the ROI.

Housing. Alternative 1 would increase availability of barracks and single Soldier housing. If the number of permanent party Soldiers were reduced by up to 3,800 personnel on Fort Knox, there is a strong possibility that vacancies will occur in on-post Family housing. Once the Active Duty military waiting lists are empty, remaining units would be filled according to the cascading priority list outlined in Section 4.14.3.1. Fort Knox anticipates long-term major adverse impacts to the housing and rental market in the region. The Proposed Action would have the most impact in Hardin and Meade counties, as well as the cities of Elizabethtown and Radcliff where rental vacancy and current military tenant populations are highest

Schools. Fort Knox anticipates the potential for significant adverse impacts to the Fort Knox DoD Education Activity, Hardin and Meade County public schools and Elizabethtown Independent Schools, that support on-post dependents a result of the implementation of Alternative 1. The listed school systems have invested heavily in infrastructure and staff as part of recent transformation and growth at Fort Knox. The loss of approximately 3,800 Soldiers and dependents will create excess capacity that would be unsupportable for the long term.

Public Health and Safety. As a result of the implementation of Alternative 1, resident and daytime population levels on Fort Knox would decrease and could potentially reduce demand on law enforcement, fire and emergency service providers, and on medical care providers on and off post. Active Duty military, remaining permanent party Soldiers, retirees, and their dependents, would continue to demand these services. Fort Knox anticipates less than significant impacts to public health and safety under the Proposed Action.

Family Support Services. As a result of the implementation of Alternative 1, a reduction in permanent-party Soldiers could reduce demand on select Family support service providers on post. Active Duty military, remaining permanent party Soldiers, retirees, and their dependents would continue to demand child care and other ACS programs. Off-post Family support services throughout the region would likely experience a significant decrease in clients. Fort Knox anticipates less than significant impacts to Family support services on post under the Proposed Action.

Recreation Facilities. A reduction in permanent-party Soldiers could potentially decrease use of recreation facilities on post. Any decrease in utilization would be minor. Fort Knox does not anticipate significant adverse or beneficial impacts to recreation facilities under the Proposed Action.

Environmental Justice. As result of the implementation of Alternative 1, Fort Knox does not anticipate that a disproportionate adverse impact to minorities, economically disadvantaged populations, or children, would occur in the ROI. Fort Knox anticipates that job loss would be felt across economic sectors and at all income levels and spread geographically throughout the ROI. The proposed force reduction in military authorizations on Fort Knox would not have disproportionate or adverse health effects on low-income or minority populations in the ROI.

Alternative 2: Installation gain of up to 1,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

Economic Impacts. Alternative 2 would result in the gain of up to 1,000 Soldiers, each with an average annual income of \$41,830. In addition, this alternative would affect an estimated 558 spouses and 960 dependent children for a total estimated potential impact to 1,518 dependents. The total population increase of Soldiers and their dependents would be projected to be 2,518.

Based on the EIFS analysis, there would be no significant impacts for sales volume, income, population, and employment. The range of values is presented in Table 4.13-11. Table 4.13-12 presents the projected economic impacts to the region for Alternative 2.

**Table 4.13-11. Economic Impact Forecast System and Rational Threshold Value
Summary of Implementation of Alternative 2**

Region of Influence Economic Impact Significance Thresholds	Sales Volume (Percent)	Income (Percent)	Employment (Percent)	Population (Percent)
Economic Growth Significance Value	9.11	9.23	7.08	6.62
Economic Contraction Significance Value	- 7.48	- 6.42	- 6.99	- 4.53
Forecast Value	1.69	1.58	2.52	1.75

**Table 4.13-12. Economic Impact Forecast System: Summary of Projected Economic
Impacts of Implementation of Alternative 2**

Region of Influence Impact	Sales Volume	Income	Employment	Population
Total	\$44,796,170	\$46,967,250	1,120 (Direct) 142 (Indirect) 1,262 (Total)	2,518
Percent	1.69 (Annual Sales)	1.58	2.52	1.75

The total annual gain in sales volume from direct and indirect sales increases in the ROI would represent an estimated 1.69 percent gain in total sales volume from the current sales volume of \$2.65 billion within the ROI. It is estimated that state tax revenues would increase by approximately \$2.69 million as a result of the gain in revenue from sales increases. Some counties within the ROI supplement the state sales tax of 6 percent by varying percentages, and these additional local tax revenues would be gained at the county and local level. Regional income would increase by 1.58 percent. While 1,000 direct military and government civilian positions would be gained within the ROI, EIFS estimates another 120 direct contract service jobs would be gained, and an additional 142 jobs would be created from increased demand for goods and services in the ROI as a result of the indirect impacts of force increases. The total estimated increase in demand for goods and services within the ROI is projected to lead to a gain of 1,262 jobs, or a 2.52 percent change in regional employment. The total number of employed positions (military and private employment) in the ROI is estimated to be approximately 50,153. A population increase of 1.75 percent within the ROI is anticipated as a result of this alternative. Of the approximately 144,000 people (including those residing on Fort Knox) that live within the ROI, 2,518 military employees and their dependents would reside in the area following the implementation of Alternative 2. This would lead to an increase in demand for housing and decrease housing availability in the region. This could lead to a slight increase in median home values.

Table 4.13-13 shows the total projected economic impacts, based on the RECONS model, that would be estimated to occur as a result of the implementation of Alternative 2.

Table 4.13-13. Regional Economic System: Summary of Projected Economic Impacts of Implementation of Alternative 2

Region of Influence Impact	Sales Volume	Income	Employment
Total	\$34,000,109 (Local) \$60,580,356 (State)	\$46,276,196	1,075 (Direct) 93 (Indirect) 1,168 (Total)
Percent	1.28	1.55	2.33

The total annual gain in sales volume from direct and indirect sales increases in the region would represent an estimated 1.28 percent change in total regional sales volume according to the RECONS model, an impact that is approximately .41 percentage points less than estimated by EIFS; however, it is estimated that gross economic impacts at the state level would be greater. Extrapolating from sales volume numbers presented in the RECONS model, it is anticipated that state tax revenues would increase by approximately \$3.64 million as a result of the gain in revenue from sales increases, which would be \$950,000 more than the additional state sales tax revenue projected by the EIFS model. Regional income is projected by RECONS to increase by 1.55 percent, slightly less than the 1.58 percent increase forecasted by EIFS. While 1,000 direct military and government civilian positions would be gained within the ROI, RECONS estimates another 75 direct contract and service jobs would be gained, and an additional 93 jobs would be created from indirect increases in demand for goods and services in the ROI as a result of population increase. The total estimated increase in demand for goods and services within the ROI is projected to lead to a gain of 1,168 jobs, or a 2.33 percent change in regional employment; under EIFS, it is an estimated 2.52 percent.

When assessing the results together, both models indicate that the economic impacts of the implementation of Alternative 2 would lead to a net increase of economic activity within the ROI.

4.13.9 Land Use Conflicts and Compatibility

4.13.9.1 Affected Environment

Fort Knox occupies 108,955 acres, of which approximately 6,902 acres are the cantonment area. Land in the areas outside the cantonment area is used mainly for training, small arms and artillery impact, and vehicle uses. About 52,000 acres of land are under forest management. These lands are used as training grounds and buffer areas and for timber supply and recreation. Overall, the main land use at Fort Knox, occupying approximately two-thirds of the total acreage, consists of live-fire ranges and impact areas (U.S. Army, 1995).

4.13.9.2 Environmental Consequences

No Action Alternative

No changes to land use conditions would occur and no effects are anticipated under the No Action Alternative.

Alternative 1: Force Reduction (up to 3,800 Soldiers and Army Civilians)

No impacts are anticipated as a result of the implementation of Alternative 1. No changes to land use would be anticipated to occur through implementation of this alternative at Fort Knox. A reduction in training land use would be anticipated that roughly correlates with the number of Soldiers inactivated or realigned as a result of this alternative in comparison to those remaining at Fort Knox. The loss of approximately 3,800 Soldiers and Army civilians would not likely alter existing training lands or training facilities, but the loss would add significant strain to the installation to maintain these areas. Several BCT unique projects are programmed to support the current BCT mission.

Alternative 2: Installation gain of up to 1,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

There would be minor impacts, from land use conflicts and compatibility anticipated as a result of the implementation of Alternative 2. The gain of 1,000 additional Soldiers would require the additional use of training areas and qualification ranges. These uses may preclude the use of maneuver areas and require the need for increased management and balancing of training priorities.

4.13.10 Hazardous Materials and Hazardous Waste

4.13.10.1 Affected Environment

The affected environment for these Proposed Actions include the use, storage, transport, and disposal of hazardous materials and waste at Fort Knox. This includes hazardous materials and waste from USTs and ASTs, pesticides, LBP, asbestos, PCBs, radon, and UXO.

Fort Knox is a large quantity hazardous waste generator and has a RCRA Part B permit for a Treatment, Storage, and Disposal Facility. The types of wastes generated and stored at the installation include those found in maintenance activities, printing and painting operations, as well as electrical and mechanical shops. Approximately 90 percent of the waste solvents at Fort Knox are generated from vehicle and aircraft maintenance facilities. Many of the wastes received for disposal are expired commercial chemical products. All hazardous waste generated at Fort Knox is manifested under Fort Knox's EPA identification number (KY6210020479) (USACE, 2006).

4.13.10.2 Environmental Consequences

No Action Alternative

Overall, negligible effects are anticipated under the No Action Alternative. There would be no change in Fort Knox's management of hazardous materials, toxic substances, hazardous waste, or contaminated sites. Fort Knox would continue to manage existing sources of hazardous waste in accordance with the HWMP.

Alternative 1: Force Reduction (up to 3,800 Soldiers and Army Civilians)

Minor impacts are anticipated as a result of the implementation of Alternative 1. In the short term, there would be an increase in the demolition of outdated and no longer needed facilities. This would increase the volume of solid waste generated. In addition, an increase in asbestos and LBP disposal is anticipated until facility reduction is completed under this alternative. Construction workers and Army personnel would take measures to dispose materials in accordance with regulatory requirements installation management plans.

Alternative 2: Installation gain of up to 1,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

Negligible impacts from hazardous materials and waste would be anticipated with an increased Soldier strength of up to 1,000. The storage, use, handling, and disposal of hazardous materials, toxic substances, and hazardous wastes would not increase the risk to human health due to direct exposure, would not increase the risk of environmental contamination, and would not violate applicable federal, state, local, or DoD regulations. Existing management procedures, regulations, plans, and permits would be used to minimize risk.

4.13.11 Traffic and Transportation

4.13.11.1 Affected Environment

The affected environment or ROI for this Proposed Action includes Fort Knox and Hardin County, Kentucky. Within Hardin County, the areas most influenced by the proposed restationing of units to Fort Knox would be the Town of Radcliff and City of Elizabethtown. There are no commercial air carriers or waterway or maritime shipping at this installation. The installation has a railhead for rail movement of tactical vehicles.

The Army 2020 force initiative would not result in major increases in vehicle traffic volume either on the installation and in the local community leading to it. A large portion of the military and all of the civilians and contractors would continue to commute to Fort Knox by private automobile.

In conjunction with 2005 BRAC, the communities surrounding Fort Knox invested heavily in traffic improvements and mass transit systems. Fort Knox has completely redesigned the ingress and egress capability by improving capacity and throughput (by widening three gates and closing a fourth due to Anti-Terrorism/Force Protection concerns). In FY 2011, Fort Knox supported a weekday average inbound traffic flow of 31,000 vehicles (as compared to 46,000 in FY 2010) so capability exists to support a mission increase of up to 1,500 Soldiers and their Families. Additionally, the local communities invested approximately \$250 million in state roadway to improve trafficability and access to and from Fort Knox (i.e., Elizabethtown/Radcliff Connector, Highway 313 expansion, and Highway 31W safety improvements). Fort Knox's mass transit program also provides service to approximately 500 personnel.

4.13.11.2 Environmental Consequences

No Action Alternative

Negligible impacts are anticipated under the No Action Alternative. Surveys and studies conducted on the existing transportation system determined that it is sufficient to support the current traffic load.

Alternative 1: Force Reduction (up to 3,800 Soldiers and Army Civilians)

This alternative would have minor beneficial traffic impacts resulting from a reduction in force at Fort Knox. It is anticipated that traffic congestion would be diminish in and around key ACPs and entrance gates. The roads would continue to be maintained and LOS for on- and off-post commuters would improve as traffic volume decreased. Fort Knox traffic system is providing decent LOS to meet the needs of its supported Soldiers, dependents and civilians.

Alternative 2: Installation gain of up to 1,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

There would be minor, short and long-term impacts on traffic and transportation systems on the installation due to the presence of an additional 1,000 Soldiers and their dependents. The increase in off-post traffic would have a minimal impact on traffic in the community overall. The implementation of this alternative would not contribute to a decrease in the LOS of the road network leading to the installation, particularly during peak morning and afternoon travel periods. This increase in population would also have a minor impact on the traffic volume on the installation on some of the installation's main and arterial routes. It should be noted that in 2010, average daily traffic was around 46,000 trips per day as opposed to 31,000 trips per day in 2011. The Fort Knox transportation system has the capacity to accommodate additional Soldier and dependent growth.

4.13.12 Cumulative Effects

Region of Influence

The ROI for this cumulative impact analysis of Army 2020 realignment includes Fort Knox, as well as Hardin and Meade counties in the State of Kentucky. Louisville, Kentucky is the largest city within the ROI. Louisville is the center for commercial manufacturing, transportation, and medical activities in the metropolitan area. Fort Knox has long been a key component of the economy of the metropolitan area, employing several thousand Soldiers and civilian employees within the ROI. Fort Knox has been in operation supporting the Army since 1918. For the purposes of this analysis, cumulative effects analysis considers reasonably foreseeable Army, DoD, and other federal agency actions that are funded and in the planning process for moving forward. This analysis also includes past or present projects not already included for consideration as part of the direct and indirect impact analysis. Reasonably foreseeable projects are considered those projects which are funded or zoned, and therefore there is high likelihood of project completion.

There are numerous planned or proposed actions within the ROI that have the potential to cumulatively add impacts to Army 2020 alternatives. These actions are either in progress or reasonably could be initiated within the next 5 years. A number of the Army's proposed projects have been previously identified in the installation's Real Property Master Planning Board and are programmed for future execution. A list of projects below presents some of the projects which may add to the cumulative impacts of the implementation of Army 2020 realignment alternatives.

Cumulative effects at Fort Knox include Army mission-related activities and potential land transfer activities. Actions considered for cumulative effects include:

Ongoing Projects:

- The Warrior in Transition Complex is currently under construction and will become operational in FY 2012.

Future Projects:

- New Hospital in FY 2013 to FY 2014;
- School Replacement and/or Consolidation Projects (4) in FY 2012 to FY 2015;
- Infantry Platoon Battle Course in FY 2012;
- Infantry Squad Battle Course in FY 2013;
- 19th Engineer Battalion Complex in FY 2012;
- Digital Air Ground Integration Range in FY 2016; and
- Multi Purpose Machine Gun Range in FY 2016.

Other Agency (DoD & non-DoD) Actions (Past, Present, and Reasonably Foreseeable Future)

- State Highway Project Connector from Veterans Memorial Pkwy to State Highway 313;
- State Highway Project Widening of State Highway Road 1600 through Elizabethtown; and
- Completion of State Highway 313 from State Highway 1500 to State Highway 448 in Brandenburg.

Fort Knox anticipates a range of cumulative effects resulting from the implementation of the Proposed Action and alternatives. Cumulative impacts for each alternative are as follows:

No Action Alternative

No adverse cumulative impacts would be anticipated under the No Action Alternative. Under the No Action Alternative, no changes in military authorizations, or local environmental conditions would be anticipated. Installation facility shortages and excesses would remain at their currently planned levels without additional stationing or force reductions. The Army would continue to implement some facilities reductions of outdated/unused facilities. Under the No Action Alternative, cumulative impacts to the following VECs would have no impact, or have a minor impact only and are not carried forward for detailed discussion in this section. These VECs are: air quality, airspace, cultural resources, noise, soil erosion, biological resources, wetlands, water resources, facilities, socioeconomics, energy demand and generation, land use conflict and compatibility, hazardous materials and hazardous waste, and traffic and transportation.

Alternative 1: Force Reduction (up to 3,800 Soldiers and Army Civilians)

Overall, as a result of the implementation of Alternative 1, cumulative adverse socioeconomic impacts would likely be long term and significant in nature. A significant adverse impact would be anticipated due to the decreased population and the resulting impacts to the local communities as Fort Knox is a leading employer within the region. The significant direct and indirect socioeconomic impacts, when considered in conjunction with the highway projects discussed above, would be anticipated to remain significant. Other than Fort Knox, there are limited employment options upon which the community can rely meaning that the job loss cannot be absorbed by other employment sectors such as the case in more urban areas. In

1 addition, adverse impacts to multiple regional community services and schools would be
2 expected because they receive funding, support, time, donations, and tax revenue directly
3 related to the number of military authorizations and their dependents.

4 The loss of the BCT would have minor beneficial impacts to air quality, soils, water quality,
5 traffic, and biological resources.

6 **Alternative 2: Installation gain of up to 1,000 Combat/Combat Support Soldiers resulting**
7 **from Brigade Combat Team Restructuring and Unit Realignments**

8 There are no significant cumulative impacts anticipated as a result of the implementation of
9 Alternative 2 at Fort Knox. Beneficial socioeconomic impacts are anticipated. The following VEC
10 areas are anticipated to experience either no impact or minor cumulative impact as a result of
11 the implementation of Alternative 2: air quality, airspace, cultural resources, noise, soil erosion,
12 biological resources, wetlands, water resources, facilities, energy demand and generation, land
13 use conflict and compatibility, hazardous materials and hazardous waste, and traffic and
14 transportation.

4.14 FORT LEE, VIRGINIA

4.14.1 Introduction

Fort Lee provides logistics and support for Army operations world-wide. Fort Lee is the home of the Combined Arms Support Command, the Army Logistics University, the U.S. Army Quartermaster School, the U.S. Army Ordnance School, and the U.S. Army Transportation School. The USAG - Fort Lee, Virginia is under Installation Management Command Atlantic Region. Fort Lee is also home to the Defense Contract Management Agency, the consolidated headquarters of the Defense Commissary Agency, Kenner Army Health Clinic, the Military Entrance Processing Station and the 49th Quartermaster Group. The 49th Quartermaster Group is a FORSCOM unit, and the only Active-duty petroleum and water group headquarters. The 49th Quartermaster Group consists of a headquarters company and the 530th Combat Support Sustainment Battalion.

Fort Lee is located 25 miles south of Richmond, Virginia, in Prince George County. The installation is situated between the cities of Petersburg and Hopewell. Petersburg, Hopewell, and the City of Colonial Heights together constitute a minor metropolitan area encompassing Fort Lee known as the Tri-Cities. Fort Lee is situated on 5,678 acres and comprised of three distinct areas: the cantonment, the Range Complex (includes North Range), and the Ordnance Campus (Figure 4.14-1). Fort Lee's Range Complex supports live fire, maneuver area, and other specialized training. Fort Lee supports specialized field training in bulk petroleum supply in the cantonment area at the military in the Field training site and at the Petroleum Training Facility. Water purification training occurs in the cantonment area and at the Appomattox River Training site adjacent to the Range Complex.

In addition to training areas and ranges located on Fort Lee, two nearby military installations support the field training requirements for AIT students and permanent party military personnel to include units from the 49th Quartermaster Group. Fort A.P. Hill, located 70 miles north of Fort Lee, provides field training opportunities for Soldiers conducting force protection, patrolling, small arms firing, and military operations on urban terrain. Fort Pickett, located 45 miles to the southwest, accommodates the majority of weapons training required by permanent party military personnel.

The PEA analyzes the anticipated impacts of two alternatives on Fort Lee, the No Action Alternative and Alternative 1: (Force Reduction of up to 2,400 Soldiers and Army Civilians). Alternative 1 assumes a loss of 35 percent of the installation's Soldiers as well as a loss of up to 15 percent of the civilian employees. In addition, a 10 percent reduction in students and temporary trainees would be anticipated to occur as a result of the implementation of Alternative 1. If officials decide that the proposed reduction is in the best interest of the Army and the Nation after considering the impacts presented in this analysis, the reductions would be implemented before 2020. The second alternative is the No Action Alternative in which the Army implements currently programmed and authorized force structure decisions.

4.14.1.1 Valued Environmental Components

For alternatives the Army is considering as part of Army 2020 force structure realignments, Fort Lee does not anticipate any significant adverse environmental or socioeconomic impact a result of the implementation of Alternative 1 (Force reduction of up to 2,400 Soldiers and Army Civilians) with the exception of a projected significant impact to socioeconomics attributable to a change in ROI population. Alternative 1 would result in minor decreases in the frequency of training activities performed at Fort Pickett and Fort A.P. Hill. Fort Lee anticipates beneficial or less than minor impacts to the environment on Fort A.P. Hill and Fort Pickett as a result of this

- 1 alternative; therefore, impacts to VECs are not carried forward for detailed analysis. Table 4.14-
- 2 1 summarizes the anticipated impacts to VECs on Fort Lee for each alternative.

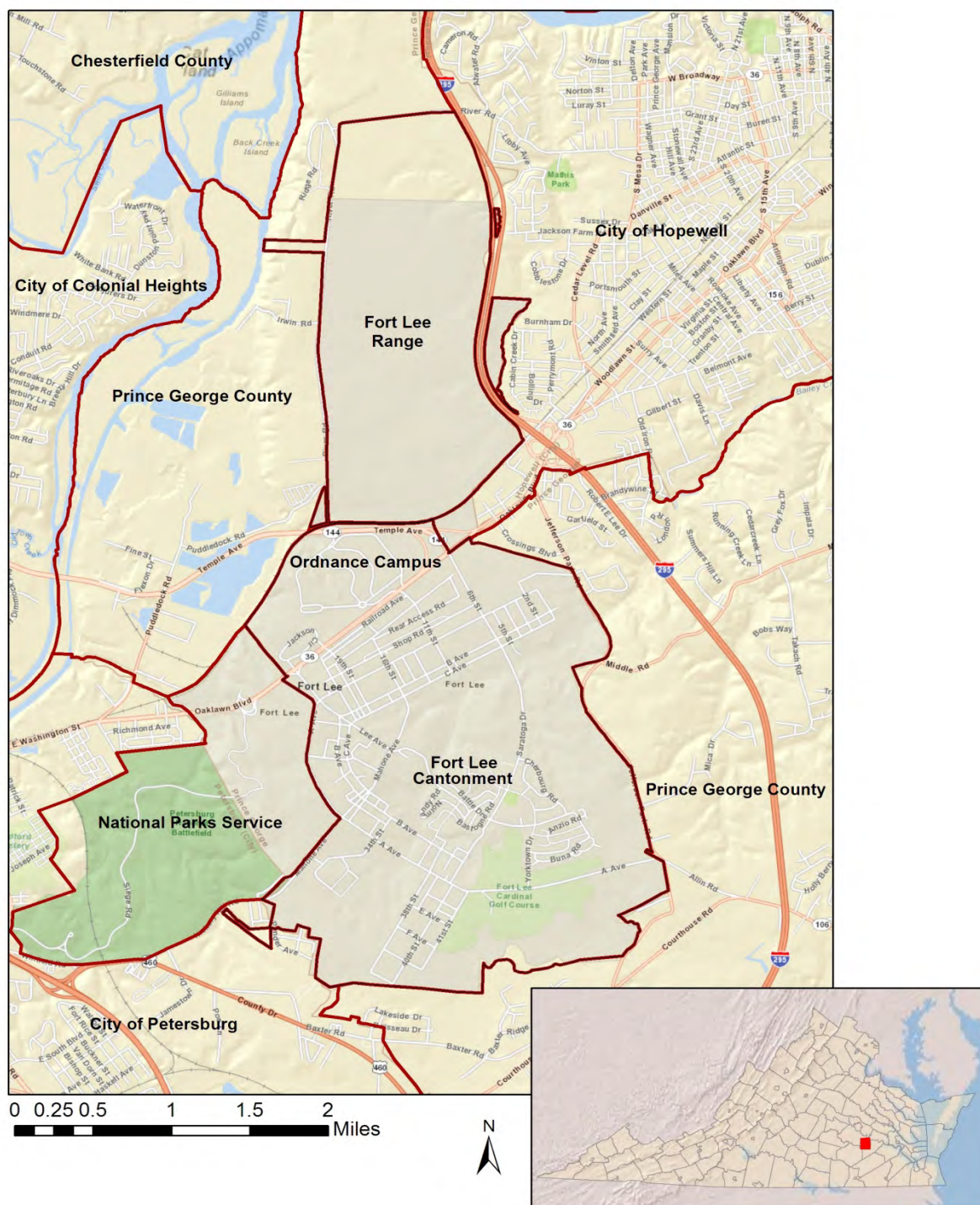


Figure 4.14-1. Fort Lee Installation Setting

Table 4.14-1. Fort Lee Valued Environmental Component Impact Ratings

Valued Environmental Component	No Action Alternative	Alternative 1: Force Reduction of up to 2,400
Air Quality	Negligible	Beneficial
Airspace	Negligible	Negligible
Cultural Resources	Minor	Minor
Noise	Negligible	Beneficial
Soil Erosion	Negligible	Negligible
Biological Resources	Negligible	Negligible
Wetlands	Negligible	Negligible
Water Resources	Negligible	Negligible
Facilities	Negligible	Beneficial
Socioeconomics	Beneficial	Significant
Energy Demand and Generation	Negligible	Beneficial
Land Use Conflict and Compatibility	Negligible	Beneficial
Hazardous Materials and Hazardous Waste	Negligible	Minor
Traffic and Transportation	Negligible	Beneficial

4.14.1.2 Valued Environmental Components Dismissed from Detailed Analysis

For the VECs discussed in this section, no more than a beneficial or negligible impact would be anticipated. Therefore, these VECs are not being carried forward for detailed analysis, as no potential for significant impacts exists.

- **Air Quality.** Fort Lee anticipates negligible impacts to air quality under No Action Alternative. Fort Lee anticipates long-term minor beneficial impacts to air quality as a result of implementation of Alternative 1. Emissions would decrease with the reduced use of: POVs; General Services Administration (GSA) vehicles; stationary sources (e.g., fuel combustion/fuel transfer, solvent/weapons cleaners); and fugitive emissions sources (e.g., paints, solvents, pavement). Decreased facility use would reduce the use of associated fuel burning equipment including boilers, hot water heaters, furnaces, and emergency generators. The risk of Fort Lee air permit violations is anticipated to be lower with implementation of the Proposed Action; however, the probability of a lower risk outcome would greatly depend on the adequacy of manpower resource support for those garrison organizations responsible for regulatory compliance with the CAA.
- **Airspace.** Fort Lee anticipates negligible impacts to installation airspace usage, operations, and/or utilization under either alternative. Fort Lee's Aerial Delivery and Field Services Department would continue to perform Sling Load and Low Cost Aerial Delivery System training with rotary-winged aircraft at the frequency specified in the Program of Instruction.

- 1 • **Noise.** Fort Lee anticipates negligible impacts to noise levels on and around Fort Lee
2 under the No Action Alternative. Fort Lee anticipates beneficial impacts to noise levels
3 on Fort Lee and in the surrounding area as a result of the implementation of Alternative
4 1. Decreased use of the Qualifications Training Range (under construction) and other
5 live-fire ranges, and less frequent military vehicle operation would decrease the
6 frequency and duration of noise generated on Fort Lee. Recreational use of Fort Lee's
7 ranges and training land could increase or experience no change under Alternative 1.
8 (see Land Use Conflicts and Compatibility discussion). It is unlikely that the frequency
9 or duration of noise generated by Fort Lee would increase under either alternative. Any
10 changes in frequency and duration of noise would be updated in Fort Lee's Noise
11 Management Plan.
- 12 • **Soil Erosion.** Fort Lee anticipates negligible impacts to soil erosion as a result of the
13 implementation of either alternative. Neither alternative involves activities or projects that
14 would result in more than negligible impacts to soil resources. Decreased field training
15 activity associated with Alternative 1 could reduce soil erosion in training areas and
16 ranges. Removal of temporary structures could temporarily increase soil erosion from
17 demolition activity; however, erosion and sediment controls including silt fencing and
18 stormwater inlet protection would be implemented in accordance with Virginia
19 Stormwater Regulations as outlined in the Virginia Department of Conservation and
20 Recreation's Sediment and Erosion Control Handbook. The risk of soil loss and
21 sediment discharge to surface waters would not increase under the No Action
22 Alternative or Alternative 1.
- 23 • **Biological Resources.** Fort Lee anticipates negligible impacts to vegetation or wildlife,
24 including threatened or endangered species under either alternative. There are currently
25 no listed threatened or endangered species on Fort Lee. A nesting pair of bald eagles
26 was last seen on Fort Lee in 2005. As of 2011, there are no active bald eagle nests on
27 Fort Lee and there is no statutory requirement to extend protection to historical nest
28 sites. Fort Lee coordinates annually with the USFWS and complies with Fort Lee's
29 INRMP. Fort Lee's Natural Resource Manager consulted with USFWS in March of
30 2012. There are no prime or statewide important farmlands on Fort Lee. No impacts
31 would occur to the stretch of the Appomattox River 5 miles upstream from Fort Lee that
32 is designated as a Virginia Scenic River. The risk of ESA or Sikes Act violations would
33 not increase under the Proposed Action. Because Alternative 1 does not involve
34 significant changes to the installation operations, it is anticipated to have only negligible
35 or minor beneficial impacts to biological resources. There would not be a change in the
36 types of activities conducted on Fort Lee, only a decrease in the frequency of training
37 activities associated with the implementation of Alternative 1. The installation would
38 continue to manage its natural resources and potential habitat in accordance with the
39 installation INRMP and any conservation measures identified in any ESA, Section 7
40 consultation documents.
- 41 • **Wetlands.** Fort Lee anticipates negligible impacts to wetlands under either alternative.
42 Facility demolition associated with the proposed downsizing could temporarily increase
43 soil erosion and the risk of hydraulic fluid, oil or other small spills associated with
44 construction equipment. Reduced vehicle traffic and training throughput on training
45 areas and ranges could also reduce the risk of spills and soil erosion. Spill kits are
46 required on Fort Lee construction sites and all spills must be handled according to Fort
47 Lee's SPCC Plan. All wetlands and riparian resources on Fort Lee are protected by
48 forested buffers and BMPs for erosion and sediment control. The risk of unpermitted
49 discharges of sediments or other pollutants to wetlands would not increase and would
50 likely decrease, under Alternative 1.

- 1 • **Water Resources.** Fort Lee anticipates negligible impacts to water resources or
2 wastewater streams under either alternative. Given Fort Lee's current water demand and
3 volume of wastewater generation, the proposed reduction of permanent party Soldiers
4 would not have significant impacts to water demand or sewage volume. Fort Lee would
5 contribute a smaller share of wastewater to Hopewell's Regional WWTP under the
6 implementation of Alternative 1, which could impact operations at the facility. Demolition
7 activities could temporarily increase stormwater runoff associated with ground
8 disturbance while reducing impervious surfaces and preventing stormwater runoff over
9 the long term. Less frequent field training activities would also decrease soil erosion and
10 associated stormwater runoff. This decrease in stormwater runoff and soil erosion would
11 decrease the risk of sediment pollution reaching surface waters. With current
12 management practices it is unlikely that an unpermitted discharge of sediment into
13 surface waters would occur under either the No Action Alternative or Alternative 1. Field
14 training and construction/demolition activities follow BMPs and comply with associated
15 permits on Fort Lee regardless of training throughput and permanent party population.
- 16 • **Facilities.** The cantonment area is the urbanized portion of Fort Lee, and has been
17 developed into a wide variety of land uses necessary for a complete community. This
18 includes a Post Exchange, commissary, housing and Family support services, medical,
19 and mission-support facilities. Fort Lee anticipates negligible impact to facilities on post
20 under the No Action Alternative. Fort Lee would continue to operate and maintain its
21 existing facilities in accordance with current requirements. Alternative 1 would have a
22 beneficial impact on facilities, allowing the release of temporary, relocate-able buildings
23 and the demolition of some older, energy-inefficient buildings. Under the proposed force
24 reduction, some permanent facilities may be re-designated to support units remaining at
25 Fort Lee to provide more space and facilities that are better able to meet tenant and
26 Army needs.
- 27 • **Energy Demand and Generation.** Utilities are connected across the cantonment area
28 and along defined utility corridors and contribute collectively to the overall capacity, use,
29 and storage as a unit. Electric lines also extend to North Range facilities. As such, the
30 ROI for this resource is the North Range and cantonment area of Fort Lee. Dominion
31 Virginia Power supplies electricity to Fort Lee. Fort Lee privatized the on-post electrical
32 distribution system, now owned and operated by Dominion Virginia Power. Atmos
33 Energy currently supplies natural gas to Fort Lee via infrastructure belonging to the state
34 and to Columbia Gas of Virginia. Fort Lee owns the on-post natural gas distribution
35 system. The North Range consumes a very small proportion of the electricity and natural
36 gas supplied to Fort Lee.
- 37 Fort Lee anticipates negligible impact to energy demand and generation under the No
38 Action Alternative. Fort Lee would continue to draw the same amounts of energy from
39 its utility provider with the same requirements for power and maintenance of power
40 infrastructure. Fort Lee anticipates beneficial impact to the installation's energy
41 resources under Alternative 1. Fort Lee anticipates reduced energy consumption would
42 result from the proposed reduction, comparing the loss of approximately 2,400 Soldiers
43 and Army civilians with Fort Lee's 2011 average daily population of approximately
44 22,000 personnel and trainees (ASIP, 2012). A reduction of this level represents more
45 than 11 percent of the installation's total base population, which could lead to noticeable
46 decreases in energy demanded by installation operations. Fort Lee's ongoing pursuit of
47 energy efficiency and conservation measures would also contribute to reduced energy
48 usage and demand under either alternative. The demolition of some less efficient
49 buildings and winterization of vacant buildings would also reduce energy consumption
50 associated with heating and cooling. Energy use could decrease by as much as 105

MMBtu per 1,000 square feet vacated. Overall, Alternative 1 would result in minor beneficial impacts to energy demand and generation.

- **Land Use Conflicts and Compatibility.** Fort Lee anticipates negligible impacts to land use conflicts and compatibility under the No Action Alternative. Fort Lee anticipates beneficial impacts to land use conflicts and compatibility as a result of the implementation of Alternative 1. Land use compatibility issues on Fort Lee are principally concerned with noise and light generated by training and recreational activities on post. Training frequency and trainee volume would decrease under the Proposed Action, which could allow more frequent recreational use of Fort Lee ranges through FMWR; however, demand for recreational activities on post could decrease under Alternative 1. It is unlikely that the frequency or duration of noise or light generated by Fort Lee would increase. Fort Lee does not anticipate increased risk of noise complaints or mission-community incompatibility under the Proposed Action.
- **Traffic and Transportation.** Fort Lee anticipates negligible impacts to traffic and transportation under the No Action Alternative. Fort Lee anticipates beneficial impacts to traffic and transportation as a result of the implementation of Alternative 1. Traffic volume on post would decrease due to the reduced number of government and POVs. Traffic volume in the local community would experience minor decreases, as fewer Soldiers and dependents would use regional transportation infrastructure. The current roadway network in and around Fort Lee is characterized by adequate levels of service with minimal congestion that is isolated to key areas during morning and afternoon peaks. The negligible impacts associated with regional transportation, should Alternative 1 be implemented, are a direct result of the overall adequacy of the regional roadway network capacity in and around Fort Lee.

Fort Lee anticipates that the implementation of any of the alternatives would result in negligible impacts for those VECs discussed above. The following provides a discussion of the VECs requiring a more detailed analysis, as they are anticipated to have the potential of a higher level of impact as a result of the implementation of the Proposed Action alternatives.

4.14.2 Cultural Resources

4.14.2.1 Affected Environment

Fort Lee has undertaken 32 historic property inventories since 1982 covering both archaeological and architectural properties. Those inventories have resulted in the identification of a total of 119 archaeological sites. Subsequent evaluations have determined that 24 of these sites are significant enough to meet criteria establishing their eligibility to the NRHP. Architectural properties inventoried resulted in the identification of two historic properties eligible for list on the NRHP. Of these two buildings Fort Lee maintains responsibility for one structure, Building 4300, the Fort Lee Theater. The remaining structure, Building 3206, is part of a nationwide agreement between the DoD and the Advisory Council on Historic Preservation. Under this agreement the Army has met responsibilities of Section 106 of the NHPA. Ninety-five (95) of the remaining identified archaeological sites have been investigated further for their overall archaeological and historical significance and 9 still require additional evaluation (Wood, 2012).

4.14.2.2 Environmental Consequences

No Action Alternative

Impacts to cultural resources under the No Action Alternative would be minor. Activities with the potential to affect cultural resources are monitored and mitigated when anticipated through a variety of preventative and minimization measures.

Alternative 1: Force Reduction (up to 2,400 Soldiers and Army Civilians)

Fort Lee anticipates short-term minor adverse impacts to cultural resources from potential facilities demolition and long-term minor beneficial impacts to cultural resources from decreased field training activity. Less frequent field training could decrease the risk of inadvertent disturbance of artifacts and archaeological sites. Removal of outdated infrastructure has very low potential to affect historic structures on Fort Lee while associated ground disturbance could increase the risk of inadvertent disturbance of artifacts and archaeological sites. Any ground disturbing activity or actions that could impact unique or potentially eligible historic structures would undergo full consultation with the SHPO as required per 36 CFR 800. The risk of NHPA, ARPA, and NAGPRA violations would not increase under the Proposed Action. Any impacts to cultural resources under the Proposed Action would be minor.

4.14.3 Socioeconomics

4.14.3.1 Affected Environment

Fort Lee is located in the south-central part of Virginia. The ROI consists of Chesterfield, Dinwiddie, and Prince George counties, and the cities of Colonial Heights, Hopewell, and Petersburg.

Population and Demographics. The Fort Lee population is measured in three different ways. The daily working population is 6,726, and consists of full-time permanent party Soldiers and Army civilians working on post. The population that lives on Fort Lee consists of 1,786 permanent party Soldiers and 4,382 dependents, for a total on-post resident population of 6,168. This does not include temporary trainees and students, which add substantially to the Fort Lee resident on-post population. Finally, the portion of the ROI population related to Fort Lee is 11,814 and consists of Soldiers, civilian employees, and their dependents living off post.

The ROI population is approximately 450,000. Compared to 2000, the 2010 population increased in Chesterfield, Dinwiddie, and Prince George counties, and the cities of Hopewell and Colonial Heights. Population decreased in the City of Petersburg since 2000 (Table 4.14-2). The racial and ethnic composition of the ROI is presented in Table 4.14-3.

Table 4.14-2. Population and Demographics

Region of Influence Counties	Population 2010	Population Change 2000-2010 (Percent)
Chesterfield	315,000	+ 21.7
Dinwiddie	28,000	+ 14.1
Prince George	35,000	+ 8.1
City of Hopewell	22,600	+ 1.10
City of Colonial Heights	17,400	+ 3.00
City of Petersburg	32,400	- 3.90

1

Table 4.14-3. Racial and Ethnic Composition

State and Region of Influence Counties	Caucasian (Percent)	African American (Percent)	Native American (Percent)	Hispanic (Percent)	Asian (Percent)	Multiracial (Percent)	Other (Percent)
Virginia	68	19	0	8	5	2	0
Chesterfield	65	22	0	7	3	2	0
Dinwiddie	63	33	0	2	0	1	0
Prince George	58	31	1	6	1	2	0
City of Hopewell	53	36	0	7	1	3	0
City of Colonial Heights	81	10	0	4	3	2	0
City of Petersburg	15	78	0	4	1	2	0

2 Permanent party Soldiers and full-time civilians generate demand for housing, enroll their
3 children in local schools, and require municipal services like other households in the region.
4 Temporary duty (TDY) personnel and transient military and civilian populations generate
5 increased demand for lodging, dining, and retail services in the area.

6 AIT students impact the community differently as they are housed on post for 4 to 33 weeks
7 depending on Military Occupational Specialty and are seldom given off-post leave. Fort Lee
8 graduated 30,977 AIT students in 2011 and currently has an average AIT population of more
9 than 7,000. AIT students also generate demand for hotels and dining regionally as their Families
10 travel to Fort Lee for graduation ceremonies. Fort Lee graduated 30,977 AIT students in 2011
11 and estimates more than 40,000 students will graduate from AIT in 2012 (Fort Lee PAID, 2012).

12 **Employment, Income, and Housing.** Compared to 2000, the 2009 employment (private
13 nonfarm) increased in the Commonwealth of Virginia and Chesterfield and Prince George
14 counties and decreased in Dinwiddie County (Table 4.14-4). Employment, median home and
15 household income, and poverty level are presented in Table 4.14-4.

16

Table 4.14-4. Employment, Housing, and Income

State and Region of Influence Counties	2009 Total Nonfarm Employment (Employees)	Employment Change 2000-2009 (Percent)	Median Home Value 2005-2009 (Dollars)	Median Household Income 2009 (Dollars)	Population Below Poverty Level 2009 (Percent)
Virginia	3,061,186	+ 5.4	\$247,100	\$59,372	10.60
Chesterfield	100,727	+ 23.00	\$225,400	\$70,055	6.00
Dinwiddie	4,454	- 8.3	\$163,800	\$51,459	11.80
Prince George	5,952	+35.3	\$196,300	\$59,349	10.20
City of Hopewell	8,742 ¹	NA ²	\$130,700	\$37,789	20.40
City of Colonial Heights	8,071 ¹	NA ²	\$187,700	\$50,571	7.5
City of Petersburg	12,962 ¹	NA ²	\$115,900	\$36,449	20.20

¹Non-farm employment derived from 2006-2010 American Community Survey 5-Year Estimates.

²Employment change is not available for cities in 2006-2010 American Community Survey 5-Year Estimates.

Fort Lee Family housing can accommodate roughly 30 percent of the 2011 permanent party Soldier population with dependents who are assigned to Fort Lee. There are currently 1,505 Family housing units on Fort Lee which are managed through an RCI partnership that has been in place since 2007. At any given time, Fort Lee personnel occupy approximately 1,420 units in Family housing. Approximately 4,400 dependents currently reside on post (Hunter, 2012). The number of dual military households living on-post is unknown. Eighty-one Families were on the waiting list for on-post housing in July 2012. Housing units are filled by the priority listed below:

- Key and Essential personnel;
- Active duty military and Reserve or National Guard under certain conditions;
- Unaccompanied Active duty military under certain conditions;
- Unaccompanied Families of Active duty personnel;
- Retired military personnel and DoD civilians; and
- Civilians (non-military personnel, non-DoD personnel).

Family housing occupancy rates for 2010 and 2011 were 95.84 percent and 94.15 percent, respectively. Under RCI Phase IV construction, 90 units are awaiting demolition, 76 of those units are currently vacant. Construction will include 93 new units with completion estimated no earlier than 18 months after all parties approve the plan and demolition is complete (Hunter, May 2012).

Unaccompanied Personnel Housing on Fort Lee has non-surge barracks space (90 square feet per Soldier) for 9,231 unaccompanied personnel; with 8,339 of those beds reserved for AITs. The remaining barracks space (892 beds) is reserved for permanent party Soldiers; with a permanent party occupancy rate of 36 percent (Boling, 2012; Royster, 2012).

Off-post housing consists predominately of single-family dwellings. The lack of new multi-family construction has placed pressure on this segment of the market. In 2000, approximately 17,300 single-family homes, or 12 percent of all occupied units, were supporting rental demand in the ROI (Fort Lee, 2008). Table 4.14-5 illustrates the percentage of military, civilian, and contractor personnel residing in different localities within the ROI and Table 4.14.6 provides the 2010 housing statistics.

Table 4.14-5. Residence of Fort Lee Personnel; 2006 and 2009 Survey Respondents

	Military (Percent)		Civilian (Percent)		Contractor (Percent)	
	2006	2009	2006	2009	2006	2009
Fort Lee	34.8	22.8	0.9	1.1	2.2	2.1
Petersburg	11.8	8.3	9.3	7.4	6.8	7.9
Hopewell	7.3	6.1	5.6	5.8	8.7	8.4
Colonial Heights	7.5	6.1	8.7	7.3	9.5	9.4
Prince George	9.7	12.7	20.0	21.6	20.1	19.4
Dinwiddie County	3.7	5.7	7.6	8.3	6.5	4.2
Chester or Chesterfield County	19.0	32.5	34.0	32.9	27.4	34.0
Other	6.2	5.7	13.8	15.6	19.0	14.7

Source: Fort Lee, 2010b

1

Table 4.14-6. 2010 Housing Statistics

	Number of Housing Units	Rental Vacancy (Percent)	Homeowner Vacancy (Percent)
Fort Lee	1,323	4.2	n/a
Petersburg	16,326	12.6	4.4
Hopewell	10,121	9.0	3.8
Colonial Heights	7,381	8.0	2.6
Prince George County	12,056	7.2	1.4
Dinwiddie County	11,422	8.3	1.4
Chesterfield County	122,555	10.1	1.9

Source: U.S. Census, 2010; Hunter, 2012

2 **Schools.** The school-age population associated with Fort Lee is in constant flux as PCS
3 military students often enroll dependents in local schools during their six-month tours on Fort
4 Lee. Table 4.14-7 presents the number of military-connected children that local schools
5 reported in a survey conducted for Child Youth and School Services (CYSS) in November of
6 2011. According to the survey, more than 5 percent of school children in the ROI are military-
7 connected. This is likely an underestimate considering non-response error in the survey.
8 Permanent party Soldiers living off post with their dependents contribute an estimated 2,211
9 school-age children to the public schools in Chesterfield County, Dinwiddie County, Hopewell,
10 Petersburg and Colonial Heights. School-age dependants of permanent party Soldiers living
11 on-post attend Prince George County Public Schools. Prince George County Schools receive
12 significant federal and DoD funding based on the number of military dependents they support
13 annually. Prince George County received \$3,550,000 in Federal School Impact Aid and
14 \$420,000 in DoD funds for the 2011-2012 school year. Prince George was also awarded more
15 than \$1 million in grants with the intent of increasing academic achievement of military students
16 in math, science, engineering, and technology. Funding for two of these three active grants is
17 based on military students' achievement on the Virginia Standards of Learning (SOL) Tests.
18 Table 4.14-7 presents school capacity data for 2008 (Fort Lee, 2008).

19

Table 4.14-7. School Capacity 2008

	Elementary	Middle	High School
Chesterfield County	-702	1,091	-177
Dinwiddie County	33	-210	-180
Prince George County	-186	457	-15
City of Hopewell	70	101	207
City of Petersburg	-71	606	79
City of Colonial Heights	-9	0	0

Source: Fort Lee, 2008.

Positive values indicate surplus capacity.

Public Health and Safety.

Police Services. The Fort Lee Police Department oversees police operations, patrols, gate security, training, traffic accident, and criminal investigations.

Fire and Emergency Services. The Fort Lee Fire Department responds to emergencies involving structures, facilities, transportation equipment, hazardous materials, and natural and man-made disasters, and directs fire prevention activities; and conducts public education programs. The Fort Lee Fire and Emergency Services Division has mutual aid agreements with Prince George and Dinwiddie counties and the cities of Colonial Heights, Hopewell, and Petersburg. City, county, and state police departments provide law enforcement in the ROI.

Medical Facilities. Fort Lee's on-post medical services are administered at the Kenner Army Health Clinic. This facility services all permanent party, Active duty personnel and their dependents, as well as retirees and their dependents, within a 20-mile radius of the post. Kenner Army Health Clinic also services AIT students training on-post, mostly at the two Troop Medical Clinics located in the training brigade areas of operation.

The Kenner Army Health Clinic functions as an outpatient treatment facility only. Acute care, specialty services, and long-term medical needs for military Families enrolled in the clinic's health care network are referred to off-post civilian and/or military hospitals and practitioners. Primary demand for off-post medical services related to Fort Lee personnel is focused in the areas of emergency/urgent care, orthopedics, behavioral health, obstetrics, and dermatology (Fort Lee, 2008).

Family Support Services. Fort Lee ACS is a human service organization with programs and services dedicated to assisting Soldiers and their Families under FMWR. Fort Lee's Child, Youth & School Services is a division of FMWR. It provides facilities and care for children ages 6 weeks to 5 years; School Age Care for ages 6 to 10 years, a middle school and teen program for ages 11 to 18 years, as well as sports and instructional classes for children of Active Duty military, DoD Civilian, and DoD contractor personnel. Children of retired military members are eligible to participate in the Middle School and Teen, Youth Sports and SKIES programs. Members of the local community can participate in the Youth Sports program. Fort Lee's Child, Youth & School Services programs frequently experience high turnover rates due to demographics associated with PCS status military students attending the Army Logistics University for short, 6-month tours (Fort Lee's Child, Youth, and School Services Division, 2012).

The Virginia Department of Social Services, which operates across the county, and local cities' social service departments provide assistance to all Virginia residents, including Active Duty military personnel and their Families stationed on Fort Lee. Virginia Department of Social Service programs include adult and child protective services, child care, adult day care, assisted living facilities, financial assistance, food stamps, low-income energy assistance, and support for adults and children with special health care needs or disabilities, domestic violence, and substance abuse counseling.

Recreation Facilities. Fort Lee offers its military community, Families, and civilians batting cages, Frisbee golf, a skate park, auto crafts shop, outdoor swimming pool, bowling center, 27-hole golf course, fitness centers, outdoor recreation opportunities, sports teams, and a Sports Zone through FMWR.

4.14.3.2 Environmental Consequences

No Action Alternative

Fort Lee anticipates beneficial socioeconomic impacts if the No Action Alternative is implemented. Fort Lee anticipates that the No Action Alternative would provide a steady-state contribution of economic and social benefits and costs. No adverse impacts to housing, public and social services, public schools, public safety, or recreational activities would be anticipated. Fort Lee would continue to receive community services and contribute to the tax base of the local economy. Fort Lee's continuing operations would represent a beneficial source of regional economic activity.

Alternative 1: Force Reduction (up to 2,400⁷ Soldiers and Army Civilians)

Economic Impacts. Alternative 1 would result in the loss of approximately 2,400 military employees (Soldiers and Army civilian employees), each with an average annual income of \$41,830. In addition, this alternative would affect an estimated 1,357 spouses and 2,334 dependent children, for a total estimated potential impact to 3,691 dependents. The total population of military employees and their dependents directly affected by Alternative 1 would be 6,123.

Based on the EIFS analysis, there would be no significant impacts for sales volume, income, or employment. There would be significant impacts for population. The range of values that represents a significant economic impact in accordance with the EIFS model is presented in Table 4.14-8, along with the predicted percentages for Alternative 1. Table 4.14-9 presents the projected economic impacts to the region for Alternative 1 as assessed by the Army's EIFS model.

Table 4.14-8. Economic Impact Forecast System and Rational Threshold Value Summary of Implementation of Alternative 1

Regional Threshold Value	Sales Volume (Percent)	Income (Percent)	Employment (Percent)	Population (Percent)
Positive	12.76	12.40	3.24	3.36
Negative	-8.35	-6.17	-7.97	-0.96
Forecast Value	- 1.57	-1.48	- 2.22	-1.36

Table 4.14-9. Economic Impact Forecast System: Summary of Projected Economic Impacts of Implementation of Alternative 1

Region of Influence Impact	Sales Volume	Income	Employment	Population
Total	- \$143,266,914	- \$132,684,760	- 2,691 (Direct) - 481 (Indirect) - 3,172 (Total)	- 6,123
Percent	- 1.57	- 1.48	- 2.22	- 1.36

The total annual loss in direct and indirect sales in the ROI represents an estimated -1.57 percent reduction. State tax revenues would decrease by approximately \$5.73 million as a result

⁷ Calculations used a number of 2,432 Soldiers and civilians for estimating socioeconomic impacts. This number was derived by assuming the loss of 35 percent of Fort Lee's Soldiers and up to 15 percent of the civilian workforce. As discussed in Chapter 3, this number is rounded to the nearest hundred personnel when discussing impacts of Alternative 1.

of the decreased sales. Some counties within the ROI supplement the state sales tax of 4 percent by varying percentages, and these additional local tax revenues would be lost at the county and local level. Regional income would decrease by an estimated 1.48 percent. While approximately 2,400 Soldier and Army civilian positions would be lost within the ROI, EIFS estimates another 259 military contract service jobs would be lost as a result of the implementation of Alternative 1, and an additional 481 job losses would occur indirectly as a result of reduced demand for goods and services in the ROI. The total reduction in demand for goods and services within the ROI is projected to lead to a loss of 3,172 non-farm jobs, or a -2.22 percent change in regional non-farm employment. The total number of employed positions (non-farm) in the ROI is estimated to be 142,694. A significant population reduction of 1.36 percent within the ROI is anticipated as a result of this alternative. Of the approximately 450,000 people (including those residing on Fort Lee) that live within the ROI, 6,123 military employees and their dependents would be projected to no longer reside in the area following the implementation of Alternative 1. This would lead to a decrease in demand for housing, and increased housing availability in the region. It should be noted that this estimate of population reduction includes Army civilian and military members and their dependents. This number likely overstates potential population impacts, as some of the people no longer employed by the military would continue to work and reside in the ROI, working in other economic sectors; however, this would in part be counterbalanced by the fact that some of the indirect impacts would include the relocation of local service providers and businesses to areas outside the ROI.

Table 4.14-10 shows the total projected economic impacts, based on the RECONS model, that would occur as a result of the implementation of Alternative 1.

Table 4.14-10. Regional Economic System: Summary of Projected Economic Impacts of Implementation of Alternative 1

Rational Threshold Value	Sales Volume	Income	Employment
Total	- \$83,587,518 (Local) - \$166,926,376 (State)	- \$112,661,343	- 2,616 (Direct) - 228 (Indirect) - 2,844 (Total)
Percent	- 0.91	- 1.26	- 1.99

The total annual loss in direct and indirect sales in the region represents an estimated -0.91 percent change in total regional sales volume according to the RECONS model, an impact that is 0.66 percentage points lower than the reduction projected by EIFS; however, gross economic impacts at the state level would be greater. Extrapolating from sales volume numbers presented in the RECONS model, state tax revenues would decrease by approximately \$6.67 million as a result of the loss in revenue from sales reductions, which would be \$2.87 million more in lost state sales tax revenue than projected by the EIFS model. Regional income is projected by RECONS to decrease by -1.26 percent, which would be more than the 1.48 percent reduction projected by EIFS. While approximately 2,400 direct Soldier and Army civilian employee positions would be lost on the installation, RECONS estimates 184 military service contract jobs would be lost within the ROI, and an additional 228 job losses would occur indirectly as a result of reduced demand for goods and services in the ROI. The total estimated reduction in non-farm employment in the ROI is anticipated to be -2,844 jobs, or a -1.99 percent change in regional non-farm employment, which would be 0.23 percentage points lower than projected by the EIFS model.

When assessing the results together, both models predict that the economic impacts of the implementation of Alternative 1 would lead to an overall reduction of economic activity within the ROI of a similar order of magnitude.

Housing. Alternative 1 would increase availability of single occupancy barracks and single Soldier housing. If the Army reduced the number of permanent party Soldiers by 35 percent on Fort Lee, there is a possibility that vacancies could occur in on-post Family housing. The waiting list for on-post Family housing was 81 Families long in July 2012 (Hunter, 2012). Once the Active Duty military waiting lists are empty, remaining units would be filled according to the cascading priority list outlined in Section 4.14.3.1 (Hunter, 2012). Fort Lee anticipates long-term minor adverse impacts to the housing and rental market in the region.

Schools. Fort Lee anticipates that Alternative 1 would result in less than significant impacts to school funding and operations in the region as a whole. With the exception of Prince George County, the proposed reduction would not affect any school district in the ROI seriously, as decreases in enrollment would be small relative to total student population (Table 4.14-8). Fort Lee anticipates the potential for significant impacts to Prince George County Public Schools that support on-post dependent children as a result of the implementation of Alternative 1. Prince George receives significant federal and DoD funding (Federal School Impact Aid and grants) based on the number of military-connected children it supports. As a result of the implementation of Alternative 1, occupancy rates could drop in on-post Family housing and housing units would be filled based on the cascading priorities list. Personnel considered eligible based on the cascading priorities list may contribute fewer military-connected children to Prince George schools than permanent party military. This would decrease Federal School Impact Aid and select federal funding paid to Prince George schools. According to data from the Fort Lee Growth Management Plan (Table 4.14-7), Prince George Elementary and High schools were over capacity in 2008, so a reduction in military children attending Prince George schools could also have a beneficial impact by reducing overcrowding in the school system. The net impact of Alternative 1 on Prince George County public schools would depend on the number of remaining permanent party Soldiers eligible to live on-post; how many of those eligible Soldiers would choose to live on-post; and how many dependent children each Soldier would have. Prince George County public schools could experience negligible to significant net impacts to funding and operations, but the severity of impacts cannot be determined without knowledge of Soldier Family structure, preference, and eligibility for on-post housing. Across the ROI, Fort Lee anticipates less than significant impacts to school funding and operations.

Public Health and Safety. As a result of the implementation of Alternative 1, resident and daytime population levels on Fort Lee would decrease and could potentially reduce demand on law enforcement, fire and emergency service providers, and on medical care providers on and off post. AIT Soldiers, Active Duty military, remaining permanent party Soldiers, retirees, and their dependents, would continue to demand these services. Fort Lee anticipates less than significant impacts to public health and safety under Alternative 1.

Family Support Services. As a result of the implementation of Alternative 1, a reduction in permanent-party Soldiers could reduce demand on select Family support service providers on post. AIT Soldiers, Active Duty military, remaining permanent party Soldiers, retirees and their dependents would continue to demand child care and other ACS programs. Off-post Family support services throughout the region would not likely experience a significant decrease in clients. Fort Lee anticipates less than significant impacts to Family support services under Alternative 1.

Recreation Facilities. A reduction in permanent-party Soldiers could potentially decrease use of recreation facilities on post. Any decrease in utilization would be minor. Fort Lee does not

anticipate significant impacts to recreation facilities as a result of the implementation of Alternative 1.

Environmental Justice. As a result of the implementation of Alternative 1, Fort Lee does not anticipate a disproportionate adverse impact to minorities, economically disadvantaged populations or children would occur in the ROI. Fort Lee anticipates that job loss would be felt across economic sectors and at all income levels and spread geographically throughout the ROI. The proposed force reduction in military authorizations on Fort Lee would not have disproportionate or adverse health effects on low-income or minority populations in the ROI. The racial and ethnic composition of the ROI differs from that of the Commonwealth as a whole. There are fewer Hispanic and Asian people in the ROI, but a larger African American population in all affected districts. At the extreme, the City of Petersburg is 78 percent African American, compared with 19 percent for the Commonwealth as a whole. Seen at the state-wide level, adverse impacts in the ROI represent a disproportionate adverse impact to African Americans, with a less-than-expected impact to Hispanic and Asian populations.

4.14.4 Hazardous Materials and Hazardous Waste

4.14.4.1 Affected Environment

The affected environment includes the use, storage, transport, and disposal of hazardous materials and waste at Fort Lee. Fort Lee has a Hazardous Waste Facility, a Hazardous Material Control Center, and a Solid Waste Recycling Center to handle all types of waste from units and facilities on Fort Lee. Hazardous materials and waste are handled, stored and transported in accordance with DOT Regulation 49 CFR.

4.14.4.2 Environmental Consequences

No Action Alternative

There would be no impact to hazardous waste and hazardous materials on Fort Lee under the No Action Alternative. Fort Lee would continue to dispose of waste and store and manage hazardous materials in accordance with installation hazardous waste and material management plans.

Alternative 1: Force Reduction (up to 2,400 Soldiers and Army Civilians)

Fort Lee anticipates minor impacts to hazardous materials and hazardous waste as a result of the implementation of Alternative 1. The volume of waste generated and material requiring storage would increase slightly. Deactivating units would turn in hazardous material, such as paint, cleaning solvents, and pesticides for storage to avoid transportation risks. Deactivating units would also turn in expired hazardous material requiring disposal as hazardous waste to the appropriate locations designated by Fort Lee's Hazardous Waste Management Office. Removal of temporary facilities could increase the hazardous waste streams as components of some temporary structures, may require special handling. Over the long-term, force reduction would result in less solid and hazardous waste being generated. Deactivating units may increase the turn-in of hazardous material such as tent canvas. Hazardous materials and hazardous waste standing operating procedures and management practices would not change. The risk of RCRA, CERCLA, FIFRA, or TSCA violations would not increase under Alternative 1.

4.14.5 Cumulative Effects

Region of Influence

The ROI for this cumulative impact analysis of Army 2020 realignment at Fort Lee encompasses Chesterfield, Dinwiddie, and Prince George counties; and the Cities of Colonial Heights, Hopewell, and Petersburg in Virginia unless otherwise stated in the analysis below.

Fort Lee has been supporting the Army since 1950 when it was designated as a permanent military installation. Fort Lee is a key component of the regional economy. Chesterfield County is also a key component of the regional economy as nearly 88.2 percent of all new employment growth over the next three decades is expected to occur in the county (Fort Lee, 2008). This cumulative effects analysis considers reasonably foreseeable Army, DoD, and other federal agency actions that are planned for funding and/or implementation over the next 5 years. These actions are considered reasonably foreseeable projects because they are funded and/or zoned.

The following actions within the ROI have potential to cumulatively add impacts to the proposed reduction of approximately 2,400 military authorizations at Fort Lee. These actions are either in progress or could be initiated within the next 5 years. A number of the Army's proposed projects have been previously identified in the installation's Real Property Master Plan, the Final Environmental Assessment for the Army Lodging Facility at Fort Lee, and tiered analysis of the 49th Group Draw-Down.

Fort Lee Actions (Past, Present, and Reasonably Foreseeable)

- 49th Quartermaster Group Reduction in Authorized Strength
- 1,000 Room Lodging Facility Opening;
- Adams Avenue Barracks Construction Phases 2 and 3;
- Programmed Demolition Projects;
- Kenner Army Health Clinic New Construction; and
- Bowling Center New Construction.

Other Agency (DoD and non-DoD) and Other Public/Private Actions (Past, Present, and Reasonably Foreseeable)

- 460 Corridor Improvements;
- Intersection Enhancement Route 36 and Lee Avenue;
- Intersection Enhancement Route 36 and Puddledock Road; and
- Construction and Operation of Two New "Amazon.com" Distribution Centers.

Impacts of Cumulative Projects Considered: Virginia Department of Transportation (VDOT) anticipates that the Route 460 Corridor Improvements Project between I 295 and U.S. Highway 58 will enhance connections among the region's military installations, accommodate freight traffic, and promote economic development along the corridor with state tax incentives for distribution centers operating along the new high-speed roadway. VDOT estimates that the new high-speed roadway will create more than 4,000 jobs during construction and more than 13,000 long-term jobs when the new road opens in the expanded ROI including Prince George, Sussex, Surry, Isle of Wight, and Southampton counties (VDOT 460 Corridor 2012 Update and Morris, 2012). Impacts to VECs in the ROI associated with the 460 Corridor Improvements project are documented in VDOT's June 2008 FEIS and September 2008 ROD. The project is anticipated to result in 129 acres of wetland impacts and roughly 30,000 linear feet of stream impacts. Mitigation is included in the 460 Corridor project to offset impacts.

Intersection enhancement projects along Route 36 would temporarily increase soil erosion and traffic congestion from construction activity with less than minor impacts to VECs in the ROI. The construction and subsequent operation of two new distribution centers for Amazon.com would create 300 jobs in Dinwiddie County and 1,000 jobs in Chesterfield County (Morris, 2012).

Personnel reductions across the 49th Group (FY 2010 to FY 2012) as directed by FORSCOM (proponent) have been sufficiently analyzed and documented prior to the current analysis undertaken in this PEA. The continued draw-down of the 49th Group for FY 2013 and beyond is assumed to be covered under this PEA. 49th Group reductions (more than 1,200 military personnel associated with deactivating units as of FY 2012) have been offset, by BRAC expansion (FY 2005 to 2011) and associated gains in permanent party cadre to support growing trainee and student populations. Permanent party military population increased from 2,870 in FY 2005 to 4,748 in FY 2009, peaking at 5,910 in FY 2010. After 2010, the 49th Group draw-down began to temper BRAC growth as the permanent party population decreased to 4,694 in FY 2011 (ASIP, 2012).

Fort Lee's 1,000-Room Lodging Facility is scheduled to open in 2012 and will house a portion of the TDY and transient military population. A 2010 study on the impacts of Fort Lee's 1,000 Room Lodging Facility (Crater Planning District Commission, 2010), determined that projected increases in course load at the Army Logistics University on Fort Lee could increase the regional hotel occupancy level from 58 percent in 2009 to more than 81 percent in 2011. The study found that even with the operation of the 1,000-Room Lodging Facility on post, there would be a continued demand for lodging in the private sector. This net benefit depends on the Army's ability to maintain a structured average daily load of 2,100 or more TDY students (Crater Planning District Commission, 2010). The 2012 structured average daily load is 1,927 TDY students (ASIP, 2011). As of 2010, there were 14 hotels with more than 1,200 rooms in the development approval process. If constructed, excess supply, increased price competition, and the failure of some hotels could result (Crater Planning District Commission, 2010).

There are 544,077 square feet of facilities scheduled for demolition on Fort Lee from FY 2013 to FY 2015 (Royster, 2012). Construction of the Adams Avenue Barracks Complex, Kenner Army Health Clinic, and DFMWR Bowling Center would be a beneficial source of employment for local demolition and construction companies while enhancing Quality of Life for Soldiers on Fort Lee.

Fort Lee anticipates a range of cumulative effects resulting from the implementation of the Proposed Action and alternatives. Cumulative impacts for each alternative are as follows:

No Action Alternative

Fort Lee anticipates beneficial through minor cumulative impacts to occur when evaluating the No Action Alternative in conjunction with other past, present and reasonably foreseeable projects within the ROI. Cumulative impacts to the following VECs would have no impact, or have a minor impact only and are not carried forward for detailed discussion in this section. These VECs are: air quality, airspace, cultural resources, noise, soil erosion, biological resources, wetlands, water resources, facilities, energy demand and generation, land use compatibility, hazardous materials and hazardous waste, and traffic and transportation. Considering the aforementioned projects, the No Action Alternative would have beneficial cumulative impacts to socioeconomics in the ROI. The current socioeconomic conditions in the ROI are discussed above in Section 4.14.3.1. Job creation and economic benefits associated with the 460 Corridor Improvement Project and the construction and operation of the new Amazon.com distribution centers could bolster the local economy while the operation of the 1,000-Room Lodging Facility would have little net impact on the local economy as the average daily load of TDY students at the Army Logistics University would remain stable under the No Action Alternative. Other programmed construction and demolition activities would also benefit the local economy by creating temporary jobs and boosting lodging and dining facilities regionally.

Alternative 1: Force Reduction (up to 2,400 Soldiers and Army Civilians)

Cumulative impacts as a result of the implementation of Alternative 1 range from beneficial impacts to less than significant socioeconomic impacts. The following VEC areas are anticipated to experience either no impact or beneficial impact as a result of the implementation of Alternative 1: air quality, airspace, cultural resources, noise, soil erosion, biological resources, wetlands, water resources, facilities, energy demand and generation, land use compatibility, hazardous materials and hazardous waste, and traffic and transportation.

Fort Lee anticipates cumulative beneficial impacts to traffic and transportation; energy demand and generation; and facilities under Alternative 1, in conjunction with the regional projects discussed. Fort Lee anticipates cumulative benefits to traffic flow locally and regionally due to slight decreases in government and POV traffic occurring in conjunction with the Route 460 Corridor and Route 36 Improvement Projects. The New Construction of Kenner Army Health Clinic and the Adams Avenue AIT Barracks Complex project considered cumulatively with demolition associated with Alternative 1 would improve energy efficiency and increase the number of new more efficient facilities on post.

Socioeconomics. In addition to the impacts described in Section 4.14.3.2, the cumulative socioeconomic impact within the ROI under Alternative 1 would be anticipated to be less than significant. While there is potential for regional economic growth associated with the 460 Corridor Improvements Project and incoming retail distribution centers that could offset some adverse socioeconomic impacts, less than significant cumulative adverse impacts would be associated with the proposed loss of approximately 2,400 military authorizations. These adverse impacts would be projected to outweigh some of the potential economic gains from other projects implemented within the ROI. The overall cumulative socioeconomic impacts, as a result of the implementation of Alternative 1, would remain less than significant.

4.15 FORT LEONARD WOOD, MISSOURI

4.15.1 Introduction

Fort Leonard Wood is located just south of I-44, approximately 120 miles southwest of St. Louis, Missouri and 85 miles northeast of Springfield, Missouri (Figure 4.15-1). The installation contains approximately 61,410 acres of land in the Ozark Plateau region, located in Pulaski County. The installation is defined by the Big Piney River on its eastern boundary and the Roubidoux Creek on the western edge. Much of the surrounding land is part of the Mark Twain National Forest. The towns of Waynesville and St. Robert, to the northwest and north, are the closest municipalities to Fort Leonard Wood. Waynesville is the county seat of Pulaski County, and the commercial center of St. Robert straddles the I-44 business spur leading south into the installation. Other towns in the immediate area include Rolla, 28 miles to the northeast; Lebanon, 35 miles to the southwest; Jefferson City, 68 miles to the north; and Big Piney, Roby, and Plato to the immediate south.

Fort Leonard Wood has a diverse mission and has a average daily training population of more than 18,000 military and civilian students (ASIP, May 2012). Home to the Maneuver Support Center of Excellence, Fort Leonard Wood trains and educates service members and develops doctrine and capabilities for TRADOC's U.S. Army Chemical, Biological, Radiological, and Nuclear School (including the Chemical Defense Training Facility); U.S. Army Engineer School; U.S. Army Military Police School; three gender-integrated Initial Military Training brigades; one of only two gender-integrated Initial Military Training installations; one of only four reception stations in the Army; and the Army's largest Non-Commissioned Officers Academy. General Leonard Wood Army Community Hospital provides inpatient and outpatient care to more than 36,000 beneficiaries and is staffed by 900 medical, dental, nursing, and administrative personnel. Over the past several years, Fort Leonard Wood has received numerous additional responsibilities to include supporting the 4th MEB, a FORSCOM unit that deploys abroad to provide maneuver capabilities to Armor and Infantry units. The Humanitarian Demining Training Center and the Directorate for Counter Improvised Explosive Devices also reside at Fort Leonard Wood. A Marine Corps Detachment and an Air Force Detachment, along with a large Navy Seabee Detachment are also stationed at Fort Leonard Wood. Units from the Army Reserves and National Guard routinely train at Fort Leonard Wood and including the 102nd Training Division (Army Reserves), 35th Engineer Brigade (National Guard) as resident units as well as the Kit Bond Aviation Support Facility (National Guard). The post is home to all DoD truck driver training and a large international student detachment that has representation from over 120 different countries. Figure 4.15-1 depicts the location of the installation.

As a result of the implementation of the Proposed Action the permanent party Soldier population of Fort Leonard Wood could be reduced by up to 3,900 Soldiers and civilians and their accompanying dependents. In addition, there would be a reduction in the number and amount of students that train at Fort Leonard Wood annually, as the Army slows the pace of recruiting and re-enlistments. Much of the institutional training would continue as it currently is being conducted by the Maneuver Support Center of Excellence and other TRADOC units. As the size of the Army is reduced, the demand for the number of Soldiers trained for specific military functions may also decrease. A reduction of approximately 10 percent of the student and temporary trainee population that is routinely trained at Fort Leonard Wood each year would be anticipated with the implementation of Alternative 1.

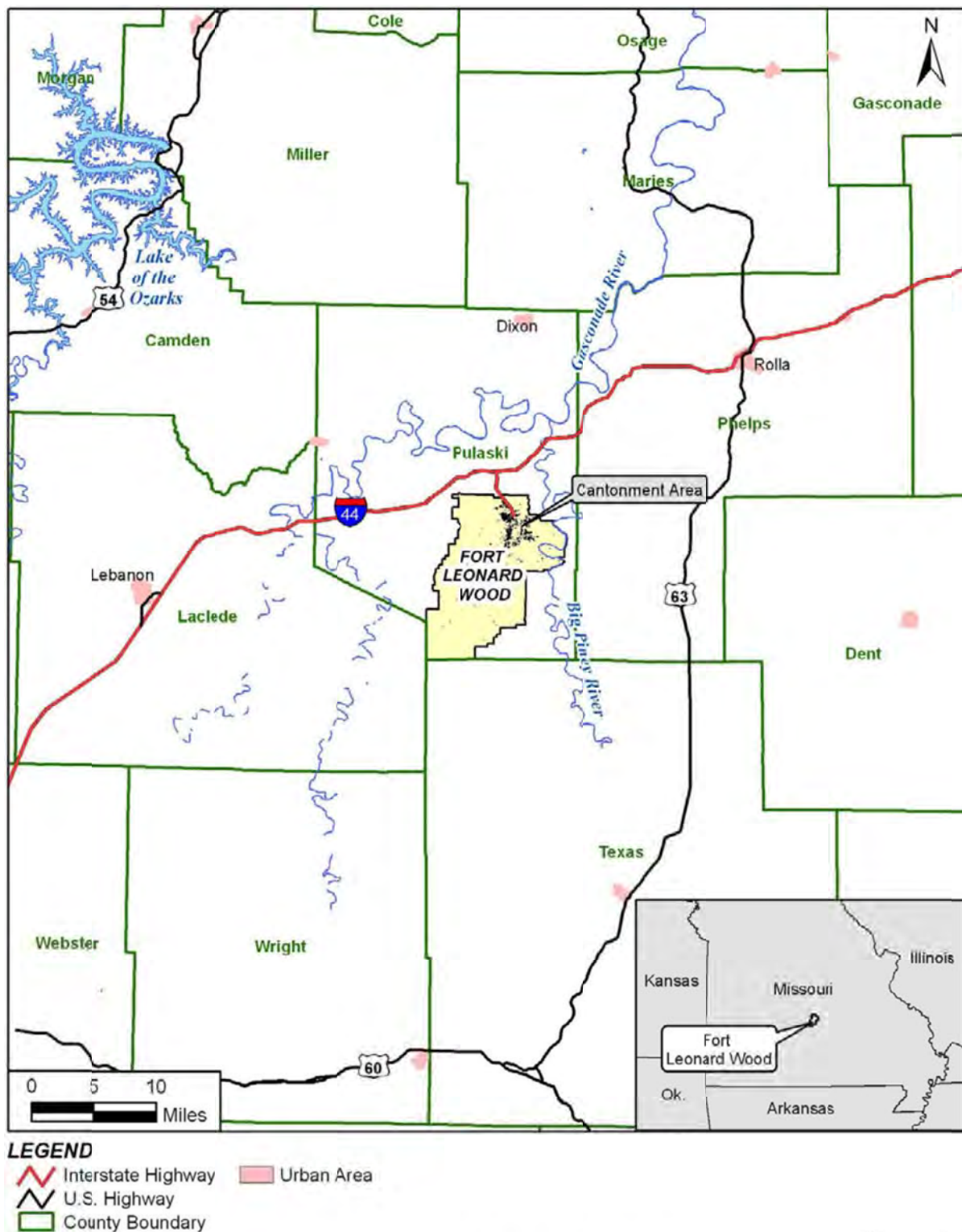


Figure 4.15-1. Fort Leonard Wood

There would be some decreases in the frequency of training events and activities performed year-round at Fort Leonard Wood and negligible beneficial environmental impacts for many VECs evaluated.

Fort Leonard Wood has a major economic impact on the surrounding community. Not only is Fort Leonard Wood a leading training installation, it is also a leading employer and economic engine for the region, employing over 9,000 civilians in a variety of fields to include information technology, medical, engineering and accounting. Fort Leonard Wood is estimated to have an annual economic impact of between \$2-3 billion to the ROI. MILCON projects underway or pending have added an estimated total of more than \$600 million to the regional economy.

This section incorporates by reference the *Programmatic Environmental Assessment of the Ongoing Mission – U.S. Army Maneuver Support Center and Fort Leonard Wood* (PEAFLW) (USACE, 2006). The PEAFLW provides a statement of existing conditions and typical impacts that can be used to support subsequent documents. In accordance with CEQ regulations (40 CFR 1502.20), this PEA need only summarize the issues that are specific to the alternatives, and incorporate by reference, any pertinent issues that have already been covered by the PEAFLW. The affected environment in the PEAFLW was prepared for the purpose of serving as the baseline for analysis of future projects that fall under the scope of the PEAFLW. The affected environment for the PEAFLW included the area of Fort Leonard Wood.

4.15.1.1 Valued Environmental Components

For alternatives the Army is considering as part of Army 2020 force structure realignments, Fort Leonard Wood does not anticipate any significant adverse environmental impacts; however, significant socioeconomic impacts to regional population, economic activity and school districts are anticipated as a result of the implementation of Alternative 1 (Force reduction of up to 3,900 Soldiers and Army Civilians). Table 4.15-1 summarizes the anticipated impacts to VECs for each alternative.

Table 4.15-1. Fort Leonard Wood Valued Environmental Component Impact Ratings

Valued Environmental Component	No Action Alternative	Alternative 1: Force Reduction of up to 3,900
Air Quality	Negligible	Negligible
Airspace	Negligible	Negligible
Cultural Resources	Negligible	Minor
Noise	Negligible	Negligible
Soil Erosion	Negligible	Negligible
Biological Resources	Negligible	Negligible
Wetlands	Negligible	Negligible
Water Resources	Negligible	Negligible
Facilities	Negligible	Beneficial

Socioeconomics	Beneficial	Significant
Energy Demand and Generation	Negligible	Beneficial
Land Use Conflict and Compatibility	Negligible	Negligible
Hazardous Materials and Hazardous Waste	Negligible	Minor
Traffic and Transportation	Negligible	Beneficial

4.15.1.2 Valued Environmental Components Dismissed from Detailed Analysis

For the VECs discussed in this section, no more than a beneficial or negligible impact would be anticipated. Therefore, these VECs are not being carried forward for detailed analysis, as no potential for significant impacts exists.

- **Air Quality.** Fort Leonard Wood is currently located in an attainment area for all NAAQS. The alternatives do not include any new or additional activities that would require an air permit review or a change in attainment status; therefore, there would be no impact to air quality.
- **Airspace.** The alternatives do not include changes (neither horizontal nor vertical) to the FAA-designated SUA, to include access; therefore, there would be no impact to airspace.
- **Noise.** The alternatives do not include changes to aircraft operations or to the type of weapons training conducted; therefore, there would be no additional noise generators adding to noise impacts aside from short-term potential demolition to add to current baseline conditions.
- **Soil Erosion.** The alternatives do not include any ground-disturbing activities; therefore, there would be no impact to any geology or soil resources.
- **Biological Resources.** The alternatives do not include activities that would affect fish, wildlife, threatened and endangered species, habitat, natural resources, or vegetation; therefore, there would be no impact to biological resources.
- **Wetlands.** The alternatives do not include any ground-disturbing activities that would result in unpermitted loss of wetlands; therefore, there would be negligible impact to wetlands anticipated.
- **Water Resources.** The alternatives do not include any activities that would lead to increased water demand or surface water disturbance; therefore, there would be no impact to water resources.
- **Facilities.** The main cantonment area is the urbanized portion of Fort Leonard Wood, and has been developed into a wide variety of land uses that comprise the elements necessary for a complete community. This includes the installation Post Exchange, commissary, housing and Family support services, medical, and mission-support facilities. Permanent party Soldiers on Fort Leonard Wood currently utilize approximately 414,500 square feet of barracks space (Parker, 2012).

There would be no impact anticipated from the continued implementation of the No Action Alternative. Fort Leonard Wood would continue to operate and maintain its existing facilities in accordance with its current requirements. Fort Leonard Wood would

continue to implement the FRP. Fort Leonard Wood is demolishing and planning to demolish outdated facilities through the FRP. In FY 2011, eighteen facilities totaling approximately 39,000 square feet were demolished; another ten facilities have either been demolished or are in the process of being demolished in FY 2012. These facilities have a total area of approximately 64,000 square feet; and demolition for FY 2013 to FY 2017 is currently being planned. Alternative 1 would have a minor beneficial effect on facilities as it allows for the removal and release of temporary, relocatable buildings and the demolition of some older, energy-inefficient buildings that are not already planned for demolition. Additional actions would be programmed under the FRP to increase installation building performance and energy efficiency to save on installation operating costs and utilities. With the implementation of force reduction, some permanent facilities may be able to be redesignated to support units remaining at Fort Leonard Wood to provide more space and facilities better able to meet tenant unit needs. Consequently, a reduction in manpower does not necessarily equate to a proportional reduction in facility requirements.

- **Energy Demand and Generation.** Utilities are generally connected across the cantonment area and along defined utility corridors and contribute collectively to the overall capacity, use, and storage as a unit. As such, the ROI for this resource is the cantonment area of Fort Leonard Wood and the various utility ROWs that connect Fort Leonard Wood with the regional systems. Generally, electricity is provided by Sho-Me Power Electrical Cooperative; natural gas is provided by Omega Pipeline Company, LLC; propane is procured through a local purchase contract; and fuel oil is purchased through a regional Defense Logistics Agency Energy contract.

There would be no impact anticipated under the No Action Alternative. Fort Leonard Wood would continue to draw the same amounts of energy from its utility provider with the same requirements for power and maintenance of power infrastructure. Alternative 1 would have a minor beneficial impact to the installation's energy resources. As a result of the implementation of Alternative 1, the installation would anticipate a reduction in energy consumption with the reduction in the installation's military and civilian populations and accompanying and supporting square footage. Fort Leonard Wood pursuit of energy efficiency and conservation measures would also contribute to reduced energy usage and energy demand reductions. Reduced energy consumption would occur from the reduction in the requirements for heated and cooled space and if some less efficient buildings were demolished and vacated buildings were moth-balled. Overall, Alternative 1 would result in beneficial impacts.

- **Land Use Conflict and Compatibility.** The alternatives would not change any existing land uses; therefore, there would be no land use conflicts or incompatibility.
- **Traffic and Transportation.** The alternatives would not increase traffic or require additional transportation options. With fewer people, there would be fewer cars and less traffic; therefore, a negligible beneficial impact could be anticipated because of decreased traffic congestion; however, there are no issues with the current traffic LOS.

Fort Leonard Wood anticipates that the implementation of any of the alternatives would result in negligible impacts for those VECs discussed above. The following provides a discussion of the VECs requiring a more detailed analysis, as they are anticipated to have the potential of a higher level of impact as a result of the implementation of the Proposed Action alternatives.

4.15.2 Cultural Resources

4.15.2.1 Affected Environment

The prehistoric cultural chronology of the Fort Leonard Wood lands is divided into a sequence of distinct segments spanning more than 10,000 years of human occupation and adaptation, from about 8500 B.C. to A.D. 1400. Prehistoric archaeological sites recognized at Fort Leonard Wood include open camp and habitation sites, caves, rock shelters, and rock burial mounds. The latter occur singly or in clusters and represent mortuary sites exclusive to the Late Woodland and Mississippian periods (A.D. 400 – 1400). Nearly 200 prehistoric sites recorded on the installation are considered eligible or are eligible for inclusion in the NRHP. A high concentration of these considered eligible or eligible sites are clustered along Roubidoux Creek and Big Piney River, with the greatest density located on Roubidoux Creek between the Hurd Hollow and Musgrave Hollow drainages.

The first historic period settlers arrived in the region in the early 19th century, establishing trading posts, living in isolated cabins, and subsisting by hunting and trapping. As populations increased in the mid-19th century farmsteads and rural communities began to appear. The population continued to grow in the late 19th century with farming, hunting, and lumbering representing the economic base until World War I. By the 1930s the federal government had become an important economic and social factor with the establishment of the Mark Twain National Forest and Civilian Conservation Corps and Works Progress Administration programs. Nearly 100 historical archaeological sites on the installation are considered eligible or are eligible for inclusion in the NRHP; however, a reassessment of all 225 recorded historical sites is ongoing to establish better their significance and NRHP eligibility status. One building from the period that predates the establishment of Fort Leonard Wood and is eligible for inclusion in the NRHP is the Rolling Heath School, constructed in 1912.

Construction of the Fort Leonard Wood cantonment began in December 1940 and was completed the following year. The 1,600 buildings constructed during this period were based on standard Office of the Quartermaster General plans for temporary mobilization construction, with the exception of a few permanent buildings such as the Water Intake and Water Treatment Plants, both eligible for inclusion in the NRHP. Other important NRHP-eligible historic properties dating from this period include the 13 buildings that comprise the World War II Temporary Buildings Historic District, Building 430 (Red Cross), Building 2051 (Garlington House), and Building 2101 (Black Officers Club). Two NRHP-eligible historic landscapes on the installation, Veteran's Park and Gammon Field, also date to the World War II era. In 1943 a Prisoner of War camp was completed and began housing primarily German soldiers. The camp closed in 1946 and was largely demolished in the early 1950s. The physical legacy of the camp is the numerous stonework features throughout the installation constructed by the POWs. Several NRHP-eligible POW Stonework Historic Districts and individual structures have been identified. Additionally, the site of the former POW camp is a NRHP-eligible archaeological site.

Fort Leonard Wood was closed to full-time military operations in 1946 and remained on inactive status until 1950, when it was reactivated during the Korean conflict. Fort Leonard Wood's role as an engineer training center and reception station continued through the 1950s, culminating with it being declared a permanent installation in 1956. The change in status to a permanent installation allowed the government to begin building permanent structures. The building boom began in 1956 with the construction of the first permanent Family quarters. This was quickly followed by more Family housing projects and the construction of a post chapel, schools, hospital, theater, trainee barracks, and enlisted and officers quarters. Between 1961 and 1965 four large "Rolling Pin" unaccompanied personnel housing complexes were constructed. One of these complexes, located in the 600 area of the installation and containing 29 buildings, is

eligible for inclusion in the NRHP as a historic district, making it exempt from the Cold War Era (1946-1974) Unaccompanied Personnel Housing program comment adopted by the Army in 2007. Building 450 (Main Post Chapel), constructed in 1962, is also eligible for inclusion in the NRHP.

The Vietnam conflict increased the number of Soldiers stationed at Fort Leonard Wood and accelerated building and facility improvements that continue to this day. At present the majority of the facilities constructed prior to 1972 on Fort Leonard Wood have been inventoried and their NRHP eligibility status has been determined. By 2017, additional facilities inventory would be necessary.

The Fort Leonard Wood CRM program operates under procedures and policies outlined in the installation's ICRMP (USACE, 2003). The ICRMP was completed in 2003 and is updated through an annual report and 5-year management plan. Additionally, maintenance and repair manuals and landscape management plans have been developed for many of Fort Leonard Wood's NRHP-eligible historic properties.

4.15.2.2 Environmental Consequences

No Action Alternative

Impacts to cultural resources under the No Action Alternative would be negligible. Activities with the potential to affect cultural resources are monitored and mitigated when anticipated through a variety of preventative and minimization measures. Activities are managed by Fort Leonard Wood cultural resource management program which consults with the SHPO on any action that could potentially affect eligible cultural resources.

Alternative 1: Force Reduction (up to 3,900 Soldiers and Army Civilians)

Fort Leonard Wood anticipates short-term minor adverse impacts from potential facilities demolition and long-term minor beneficial impacts to cultural resources as decreased training activity would reduce the risk of inadvertent disturbance of artifacts and archaeological sites. Any ground disturbing activity resulting from the removal of temporary structures would be coordinated with Fort Leonard Wood's CRM and the SHPO as necessary. The risk of NHPA, ARPA, and NAGPRA violations would not increase as a result of the implementation of Alternative 1. Minor impacts are anticipated as a result of Alternative 1 at Fort Leonard Wood with regard to the demolition of temporary facilities. There would be a very low potential for adverse effects to historic buildings and/or archeological resources. Removal of outdated infrastructure has the potential to affect historic structures, but such actions would be conducted in accordance with the current agreements between Fort Leonard Wood's CRM and the state for consultation and management of historic structures. If the undertaking has the potential to affect historic properties adversely, consultation with the SHPO would occur per 36 CFR 800 as required. There is a low potential for any unique or potentially eligible historic structures to be affected as a result implementation of Alternative 1; however, full consultation with the SHPO would occur, as required.

4.15.3 Socioeconomics

4.15.3.1 Affected Environment

Fort Leonard Wood is located in Pulaski County, Missouri. The Fort Leonard Wood MSA comprises Pulaski County. The ROI consists of Pulaski, Phelps, and Laclede counties.

Population and Demographics. The daily working population of Fort Leonard Wood consists of 9,495 full-time permanent party Soldiers and Army civilian employees working on post. The permanent party population that lives on Fort Leonard Wood is estimated to consist of

approximately 2,997 Soldiers and 2,580 dependents, for a total of 5,577. This does not include temporary trainees and students, which add significantly to the Fort Leonard Wood resident on-post population. Finally, the portion of the ROI population related to Fort Leonard Wood is estimated to consist of approximately 14,090 permanent party Soldiers, Army civilian employees, and their dependents living off post.

The ROI county population is over 130,000. Compared to 2000, the 2010 population increased in Pulaski, Phelps, and Laclede counties (Table 4.15-2). The racial and ethnic composition of the ROI is presented in Table 4.15-3.

Table 4.15-2. Population and Demographics

Region of Influence Counties	Population 2010	Population Change 2000-2010 (Percent)
Pulaski	50,000	+ 27.0
Phelps	45,000	+ 13.7
Laclede	35,600	+ 9.4

Table 4.15-3. Racial and Ethnic Composition

State and Region of Influence Counties	Caucasian (Percent)	African American (Percent)	Native American (Percent)	Hispanic (Percent)	Asian (Percent)	Multiracial (Percent)	Other (Percent)
Missouri	81	11	2	4	0	2	0
Pulaski	72	11	1	9	2	4	1
Phelps	90	2	0	2	3	2	0
Laclede	94	1	1	2	0	2	0

Employment, Income, and Housing. Compared to 2000, the 2009 employment (private nonfarm) increased in Pulaski, Phelps and Laclede counties, and decreased in the State of Missouri (Table 4.15-4). Employment, median home value and household income, and poverty levels are presented in Table 4.15-4.

Table 4.15-4. Employment, Housing, and Income

State and Region of Influence Counties	2009 Total Nonfarm Employment (Employees)	Employment Change 2000-2009 (Percent)	Median Home Value 2005-2009 (Dollars)	Median Household Income 2009 (Dollars)	Population Below Poverty Level 2009 (Percent)
Missouri	2,358,706	- 1.72	134,500	45,149	14.60
Pulaski	8,253	+ 45.30	115,100	45,073	14.10
Phelps	13,099	+ 6.70	114,700	40,260	17.90
Laclede	12,107	+ 0.10	93,000	37,294	16.00

Family housing on Fort Leonard Wood can accommodate 1,837 Families. Fort Leonard Wood currently has 1,934 Family housing units on post managed through a partnership with Balfour

Beatty Communities, LLC through the RCI. Permanent party Soldiers occupy 1,698 of those on-post housing units. Fort Leonard Wood Family housing occupancy rates for 2010 and 2011 were 89 percent averaged.

Fort Leonard Wood has barracks space for 1,299 unaccompanied personnel. Fort Leonard Wood has 414,500 square feet of barracks space for permanent party unaccompanied personnel (Parker, 2012).

Single-family dwellings are the dominant type of housing found in the off-post ROI and a lack of new multi-family construction has placed pressure on this segment of the market to serve as rental housing. Approximately 3,100 single-family homes were supporting Soldiers.

Schools. Permanent party military dependants living on-post attend Waynesville R-VI Schools. As of January 2012, 6,647 military dependants live in Fort Leonard Wood Family housing. As many as 4,000 school-age Fort Leonard Wood children living off-post attend various school districts in the surrounding area.

Public Health and Safety.

- **Police Services.** The Fort Leonard Wood Directorate of Emergency Services (DES) Law Enforcement Branch and Security Operations Branch oversees law enforcement operations, patrols, gate security, training, traffic accidents, and criminal investigations on the installation. City, county, and state police departments provide law enforcement in the ROI.

- **Fire and Emergency Services.** The Fort Leonard Wood Fire and Emergency Services Branch responds to emergencies involving structures, facilities, transportation equipment, hazardous materials, and natural and man-made disasters; directs fire prevention activities; and conducts public education programs. The Fort Leonard Wood Fire and Emergency Services Branch have mutual aid agreements with Pulaski County and the cities of Saint Robert and Waynesville.

- **Medical Facilities.** Fort Leonard Wood's on-post medical services are administered at the General Leonard Wood Army Community Hospital (GLWACH). This facility services all permanent party, Active Duty personnel and their dependents, as well as retirees and their dependents. The Consolidated Troop Medical Clinic is the designated clinic for all Initial Entry Training (IET) and AIT Soldiers assigned to Fort Leonard Wood in a training status. The services provided by Consolidated Troop Medical Clinic include sick calls, physical exams, preparation for overseas movement, case management, laboratory, pharmacy, physical therapy, radiology, and occupational therapy. Also, the Warrior Transition Unit provides command and control, primary care, and case management for service members receiving treatment for injuries suffered while deployed in the war on terrorism. Warrior Transition Unit patients can receive specialized care services at the GLWACH.

Off-post medical facilities provide a varied range of primary and specialty health care capability. Active Duty Family members and retirees and their Family members can receive care at GLWACH's Community Based Primary Care Clinic located off post in nearby Saint Robert.

The Roll Dental Clinic, Harper Dental Clinic, and GLWACH Hospital Oral Maxillofacial Department provide dental services for permanent party members including the Marines, Navy and Air Force Detachments, and Soldiers attending the IET and AIT.

Family Support Services. Fort Leonard Wood's ACS is a human service organization with programs and services dedicated to assisting Soldiers and their Families under FMWR. Fort Leonard Wood's Child, Youth & School Services is a division of FMWR. It provides facilities and

care for children ages 4 weeks to 5 years, school age care for ages 6 to 10 years, a middle school and teen program for ages 11 to 18 years, as well as sports and instructional classes for children of Active Duty military, DoD civilian, and DoD contractor personnel. Children of retired military members are eligible to participate in the Middle School and Teen Youth Sports and SKIES programs. Fort Leonard Wood's Youth Sports and Fitness Program offers both individual and team activities and involves not only Fort Leonard Wood teams but also the surrounding community teams.

The Missouri Department of Social Services, which operates across the county, and local cities' social service departments provide assistance to all Missouri residents, including Active Duty military personnel and their Families stationed on Fort Leonard Wood. Missouri Department of Social Service programs include adult and child protective services, child care, adult day care, assisted living facilities, financial assistance, food stamps, low-income energy assistance, and support for adults and children with special health care needs or disabilities, domestic violence, and substance abuse counseling.

Recreation Facilities. Fort Leonard Wood offers its military community, Families, civilians, and surrounding communities batting cages, Frisbee golf, a skate park, auto crafts shop, outdoor swimming pool, bowling center, go-kart race track, 18-hole miniature golf course, 18-hole golf course, fitness centers, outdoor recreation opportunities including access to the Lake of the Ozarks Recreation Area, sports teams, and a public library through FMWR.

4.15.3.2 Environmental Consequences

No Action Alternative

Fort Leonard Wood anticipates beneficial socioeconomic impacts under No Action Alternative. Fort Leonard Wood anticipates that the No Action Alternative would provide a continued contribution of economic and social benefits as more businesses and jobs are drawn to the area and as Fort Leonard Wood would continue to draw on community services and contribute to the tax base of the local economy. No additional impacts to housing, public and social services, public schools, public safety, or recreational activities are anticipated. Fort Leonard Wood's continuing operations would represent a beneficial source of regional economic activity.

Alternative 1: Force Reduction (up to 3,900⁸ Soldiers and Army Civilians)

Economic Impacts. Alternative 1 would result in the loss of approximately 3,900 Soldier and Army government civilian employees, each with an average annual income of \$41,830. In addition, this alternative would affect an estimated 2,156 spouses and 3,709 dependent children, for a total estimated potential impact to 5,865 dependents. The total population of military employees and their dependents directly affected by Alternative 1 is projected to be 9,729 military employees and their dependents.

Based on the EIFS analysis, there would be significant socioeconomic impacts for population and employment in the ROI for this alternative. There would be no significant impacts for sales volume or income. The range of values that would represent a significant economic impact in accordance with the EIFS model is presented in Table 4.15-5. Table 4.15-6 presents the projected economic impacts to the region for Alternative 1 as assessed by the Army's EIFS model.

⁸ Calculations used a number of 3,864 Soldiers and civilians as the basis for estimating socioeconomic impacts. This number was derived by assuming the loss of 35 percent of Fort Leonard Wood's Soldiers and up to 15 percent of the civilian workforce. As discussed in Chapter 3, this number is rounded to the nearest hundred personnel when discussing impacts of Alternative 1.

Table 4.15-5. Economic Impact Forecast System and Rational Threshold Value Summary of Implementation of Alternative 1

Region of Influence Economic Impact Significance Thresholds	Sales Volume (Percent)	Income (Percent)	Employment (Percent)	Population (Percent)
Economic Growth Significance Value	8.81	8.02	5.85	4.25
Economic Contraction Significance Value	- 8.54	- 7.81	- 6.2	- 3.17
Forecast Value	- 8.00	- 6.75	- 11.21	- 7.5

Table 4.15-6. Economic Impact Forecast System: Summary of Projected Economic Impacts of Implementation of Alternative 1

Region of Influence Impact	Sales Volume	Income	Employment	Population
Total	- \$167,559,700	- \$177,879,600	- 4,314 (Direct) - 504 (Indirect) - 4,818 (Total)	- 9,729
Percent	- 8.00 (Annual Sales)	- 6.75	- 11.21	- 7.5

The total annual loss in direct and indirect sales in the ROI represents an estimated -8.0 percent change in total sales volume from the current sales volume of \$2.09 billion within the ROI. State tax revenues would decrease by approximately \$6.7 million as a result of the loss in revenue from sales reductions. Some counties within the ROI supplement the state sales tax of 4.225 percent by varying percentages, and these additional local tax revenues would be lost at the county and local level. Regional income would decrease by 6.75 percent. While approximately 3,900 Army Soldier and government civilian positions would be lost within the ROI as a direct result of the implementation of Alternative 1, EIFS estimates another 450 military contract service jobs would be lost, and an additional 504 job losses would occur indirectly as a result of a reduced demand for goods and services in the ROI. The total estimated reduction in demand for goods and services within the ROI is projected to lead to a loss of 4,818 jobs, or a -11.21 percent change in regional non-farm employment. The total number of employed positions (non-farm) in the ROI is estimated to be 42,954. A significant population reduction of 7.5 percent within the ROI is anticipated as a result of this alternative. Of the approximately 130,000 people (including those residing on Fort Leonard Wood) that live within the ROI, 9,729 military employees and their dependents would no longer reside in the area following the implementation of Alternative 1. This would lead to a decrease in demand for housing, and increased housing availability in the region. This could lead to a slight reduction in median home values. It should be noted that this estimate of population reduction includes civilian and military employees and their dependents. This number likely overstates potential population impacts, as some of the people no longer employed by the military would continue to work and reside in the ROI, working in other economic sectors; however, this would in part be counterbalanced by the fact that some of the indirect impacts would include the relocation of local service providers and businesses to areas outside the ROI.

Table 4.15-7 shows the total projected economic impacts, based on the RECONS model that would occur as a result of the implementation of Alternative 1.

Table 4.15-7. Regional Economic System: Summary of Projected Economic Impacts of Implementation of Alternative 1

Region of Influence Impact	Sales Volume	Income	Employment
Total	- \$121,701,957 (Local) - \$272,740,872 (State)	- \$170,823,043	- 4,113 (Direct) - 290 (Indirect) - 4,403 (Total)
Percent	- 5.80 (Total Regional)	- 6.49	- 10.25

The total annual loss in direct and indirect sales in the region represents an estimated -5.80 percent change in total regional sales volume according to the RECONS model, an impact that is 2.2 percentage points less than projected by EIFS; however, it is estimated that gross economic impacts at the state level would be greater. Extrapolating from sales volume numbers presented in the RECONS model, it is anticipated that state tax revenues would decrease by approximately \$10.9 million as a result of the loss in revenue from sales reductions, which would be \$4.7 million more in lost state sales tax revenue than projected by the EIFS model. Regional income is projected by RECONS to decrease by 6.49 percent, slightly less than the 6.75 percent reduction projected by EIFS. While approximately 3,900 Soldier and Army government civilian positions would be lost within the ROI, RECONS estimates another 249 military contract and service jobs would be lost, and an additional 290 job losses would occur indirectly as a result of reduced demand for goods and services in the ROI. The total estimated reduction in demand for goods and services within the ROI is projected to lead to a loss of 4,403 jobs, or a -10.25 percent change in regional non-farm employment, which would be 0.96 percentage points less than projected by the EIFS model.

When assessing the results together, both models predict a similar significantly negative economic impact associated with the implementation of Alternative 1, and a net reduction of economic activity within the ROI.

Demographics. Fort Leonard Wood anticipates training capacity loss under the Proposed Action, resulting in a substantial decrease in the volume of trainees, TDY military, transient military and civilians served on post. Though overall population would decrease, Fort Leonard Wood does not anticipate significant impacts to installation demographic composition under the Proposed Action.

Housing. The proposed reduction would increase availability of single barracks and single Soldier housing. The proposed reduction would increase the availability of Family housing on-post, as well. Fewer notices of non-availability would be generated and fewer Soldiers would live off-post. The increased percentage of Soldiers living in Family housing would have long-term beneficial impacts to force protection under the Proposed Action. Fort Leonard Wood anticipates long-term adverse impacts to the housing and rental market in the ROI under the Proposed Action with the most impact felt in Pulaski and surrounding counties where rental vacancy and current military tenant populations are highest.

Schools. The proposed reduction could have significant impacts to schools receiving military dependants and also to those receiving civilian dependents of positions that may be lost as a result of military population reduction. Schools would be negatively impacted by a loss of Federal Impact Aid received for supporting the education of children from military and Army civilian Families. As the numbers of these dependents are reduced, it would likely have quite a serious negative financial impact in Pulaski County, and some impact in certain school districts

in surrounding counties, such as the Plato school district in Texas County, which have a significant military/civil service component to its school population.

Public Health/Safety. Under the Proposed Action resident and daytime population levels on Fort Leonard Wood would decrease, potentially reducing demand on area law enforcement, local fire and emergency service providers, and medical care providers in the community and on-post. AIT Soldiers, Active Duty military, remaining permanent party Soldiers, retirees and their dependants would continue to demand these services at reduced levels. Fort Leonard Wood does not anticipate significant adverse or beneficial impacts to public health and safety under the Proposed Action.

Family Support Services. Under the Proposed Action, a reduction in permanent party Soldiers could reduce demand on select Family support service providers on post. AIT Soldiers, Active Duty military, remaining permanent party Soldiers, retirees and their dependants would continue to demand child care and other ACS programs available on Fort Leonard Wood. Off-post Family support services in Pulaski County would also likely experience a decrease in clients. Fort Leonard Wood does not anticipate significant adverse or beneficial impacts to Family support services under the Proposed Action.

Environmental Justice. Under the Proposed Action, Fort Leonard Wood anticipates that job loss and economic impact would be adverse. The proposed reductions on Fort Leonard Wood would not be anticipated to have disproportionate or adverse health effects on low-income or minority populations. There are no historically-minority communities in the area, and there are no anticipated disproportionate economic impacts to racial, ethnic or religiously affiliated sectors of the population. However, a disproportionate amount of economic impact would impact lower income individuals and Families surrounding Fort Leonard Wood. Economic impacts to these sectors of the surrounding community would be significant. Many low income populations provide services to support the military in the region.

4.15.4 Hazardous Materials and Hazardous Waste

4.15.4.1 Affected Environment

The affected environment includes the use, storage, and transport of hazardous materials at Fort Leonard Wood, and the affected environment includes the storage, transport, and contracted disposal of hazardous waste at Fort Leonard Wood. Fort Leonard Wood has a 90-day storage facility to handle all types of hazardous waste from units and facilities on Fort Leonard Wood. Hazardous materials and hazardous waste are handled, stored, and transported in accordance with RCRA, state, and local regulations.

4.15.4.2 Environmental Consequences

No Action Alternative

There would be negligible impacts anticipated under the No Action Alternative. Fort Leonard Wood would continue to operate in accordance with current installation hazardous waste and material management plans.

Alternative 1: Force Reduction (up to 3,900 Soldiers and Army Civilians)

Fort Leonard Wood anticipates temporary minor impacts with the increase in the volume of hazardous waste generated and hazardous material requiring storage as a result of the implementation of Alternative 1. Deactivating units would turn in hazardous material (paints, cleaning solvents, pesticides etc.) to the Hazardous Material Control Center to avoid transportation risks. Deactivating units would also turn in expired hazardous material that requires disposal as hazardous waste, which requires coordinated pickups by the DRMO

Hazardous Waste contractor. More rapid implementation of the FRP, and removal of temporary facilities could increase the hazardous and solid waste streams as components of some temporary structures, such as treated tent canvas, are disposed of as hazardous waste. Hazardous materials and waste SOPs and management practices would not change. The risk of RCRA or CERCLA violations would not increase under the Proposed Action. Over the long-term, force reduction would result in the generation of less solid and hazardous waste.

4.15.5 Cumulative Effects

Fort Leonard Wood has a significant economic impact on the surrounding community. Not only is Fort Leonard Wood a leading training installation, it is also a leading employer and economic engine for the region, employing over 9,000 civilians in a variety of fields to include information technology, medical, engineering and accounting, and boasting an annual economic impact of between \$2-3 billion. MILCON projects underway or pending starting in the coming year(s) are estimated to total more than \$600 million. Because of Fort Leonard Wood's presence, in the adjacent communities, recent growth has included the addition of Buffalo Wild Wings, Colton's Steakhouse, two new Subways, Panera Bread, three new convenience stores, a new community water park and pool, a new high school and elementary school, and a few new hotels.

Fort Leonard Wood Projects Recently Completed or Ongoing

- Real Property Master Plan update (in progress);
- Range Complex Master Plan update (in progress);
- Range 24 – New Multi-Purpose Machinegun Range, including .50 caliber familiarization and qualification;
- MEDCOM – Primary Care Clinic & Warrior in Transition Unit Complex;
- FORSCOM – New 4th MEB Complex including Brigade Headquarters, Battalion Headquarters, Maintenance Facilities, and 5-Company Operations Facilities;
- Permanent Party Barracks – Completing last phase (5) of new PP barracks;
- Advance Individual Training Barracks – New Battalion Headquarters, Barracks/COFs, & Dining Facility recently completed; two new, similar MILCON projects projected in FY 2015 to FY 2016;
- Family Housing – Major new construction has been completed and is ongoing;
- Leonard Wood Institute testing renewable energy systems;
- 25-year lease with Turning Pointe for a Technology Park on Fort Leonard Wood; and
- Fort Leonard Wood's Installation Strategic Sustainability Plan (ISSP). Fort Leonard Wood has developed and is beginning to implement six long-term goals that enhance the viability of the garrison to provide military, civilian, and Family members with the infrastructure, services, and programs necessary for mission accomplishment.

Other Services

- U.S. Marine Corps, Navy, Air Force and other service reductions. These services, particularly the U.S. Marine Corps, train their Military Police and Engineers at Fort Leonard Wood. Reductions in the size of other services would reasonably be anticipated to lead to reduction in numbers of students and other permanent party at Fort Leonard Wood.

Alternative 1: Force Reduction (up to 3,900 Soldiers and Army Civilians)

1 When considering the potential reductions to other military services, who also train on Fort
2 Leonard Wood, socioeconomic impacts would be expected to increase in comparison to those
3 impacts discussed in Section 4.15.3.2. At this time, other services have not finalized military
4 end-strength reduction plans, but these additional reductions would be anticipated to add to
5 impacts that are already expected to be significantly adverse. There could, therefore, be
6 additional significant impacts to the ROI that may extend beyond the direct and indirect
7 significant economic impacts estimated for employment and population. Depending on the level
8 of force reduction implemented by other services, additional significant impacts to sales volume
9 and regional income could also occur. Impacts to state and local tax revenues would also be
10 larger impacts when considering the lost revenue from combined military service reductions.

11 Cumulatively, impacts to facilities, energy demand and generation, and traffic and transportation
12 would be beneficial, overall, as a result of reduced training loads and garrison operations
13 activity. The impacts of other projects, when cumulatively considered in conjunction with the
14 implementation of Alternative 1, would not outweigh beneficial impacts of its implementation for
15 these VECs.

16 Cumulatively, impacts to cultural resources and hazardous materials and hazardous waste
17 would be minor, overall, as a result of currently planned demolition and implementation of the
18 installation's FRP plan in conjunction with increase demolition activities as a result of the
19 implementation of Alternative 1.

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