Programmatic Environmental Assessment for

Infantry Brigade Combat Team (IBCT) Conversion to an Armored Brigade Combat Team (ABCT) and Stationing

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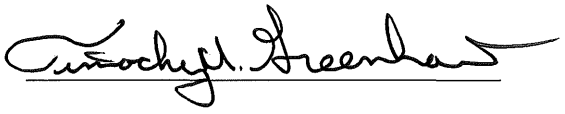

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Colonel, U.S. Army

Commanding

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1. PURPOSE, NEED, AND SCOPE

1.1. Introduction

The Department of the Army (Army) is preparing a Programmatic Environmental Assessment (PEA) to analyze the environmental and socioeconomic impacts associated with converting an Active Component (AC) Infantry Brigade Combat Team (IBCT) at Fort Carson, Colorado, into an AC Armored Brigade Combat Team (ABCT) and stationing the newly converted ABCT at one of five Army installations: Fort Carson, Colorado; Fort Bliss, Texas; Fort Hood, Texas; Fort Riley, Kansas; or Fort Stewart, Georgia.

1.2. Purpose and Need of the Proposed Action

The purpose of the Proposed Action is to increase the Active Army's ABCT capacity by one brigade (from 10 to 11), increasing the Total Army's number of ABCTs from 15 to 16 (including Army National Guard [ARNG] units), and to station the new ABCT at an existing installation in the United States. The need for this action is to reduce the shortfall in Total Army ABCT capacity to meet contingency operational demands. This conversion meets Recommendation 18 by the National Commission on the Future of the Army, transmitted to the President on January 28, 2016: "The Army should increase ABCT capacity based on the current and projected threat environment." In the discussions and recommendations, the Commission further reinforced the need for increased armored force structure: "The possibility of forceful response operations in Europe must be considered. The value of armored forces for conducting major combat operations adds to their value for deterring aggression. Such forces take a large amount of time to prepare and resources to sustain. However, underestimating the armored force requirements increases risk to mission." In support of this recommendation, the Office of the Secretary of Defense (OSD) submitted the Fiscal Year (FY) 2018 European Reassurance Initiative (now Deterrence Initiative) budget request in May 2017. Highlighted in the submission is the request for continuous ABCT presence throughout Eastern Europe, including the Baltic States, Poland, Romania, and Bulgaria. The Army's ability to maintain a continuous and ready ABCT presence to deter threats to North Atlantic Treaty Organization (NATO) and other partners in Eastern Europe requires the additional ABCT to achieve an Effective Date of Conversion by the end of June 2019 (i.e., the end of the third quarter of FY 2019).

1.3. Scope of the Analysis

The Army has prepared this PEA in accordance with the National Environmental Policy Act of 1969 (NEPA), the regulations issued by the Council on Environmental Quality (CEQ), 40 Code of Federal Regulations (CFR) Parts 1500-1508 (40 CFR 1500-1508), and the Army's procedures for implementing NEPA, published in 32 CFR 651, Environmental Analysis of Army Actions. This PEA addresses the proposed conversion of an IBCT into an ABCT to increase the Total Army's ABCT capacity. Implementing this realignment includes evaluating potential stationing actions at Fort Carson, CO; Fort Bliss, TX; Fort Hood, TX; Fort Riley, KS; and Fort Stewart, GA. This PEA will provide the decision maker with important information regarding potential environmental and socioeconomic impacts associated with the Proposed Action and alternatives. This information will be used to determine whether a Finding of No Significant Impact (FNSI) can be issued or whether a Notice of Intent (NOI) for preparation of an Environmental Impact Statement (EIS) is required. It could also assist in later decisions on specific unit changes to support the stationing of an additional ABCT at the installations not chosen for the 16th ABCT. As such, the scope of this PEA is broad and encompasses activities to support ABCT stationing and planning for facilities projected to be required from FY 2018 to FY 2021.

The programmatic approach is designed to allow for early planning, coordination, and flexibility throughout implementation of the Army's process of stationing an ABCT. This PEA provides a broad and programmatic analysis to determine the environmental and socioeconomic areas of concern, as well as general capacity to support an ABCT based on the baseline conditions of the five installations under consideration. The comparison of current training activities and their impacts on current environmental and socioeconomic conditions, with the impacts resulting from the Proposed Action, will provide the decision maker with the appropriate information to increase the Army ABCT inventory. As the programmatic decision made at Headquarters Department of the Army (HQDA) is implemented, follow-on NEPA documentation may be prepared, as appropriate and necessary, to evaluate the environmental impacts likely to result from carrying out ABCT stationing requirements at the specific installation(s). Installation impacts based on stationing decisions may involve changes in number and type of support units and equipment, new construction and/or demolition, increased intensity and duration of live fire and maneuver range usage, or combinations of these actions at a given location.

Where applicable, the PEA incorporates by reference previous Army-wide or installation-specific past NEPA analysis in considering potential for impact or prescribing relevant mitigations for each alternative. This includes the 2013 PEA and FNSI for Army 2020 Force Structure Realignment and its 2014 Supplement, and the 2015 Piñon Canyon Maneuver Site (PCMS) Training and Operations EIS and Record of Decision (ROD).

1.3.1. 2013 PEA and FNSI for Army 2020 Force Structure Realignment

The 2013 PEA analyzed the potential environmental and socioeconomic impacts associated with realignment of the Army's force structure between FY 2013 and FY 2020. It also assessed impacts of potential changes at 30 major installations, including Forts Bliss, Carson, Hood, Riley, and Stewart. The 2013 PEA looked at potential losses that could occur at these installations as the Army reduced its overall end strength. The analysis included a "no action" alternative, which retained the force structure at each installation. For each of the Forts (Bliss, Carson, Hood, Riley, and Stewart) included in this PEA, the 2013 PEA considered a gain scenario of 3,000 Soldiers. This gain scenario was not re-examined in the 2014 Supplement since the possibility of a gain did not change for the affected installations. The 2013 PEA resulted in a FNSI for both its loss and gain scenarios.

Since the Army determined in the 2013 PEA that there would be no significant impacts for gains in Soldier strength at these installations, the 2013 PEA conclusions for the "gain" scenario are used to examine potential impacts that could result from the present Proposed Action, ABCT stationing at an existing installation. As shown in Table 1.3-1, although the 3,000 Soldiers in the 2013 PEA gain scenario are less than the gain in Alternatives 2 through 5 of this PEA, each of the installations under consideration for ABCT stationing have lost Soldiers since the 2013 PEA was prepared. These losses occurred as the Army implemented end strength reductions starting in 2013 and as a result, the gain scenario in Alternatives 2 through 5 is within the magnitude of the gain analyzed in the 2013 PEA.

Table 1.3-1. Comparison of 2013 Army 2020 PEA Gain Soldier Stationing to Proposed ABCT Stationing

Installation	Net Loss from 2013-2015	2013 PEA Gain	Total	ABCT Gain
Fort Bliss	1,359	3,000	4,359	4,182
Fort Hood	3,565	3,000	6,565	4,182
Fort Riley	1,635	3,000	4,635	4,182
Fort Stewart	1,887	3,000	4,887	4,182

Note: Fort Carson is not included in the table since it would not experience a gain under any of the scenarios.

While this is not necessarily dispositive for the current analysis, it provides some historical perspective and shows that the draft FNSI is not inconsistent with relatively recent programmatic NEPA analysis looking at a Soldier gain of similar magnitude. The examination in this analysis is more specific as the Proposed Action considers the gain of an ABCT.

It is also important to consider the loss at Fort Carson under the alternatives and compare them to the losses analyzed in the 2013 PEA. The 8,000-loss scenario considered in the 2013 PEA exceeds the 4,203 Soldier loss of an IBCT under Alternatives 2 through 5 even when combined with unrelated Soldier losses that have occurred at Fort Carson from 2013 to 2017. Rather than trying to extrapolate the various measurements of economic decline set out in the 2013 PEA for the ABCT loss scenarios, this PEA considers the findings for the larger 8,000-Soldier loss scenario used in the 2013 PEA. The Army determined that the only resource area that would have significant impacts from this loss would be socioeconomic[1]. CEQ's NEPA regulation, 40

[1] The 2014 Supplement of the 2013 PEA looked at a larger possible loss at Fort Carson of 16,000. It also determined that there would be significant socioeconomic impacts. Because the Fort Carson losses in the action alternatives are within the 8,000 Soldier loss considered in the 2013 PEA, we do not need to reconsider the supplement.

CFR 1508.14, states that significant socioeconomic impacts alone do not require the preparation of an EIS. Nevertheless, the Army is very concerned about the effect a 4,203-Soldier loss would have on the people of Fort Carson and the surrounding communities. This potential economic impact will be one of the factors taken into consideration when the Army makes its stationing decision for this action.

1.3.2. 2015 Piñon Canyon Maneuver Site Training and Operations Final EIS and ROD

PCMS is a military training site for Fort Carson, Colorado. PCMS is located near Trinidad, Colorado. PCMS is approximately 150 miles (241.4 kilometers [km]) southeast of Fort Carson, and consists of approximately 235,000 acres (95,101 hectares [ha]). The primary PCMS mission is to support maneuver training for units, up to brigade size, stationed at Fort Carson that need large contiguous maneuver and training areas. PCMS is an important training center and is vital to Fort Carson's preparation of Soldiers for combat missions as its size supports large training exercises that cannot be accommodated on Fort Carson alone.

Brigade-level training was initially authorized at PCMS under the 1980 PCMS Final Environmental Impact Statement for Training Land Acquisition (1980 PCMS EIS). The 1980 PCMS EIS projected that the maneuver site would allow from 4.4 to 4.7 armored brigade-training periods annually, with a single training period generally identified as lasting 30 days.

The Army adopted these temporal limitations in the 2015 PCMS Training and Operations Final Environmental Impact Statement (2015 PCMS EIS). The 2015 EIS also added another limitation to training, designed to complement the 4.7-month restriction. The Army established a Brigade Combat Team (BCT) level training intensity limit using Standard Maneuver Areas (SMAs) and Total Task Miles to complement the 4.7-month brigade-level training period duration. This approach allows the Army to manage brigade-level training periods using intensity and duration metrics, rather than just duration alone, and provides the Army with an additional measure regarding intensity of BCT training to manage training lands. The use of an additional metric to gauge training land sustainability would be an overall benefit to biological resources as the Army would cease brigade-level training when either the duration or intensity metric, whichever comes first, is attained during a training year.

The selected alternative allowed enhanced and updated brigade-level training and covered the introduction of training by the Stryker family of vehicles at PCMS. In the 2015 EIS, the Army

determined that BCT training would result in significant impacts to soils, water resources, and biological resources. The Army used the 2015 EIS ROD to adopt management and sustainability programs at PCMS as well as other mitigation measures. The 2015 EIS and its ROD are incorporated by reference in this PEA.

Fort Carson reviewed information about the affected environment that has become available since completion of the 2015 EIS and ROD to determine whether there have been substantial changes in the Proposed Action that are relevant to environmental concerns, or significant new circumstances or information relevant to environmental concerns and bearing on the Proposed Action or its impacts. See 40 CFR 1502.9(c) and 32 CFR 651.5(g). Fort Carson determined that these factors did not exist and that supplementation of the 2015 EIS was therefore not required. This determination was documented in a Record of Environmental Consideration (REC) dated February 7, 2018.

Alternative 1 of the Proposed Action under consideration involves stationing of a second ABCT to Fort Carson. PCMS would be available for training by that ABCT. The overall amount of possible training at PCMS would not exceed the limitations established in the 1980 EIS, and reaffirmed in the 2015 EIS. Because training by the additional ABCT at PCMS would not exceed the limits in the 2015 EIS, and would be subject to the mitigation measures and restrictions in the 2015 EIS ROD, and because the 2015 EIS does not require supplementation, that training is adequately covered by the 2015 EIS and additional analysis is not required. Alternatives 2 through 5 do not involve any additional training at PCMS and in fact, would result in a reduction of IBCT training. Those actions are also adequately covered by the 2015 EIS in that it covers the training by the units that would remain at Fort Carson under these alternatives. Because of this, potential impacts of the Proposed Action at PCMS are not considered in this PEA.

It is also important to note that none of the alternatives includes, nor would they require, any land expansion.

1.4. Public Involvement

As part of the NEPA process, the Army has made this PEA and draft FNSI available to the public and interested stakeholders. The Notice of Availability (NOA) of the PEA and draft FNSI was published in the *Federal Register* and in local newspapers serving the affected installations

and surrounding communities. The public will be given 30 days to comment on this PEA and draft FNSI. Public comments submitted on the PEA and draft FNSI will be made part of the administrative record and will be considered in determining whether a FNSI is appropriate.

This PEA and draft FNSI are available for review on the United States (U.S.) Army Environmental Command website at: https://aec.army.mil/index.php?cID=352. Please submit comments to U.S. Army Environmental Command, ATTN: Public Comments, 2450 Connell Road (Building 2264), Joint Base San Antonio-Fort Sam Houston, TX 78234-7664 or via email to: usarmy.jbsa.aec.nepa@mail.mil. Inquiries may also be made via phone by calling 210-466-1590 or toll-free 855-846-3940.

1.5. Strategic Stationing Decision Process

Army decision makers use a variety of inputs to make stationing decisions. The process involves developing feasible stationing alternatives that properly balance operational, environmental, and resource impacts. In addition to this PEA, the assessment of options to support the stationing recommendation to Senior Leadership will be based on the following considerations:

- Strategic: align Army Force Structure to the Defense Planning Guidance and emerging Defense strategy,
- Operational: maximize training facilities, deployment infrastructure, and, facilities to support the well-being of Soldiers and their Families; align appropriate oversight/leadership by senior headquarters, and command and control;
- Cost: adequate funding; cost efficiencies, and
- Investment/Regeneration: preserve options to expand the Army to meet the Nation's needs.

1.6. Army NEPA Decisions

This NEPA process will end with an Army decision documented in a FNSI or a NOI to prepare an EIS. Prior to making a final decision, the decision maker will consider both the environmental and socioeconomic impacts analyzed in this PEA, along with all other relevant information, such as public issues of concern identified during the comment period. If the decision maker determines that there are no significant environmental impacts, that

determination will be documented in the Final FNSI, which will be signed no earlier than 30 days from the publication of the NOA of this PEA and draft FNSI in the *Federal Register*. The Army may initiate a NOI for an EIS if new information warrants the need for additional analysis of potentially significant environmental impacts.

2. DESCRIPTION OF THE PROPOSED ACTION, ALTERNATIVES, AND SCREENING CRITERIA

2.1. Screening Criteria and Stationing Decision Factors

To assist in determining what installations should be considered for stationing an additional ABCT, the Army used screening criteria, and other stationing decision factors needed to balance sustainment of the land for training, maximize troop readiness, and minimize installation turbulence. Application of these screening criteria and stationing factors resulted in five action alternatives (further described in Section 2.3), along with the No Action Alternative (see Section 2.2), being reasonable for evaluation within this PEA.

2.1.1. Screening Criteria

Screening criteria are absolute standards that courses of action (COAs) must meet to be considered for implementation. Screening criteria define and measure:

- Suitability: solves the problem/accomplishes the mission.
- Feasibility: within available resources.
- Acceptability: accept the cost or risk.
- Distinguishability: COAs differ substantially.

The Army used the following screening criteria to identify installations for ABCT stationing consideration:

- **ABCT Presence –** Installations must have recent and proven capability to provide sustainment and support to an ABCT. The installation alternative must possess ABCT-related digital ranges, heavy maneuver training areas, and training facilities;
- **Mission Enablers –** This includes existing assets the installation has to support ABCT stationing in addition to those identified above for ABCT presence. Reasonable alternatives must possess a Division Headquarters (HQ) with facilities. The Division HQ provides necessary oversight and coordination for the Proposed Action. Elements normally associated with a Division HQ that an ABCT would benefit from training with include: Division HQ staff; the Division's Combat Aviation Brigade (CAB); sustainment assets (e.g., Sustainment Brigade provides additional maintenance support, as required);

Division transportation assets (Heavy Equipment Transports [HETs]); and Division Artillery HQ;

- **Construction Requirements** – Installations must have existing infrastructure capable of sustaining the administrative, maintenance, supply, training, life support, and housing needs of the ABCT. Installations must require less than $500 million (M) for new Military Construction (MILCON) during implementation of conversion, and support the ABCT with existing sustainment capability; and,
- **Operational Urgency –** Installations must be capable of completing the conversion no later than June 2019, with refurbishment of equipment starting in 2018 and personnel movement beginning in early 2019.

Army installations remaining after applying the Army's screening criteria are listed in Table 2.1-1.

Table 2.1-1. Summary of Installations Meeting Screening Criteria

Installation	ABCT Presence	Mission Enablers and Construction Requirements	Operational Urgency
Fort Carson	One	4th Infantry Division Meets MILCON threshold Sustainment Capacity to Support ABCT	Meets Requirement
Fort Bliss	Two	1st Armored Division Meets MILCON threshold Sustainment Capacity to Support ABCT	Meets Requirement
Fort Hood	Three	1st Cavalry (CAV) Division Meets MILCON threshold Sustainment Capacity to Support ABCT	Meets Requirement
Fort Riley	Two	1st Infantry Division Meets MILCON threshold Sustainment Capacity to Support ABCT	Meets Requirement
Fort Stewart	Two	3rd Infantry Division Meets MILCON threshold Sustainment Capacity to Support ABCT	Meets Requirement

2.1.2. Stationing Decision Factors

In making a stationing decision, the Army will consider the environmental analysis in this PEA and public comments as well as the following stationing decision factors:

- **Military Value Analysis (MVA) scores –**The MVA is a recognized model applied to inform senior leaders of risks and considerations for stationing decisions. The Army utilizes the MVA to produce a ranked order list of installations based on mission expansion, power projection, and training and well-being. These criteria define and meet operational and quality of life requirements for the Army. In the December 2013, the U.S. Government Accountability Office Audit report, *Defense Infrastructure: Army Brigade Combat Team Inactivations Informed by Analyses, but Actions Needed to Improve Stationing Process*, noted that the Army generally has used the MVA model in stationing decisions with a large impact, potentially greater risk, and requirement for more rigorous analytical underpinning, such as in stationing decisions involving brigade combat teams;

- **ABCT Infrastructure –** Relative MILCON and Sustainment, Restoration, and Modernization (SRM) funding required to meet ABCT capacity/condition standards. MILCON and SRM are measured in U.S. dollars, which is the estimated cost to bring ABCT facility capacity and condition to the current Army standard;

- **Specific ABCT Training –** Availability of digital multi-purpose range complexes and the ability to conduct company Combined Arms Live-Fire Exercises (CALFEX). Ability to support ABCT training is measured in the ratio of heavy maneuver boxes (contiguous area to maneuver) to ABCT companies;

- **Cost of Training Transportation –** The cost to move ABCT equipment to the National Training Center;

- **Conversion Turbulence –** Relative assessment of turbulence to the force created by the conversion. Conversion-in-place is preferred to minimize unit and personnel turbulence. Conversion-in-place reduces personnel movements based on a 73 percent Military Occupations Specialties commonality between an IBCT and an ABCT; and

- **Speed of Conversion** – Assessment of the speed at which the ABCT can achieve its not-later-than June 2019 Effective Date of Conversion, as well as the foreseeable risks to the activation schedule. Some installations could in theory obtain the needed facilities, support infrastructure, etc., given enough time and enough money to invest into those

capabilities, but the Army's purpose and need for the Proposed Action has a critical time element based on a real-time shortfalls in armored capacity in Eastern Europe. The Army needs to close that gap in capacity as quickly as it can do so.

2.1.3. Screening and Evaluation Results

Based on the above screening criteria, the Army identified five action alternatives (further described in Section 2.3) which meet the above criteria for stationing an additional ABCT, along with the No Action Alternative (see Section 2.2).

2.2. No Action Alternative

Under the No Action Alternative, conversion of an IBCT into an ABCT would not occur. Force structure, personnel, and equipment would not change at any of these installations as a result of this initiative. Therefore, the No Action Alternative would not address the Army's needs for BCT realignment and no growth of an additional ABCT would occur. The No Action Alternative is required by CEQ regulations and provides baseline conditions and a benchmark against which to compare environmental impacts from the Proposed Action alternatives. It should be noted that there might be other major changes to the Army's force structure and total strength. These could be based on a variety of factors, including the world situation, evolving threats, and operation of the Budget Control Act of 2011.

2.3. Proposed Action Alternatives

2.3.1. Description of the Proposed Action

The purpose of the Army's Proposed Action is to increase the Active Army's ABCT capacity by one brigade (from 10 to 11), increasing the Total Army's number of ABCTs from 15 to 16 (including ARNG units), and to station the ABCT at an existing installation in the United States. To achieve the increase, the Proposed Action is to convert Fort Carson's 2nd Infantry Brigade Combat Team, (4th Infantry Division [ID] IBCT) into the 16th ABCT. This would occur by assigning the IBCT to one of five installations, converting it to an ABCT, and stationing the ABCT at that installation. The conversion would meet current and future national security and defense requirements and take place in FY 2019. The ABCT stationing would occur at one of the following installations: Fort Carson, CO (Alternative 1), Fort Bliss, TX (Alternative 2), Fort Hood, TX (Alternative 3), Fort Riley, KS (Alternative 4), or Fort Stewart, GA (Alternative 5).

Implementation of the conversion at the preferred alternative location would require unit stationing (e.g., realignment or inactivation), garrison construction and demolition, live-fire training, and maneuver training. The Proposed Action does not require or propose land expansion. This section describes the activities associated with the Proposed Action and unit stationing action requirements among the Proposed Action alternatives.

2.3.1.1. Force Management

The Army manages its force structure to ensure that it is fielding an appropriately sized force of proper capability and configuration. It employs a multi-phased force structure review process that generates the force requirements and recommended resourcing in all three components (Active, Army Reserves, National Guard) necessary to support execution of the National Security and Military strategies, given resource constraints and end-strength guidance and limits from Congress. The results are used to develop the Army's future force requirements. Based on the results of the analysis, the Army routinely activates, inactivates, and realigns units to achieve better command and control, operational effectiveness, and increased efficiencies. Specific to the Proposed Action, force management decisions need to be made to support the requirement for an additional ABCT. The decision of where to station the ABCT will be made on the basis of the analysis contained in this PEA as well as the stationing decision factors in Section 2.1.2. Army BCTs vary in population density based on type. IBCTs have 4,203 personnel assigned versus 4,182 in an ABCT. Each BCT is supported to various extents by an installation's non-BCT Soldier population, and civilian workforce. Therefore, the Army anticipates an increase or decrease in non-BCT Soldiers and civilian workforce relative to each alternative considered. Table 2.3-1 compares the Soldier population changes associated with conversion of the 2nd Brigade, 4th ID IBCT into the 16th ABCT at the installations in the Proposed Action alternatives.

Table 2.3-1. Comparison of Soldier Population Change by Action Alternative

	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
Fort Carson	- 21	- 4,203	- 4,203	- 4,203	- 4,203
Fort Bliss	0	+ 4,182	0	0	0
Fort Hood	0	0	+ 4,182	0	0
Fort Riley	0	0	0	+ 4,182	0
Fort Stewart	0	0	0	0	+ 4,182

(See Section 7 in each installation section for further socio-economic information)

2.3.1.2. Garrison Construction & Demolition

The Facility Investment Strategy (FIS) is the Army's holistic approach to improve facility quality that includes investments to sustain enduring facilities, improve existing facility conditions particularly energy and utility efficiencies, to demolish facilities no longer needed, and to build to address critical shortfalls. The Army would follow this strategy under the Proposed Action to enhance readiness and lower costs by maximizing the use of existing space, and in turn, limit new construction required to support unit realignments and stationing actions.

Critical facilities required by Army units include office space for battalion and company HQs, barracks space for single enlisted Soldiers, family housing, dining facilities, maintenance shops, parking for vehicles, storage space, and classrooms. The estimated requirements for construction of these facilities would be based on the ability for existing installation infrastructure to support an additional ABCT to the current Army standard. Older, less efficient facilities may be demolished or renovated, and existing facilities may be reassigned to provide better support to Army units. MILCON would be required for Alternatives 1 through 5 (see Sections 2.3.5 through 2.3.8) where an additional ABCT is being considered. Table 2.3-2 compares the estimates of MILCON by Proposed Action Alternative.

Table 2.3-2. Estimates of Required MILCON for Proposed Action (bring to Army Standard)

	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
Fort Carson	$19M	0	0	0	0
Fort Bliss	0	$195M	0	0	0
Fort Hood	0	0	$185M	0	0
Fort Riley	0	0	0	$475M	0
Fort Stewart	0	0	0	0	$396M

Note: MILCON estimates from 2017 installation surveys.

2.3.1.3. Live-Fire Training

Live-fire training is an essential component of Army training, including ABCT training. To be operationally effective, Soldiers must have the skills and experience necessary to operate and maintain their weapons. Live-fire involves both munitions and explosives that would be used in combat, as well as non-explosive training rounds designed to meet Soldiers' training needs. In order to conduct effective live-fire training, units must have access to a suite of modern range infrastructure to achieve trained and ready status. A listing of Army Training and Qualification Ranges can be found in Training Circular (TC) 25-8 *Training Ranges*.

There are three general types of Army live-fire ranges: individual, crew, and collective. Individual ranges support the individual Soldier skills, marksmanship, and qualification for individual weapon(s), grenades, or demolitions. Crew ranges support firing both direct and indirect weapon systems that are specific to a single crew function. Crew ranges enable live crew skills in preliminary, basic, and advanced gunnery to include crew qualification. Collective ranges are complexes capable of supporting multiple maneuver elements conducting combined arms live fire events that incorporate the individual Soldier and crew skills.

Individual and crew live-fire training activities are anticipated to be similar to the No Action under Alternative 1 (see Section 2.2). With the addition of an ABCT, individual and crew live-fire training would be anticipated to increase in intensity and frequency under all Proposed Action Alternatives. The Army maintains over 80 types of ranges. For brevity purposes, Table 2.3-3 compares select individual and crew ranges, and their potential increase/decrease in

demand based on each Proposed Action Alternative. The ranges selected and presented in Table 2.3-3 include individual and crew ranges having the greatest number of projected range day throughput, and/or episodic high-energy impulsive noise events (e.g., 155-millimeter [mm] artillery live-fire exercises). The percentages presented in the table are calculated from the Army Range Requirements Model (ARRM), and indicate the percent increase/decrease in range day demand based on the doctrinal requirements of existing units plus those of an additional ABCT. The percentages do not directly correlate to an increase in calendar days.

Table 2.3-3. Change in Live-Fire Range Throughput by Proposed Action Alternative

	Range	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
Fort Carson	ZERO	+8%	-8%	-8%	-8%	-8%
	FAIR	+39%	-38%	-38%	-38%	-38%
	MTR	+8%	-8%	-8%	-8%	-8%
	MPMG	+16%	-16%	-16%	-16%	-16%
Fort Bliss	ZERO		+19%			
	FAIR		+33%			
	MTR		+15%			
	MPMG		+19%			
Fort Hood	ZERO			+15%		
	FAIR			+32%		
	MTR			+13%		
	MPMG			+14%		
Fort Riley	ZERO				+36%	
	FAIR				+45%	
	MTR				+45%	
	MPMG				+28%	
Fort Stewart	ZERO					+25%
	FAIR					+64%
	MTR					+20%
	MPMG					+22%

ZERO – Basic 10M – 25M Firing Range
FAIR – Field Artillery Indirect Fire Range
MTR – Mortar Range
MPMG – Automated Multipurpose Machine Gun Range

2.3.1.4. Maneuver Training

Army BCT units (including ABCTs) must conduct "combined-arms" training to ensure that all of the units' capabilities can be integrated and synchronized to execute missions under operational conditions. Maneuver training consists of collective training of the constituent units of the BCT working together to integrate their combined capabilities and skills. BCTs must conduct and rehearse maneuver training at every echelon from platoon through brigade level to ensure they can accomplish their mission-critical tasks.

Maneuver training is a critical component of unit training that synchronizes the execution of battle tasks and enables units to shoot, move, and communicate on the battlefield. Large-scale battalion and brigade maneuver training events are often the capstone training exercises that test and certify units for operational deployments abroad. Maneuver training builds on all of the individual skills that Soldiers possess and tests each echelon of command of the BCT. Platoons, companies, and battalions conduct maneuvers to ensure unit proficiency at each successive level of command within a BCT. Army TC 25-1 *Training Land* is the Army's definitive source for defining maneuver training land requirements. As part of the implementation of the Army's Proposed Action, each alternative installation would experience an increase in environmental impacts from maneuver training activities.

To support unit training, each platoon, company, battalion, and brigade must conduct maneuver events to ensure the operational capabilities of the BCT. Each platoon and company must train up to five weeks per year to meet maneuver-training requirements. In addition, each battalion must conduct semi-annual maneuvers lasting approximately three to four weeks each to certify its subordinate units, and each brigade must conduct maneuvers every 12 to 18 months and in advance of operational deployments. Army Field Manual (FM) 7-0 *Train to Win in a Complex World* (Department of the Army [DA], 2016) describes how the Army plans and prepares for training events. Army FM 3-96, *Brigade Combat Team*, describes the operations that must be rehearsed by BCTs in combat maneuver training.

Maneuver training requires use of maneuver training areas suitable for conducting combat tasks relative to unit size (e.g., squad, platoon, company, etc.). Installations balance the use of maneuver training areas based on frequency and intensity of use, environmental impacts, and mission requirements, resulting in land condition assessments. Army range and training area

managers use Army doctrine in tandem with these assessments to develop optimal maneuver area throughput capacities. The primary tool that the Army uses to assess and analyze training requirements and capacities is ARRM. ARRM is linked to several Army administrative and operational databases to ensure consistent requirements and capacities are provided, including those for BCTs. ARRM inputs include training asset inventories (e.g. amount of maneuver/training area in square kilometers, doctrinal training demand measured in acres and square kilometer x days [km^2 x days]), training requirements of Active and Reserve Component forces, and institutional training land requirements.

The Army measures doctrinal training demand in km^2 x days using the quantities, types and echelons of units required to train at each installation. TC 25-1 outlines the task, maneuver area requirements, annual repetitions and days per repetition for each type of unit to calculate km^2 x days. Using a tank platoon example, the task of "Attack" requires 3 km^2 of maneuver area, 2 annual repetitions, and 2 days per repetition that results in a training demand of 12 km^2 x days ([1x3 = 3 km^2] x 2 repetitions x 2 days = 12km^2 x days). Table 2.3-4 provides an excerpt of tank platoon requirements per TC 25-1. Maneuver/training area requirements of higher echelon units, for example BCTs, are calculated using the aggregated totals of their numerous subordinate units (e.g., battalions, companies, and platoons). Under the Proposed Action and Alternatives, an ABCT would doctrinally require 9,336 km^2 x days per year.

Table 2.3-4. Tank Platoon Maneuver/Training Area Requirements from TC 25-1

Units and Tasks	**Maneuver Area Requirements**	**Annual Repetitions**	**Days per Repetition**	**Totals*** (Area x Reps x Days)
Move	2 x 10 = 20 km^2	2	2	80 km^2 x days
Attack	1 x 3 = 3 km^2	2	2	12 km^2 x days
Defend	1 x 1 = 1 km^2	2	2	4 km^2 x days
Total				**96 km^2 x days**

*Totals column is not in TC 25-1 and is included to aid the understanding of how maneuver area requirements are calculated and aggregated.

Installation-specific training capacity is measured in square kilometers and/or acres using the asset inventory of amphibious, light, and heavy maneuver/training areas available. Increases or decreases in maneuver area throughput are measured by comparing doctrinal training demand

against installation-specific training capacity. For example, if an installation has a current demand of 100,000 km^2 x days, and has a capacity of 300,000 km^2 x days, its estimated throughput would be approximately 33 percent of capacity. In an ABCT gain scenario using this example, training demand would increase by 9,336 km^2 x days, resulting in a total training demand of 109,336 km^2 x days (36 percent of capacity). In this scenario, training demand would increase by approximately 3 percent from the previous level.

Table 2.3-5 provides a comparison of maneuver area throughput changes relative to each Proposed Action Alternative. Percentages are based on each installation's current training demand capacity with an ABCT gain scenario equating to an increase of 9,336 km^2 x days for each alternative, and an IBCT loss scenario for Alternatives 2 through 5 at Fort Carson resulting in a decrease of 8,951 km^2 x days.

Table 2.3-5. Change in Maneuver Area Throughput by Proposed Action Alternative

	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
Fort Carson	**+0.13%**	**-3.22%**	**-3.22%**	**-3.22%**	**-3.22%**
Fort Bliss		**+1.02%**			
Fort Hood			**+7.47%**		
Fort Riley				**+6.83%**	
Fort Stewart					**+6.74%**

Note: Increases are based on the additional doctrinal training requirements of an ABCT at 9,336 km^2 x days. Decreases are based upon the loss of IBCT doctrinal training requirements at 8,951 km^2 x days.

2.3.1.5. Maneuver Impact Miles (MIMs)

The Army uses a standardized methodology for comparing maneuver impacts of different units. This methodology takes the weights and authorized yearly mileages for unit vehicles, and converts them to a unit of measure called the Maneuver Impact Mile (MIM). The MIM is a unit of measure that the Army uses to anticipate maneuver damage and required repair costs for its training areas. To calculate MIMs, the Army determines an impact per mile measure relative to that of the M1 Abrams tank. The Army applies different physical characteristics of unit vehicles (weight, tire/track pressure, etc.) to make the conversion to M1 Abrams tank mile equivalents. An ABCT must execute approximately 130,000 MIMs of maneuver training annually to carry

out its doctrinal maneuver requirements in comparison to the 65,000 MIMs needed to support the doctrinal training of an IBCT. Table 2.3-6 compares the changes to BCT MIMs (number and percentage change) by installation among the Proposed Action alternatives.

Table 2.3-6. Change in BCT MIMs by Alternative (number and percentage change)

	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
Fort Carson	+65,000 / +22%	-65,000 / -22%	-65,000 / -22%	-65,000 / -22%	-65,000 / -22%
Fort Bliss	0	+130,000 / +36%	0	0	0
Fort Hood	0	0	+ 130,000 / +27%	0	0
Fort Riley	0	0	0	+130,000 / +50%	0
Fort Stewart	0	0	0	0	+130,000 / +50%

Note: MIM change reflected in the table is presented first by the increase (or decease) of doctrinal BCT MIMs by addition of an ABCT and then by the percent change of MIMs from existing baseline conditions.

As shown in Table 2.3-6, under Alternative 1 (Fort Carson IBCT-ABCT conversion), there would be an expected increase in maneuver intensity and impacts based upon the conversion of some wheeled vehicles to heavier tracked vehicles. Though the MIMs increase is identical for the other four installations, their percent increase varies as the number and types of existing BCTs at each installation vary. The other installations would experience an ABCT-gain scenario, which would represent an overall increase from current conditions.

2.3.1.6. Combat Unit Training

Training readiness is the Army's number one priority for units, and commanders train their units to be combat ready. "Battle Focus" is a concept used to derive training requirements, and units train according to their Mission Essential Task List (METL). This is derived from wartime operational plans (why they fight); specific (to unit) combat capabilities (how they fight); the operational environment (where they fight); directed missions (what they must do); and any external guidance. The Army trains Soldiers in individual skills, units on collective tasks, and different levels of units through multi-echelon training. The Army trains as it fights, as a

combined arms team. Training ranges and training lands allow Army units to fire weapons, maneuver as a combined arms team, and incorporate protective measures against enemy actions.

All Soldiers qualify with their individual weapon (rifle or pistol) at least twice annually. Crew-served weapons qualification varies by type of unit. This training is usually accomplished at the company level on fixed ranges described in TC 25-8 *Training Ranges.* Weapons system training (M1 Abrams Tank, Bradley Infantry Fighting Vehicle, and Attack Helicopter) consists of a series of "tables" and occurs on large range complexes.

All units must establish logistical and command and control operations in the installation's maneuver areas. From those maneuver area locations, the units will train on their mission essential tasks. The size of the area, and frequency and duration of the training exercises will vary by type of unit.

Units train to maintain proficiency on key tasks as defined by their METL. Training strategies and events for the two Army BCTs (ABCT and IBCT), and subordinate units affected under the Proposed Action are described in more detail below.

- ***Armored Brigade Combat Team.***

  Equipment. The ABCT consists of 4,182 Soldiers, 87 M1 Abrams tanks and 138 Bradley Infantry Fighting Vehicles. In addition to these armored tracked combat vehicles, the ABCT also possesses 18 M109 Paladin Self-propelled Howitzers, 18 M1064A3 Self-propelled 120-mm Mortars, tracked earthmoving vehicles, recovery vehicles, and an assortment of other tracked vehicles. The ABCT also has a large number and variety of wheeled-vehicles, to include light tactical trucks, medium trucks, and large cargo and fuel trucks. All vehicles are capable of on-road and off-road maneuver.

  Training. M1 Abrams Tank and Bradley Infantry Fighting Vehicle crews in the combined arms battalion practice and qualify on their vehicles on a series of four individual gunnery "tables" once every six months, and as sections and platoons once every 12 months. A company will complete a CALFEX once every 12 months on its own or as part of a battalion CALFEX. This training also occurs on large fixed ranges

such as the Multi-Purpose Training Range (MPTR) or Multi-Purpose Range Complex (MPRC) that have multiple lanes for mounted maneuver and live-fire target engagements.

The ABCT's smaller subordinate units will train on a specific event as many as four times per 12 months; the larger units may train as many as two times per 12 months.

- ***Infantry Brigade Combat Team.***

  Equipment. The modular IBCT consists of 4,203 Soldiers and possesses towed M777 155-mm artillery, light engineer equipment, and light tactical and medium and large cargo trucks. All vehicles are capable of on-road and off-road maneuver.

  Training. Infantry training is weapons intensive as individual Soldiers, crews, teams, and squads practice and qualify with a variety of weapons. Weapons qualification is a semi-annual requirement, practice firing is completed as time, ammunition, and other resources permit. Infantry units, from squad to company also participate in quarterly and semi-annual Live-Fire Exercises (LFXs) that include all weapons systems on a large and more complex range.

  Infantry units can incorporate airborne, airmobile, and air assault operations into their training. Like the ABCT, the IBCT's smaller subordinate units will train on a specific event as many four times per 12 months, the larger units such as the battalion may train as many as two times per 12 months.

2.3.2. Alternative 1 - Convert Fort Carson IBCT into ABCT

Under Alternative 1, the Army would convert the Fort Carson-stationed IBCT (2nd Infantry Brigade Combat Team, 4th ID [2-4 IBCT]) into an ABCT, and station the ABCT at Fort Carson. Fort Carson is home to three 4th ID BCTs:

- 1st Stryker Brigade Combat Team (1-4 SBCT);
- 2nd Infantry Brigade Combat Team (2-4 IBCT); and
- 3rd Armored Brigade Combat Team (3-4 ABCT).

Implementation of Alternative 1 would take the assigned IBCT, convert it into an ABCT, and station the ABCT at Fort Carson. This would realign the BCT force structure, and result in one SBCT and two ABCTs stationed at Fort Carson. An IBCT and ABCT have an approximate

commonality of 73 percent in personnel, and 80 percent in equipment. As of September 2015, all Active Component Army BCTs converted to the Army 2020 design, which assigned 4,182 Soldiers to an ABCT, and 4,203 Soldiers to an IBCT. Therefore, Fort Carson's Soldier population would decrease by 21 Soldiers under Alternative 1. Regarding major equipment changes, there would be an increase in tracked vehicle densities on Fort Carson. Specifically, tracked vehicles would increase by 132 Bradley Infantry Fighting Vehicles, 87 M1 Abrams tanks, 18 self-propelled Howitzers, and 18 self-propelled mortars.

2.3.2.1. Construction

To assign the IBCT to the garrison, and convert the IBCT to ABCT at the installation, no new garrison construction would be required (the implementation phase of conversion). ABCT personnel and equipment would be located within the converted IBCT's administrative and operational footprint located near Wilderness Road.

To bring Fort Carson's facilities up to the current Army standard, however, garrison construction is estimated at $19M for cantonment infrastructure improvements under Alternative 1. The existing facilities assigned to the IBCT were constructed to U.S. Army Corps of Engineers (USACE) standard design in 2009 for an IBCT, and would only need to be modestly expanded to meet the minimal functional requirements for an ABCT. The scope of work would involve expanding two existing small tactical equipment maintenance facilities (TEMFs) to medium TEMFs; constructing additional organizational parking; and constructing a new Distribution Company storage building with loading dock and secure open storage.

Construction would occur within the IBCT's existing and previously analyzed footprint near Wilderness Road (see Figure 2.3-1). No new ranges or range upgrades would be required under Alternative 1.

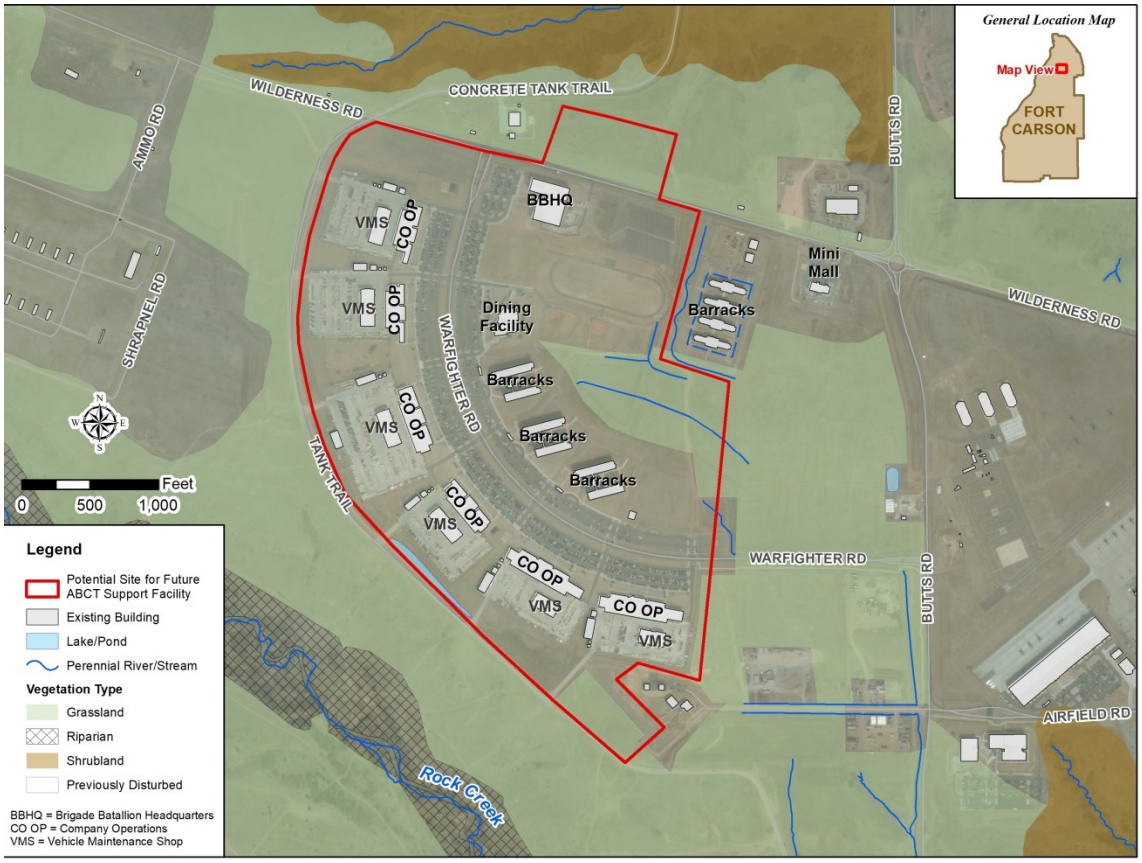

Figure 2.3-1. Future Infrastructure Improvements under Alternative 1

2.3.2.2. Training

Fort Carson and PCMS currently possess the range and maneuver land capacity to support an ABCT. Fort Carson's existing BCTs account for an approximate 292,000 MIMs load at full training capacity. A conversion from an IBCT to an ABCT could result in a net increase of 65,000 MIMs exercised if all ABCT doctrinal maneuver training occurs at Fort Carson (an approximate 22 percent increase). Fort Carson units would utilize PCMS to help offset this increase. No land expansion is proposed under Alternative 1.

2.3.2.2.1. PCMS

There is a potential for training to increase at PCMS. This training would be within the parameters analyzed in the 2015 PCMS EIS for training and operations at PCMS. The ROD for the EIS established new brigade-level training intensity measures and limits such training to 4.7 months per year to allow for sufficient time for training land to recover sustainably from training

events. The ROD includes mitigation measures that will reduce or eliminate adverse impacts. Even with the ABCT stationing, Fort Carson's units will not exceed the 4.7-month limitation. All mitigation measures are still in effect. There is also no new information about the Army's actions or the affected environment that would require supplementation of this EIS. For this reason, no further analysis is required for the effects of the Fort Carson IBCT-to-ABCT conversion at PCMS.

2.3.3. Alternative 2 – Reassign Fort Carson IBCT to Fort Bliss and Convert to ABCT

The Army would reassign Fort Carson's IBCT to Fort Bliss, convert into an ABCT, and station it at Fort Bliss under Alternative 2.

2.3.3.1. IBCT Loss at Fort Carson

Fort Carson would lose an IBCT under Alternative 2. This would equate to a loss of 4,203 BCT Soldiers.

Fort Carson would not require additional construction and infrastructure costs. In addition, IBCT administrative and operational facilities would become vacant and available for reuse and/or decommissioning.

Fort Carson would reduce live fire and maneuver training intensity and throughput at Fort Carson and PCMS.

2.3.3.2. ABCT Gain at Fort Bliss

Fort Bliss would gain an ABCT under Alternative 2. Fort Bliss is home to three 1st Armored Division (AD) BCTs:

- 1st Stryker Brigade Combat Team (1-1 SBCT);
- 2nd Armored Brigade Combat Team (2-1 ABCT); and
- 3rd Armored Brigade Combat Team (3-1 ABCT).

Implementation of Alternative 2 would increase the BCT force structure, resulting in one SBCT and three ABCTs stationed at Fort Bliss.

Fort Bliss' Soldier population would increase by 4,182 under Alternative 2. In addition, there would be an increase in tracked vehicle densities on Fort Bliss. Specifically, tracked vehicles

would increase by 132 Bradley Infantry Fighting Vehicles, 87 M1 Abrams Tanks, 18 self-propelled Howitzers, and 18 self-propelled mortars.

To assign the IBCT to the garrison, and convert the IBCT to ABCT at the installation, no new garrison construction would be required during the implementation phase under Alternative 2. Fort Bliss has facility capacity to absorb personnel and equipment while implementing the conversion process. ABCT personnel and equipment would be located within the existing BCT footprint on Central Fort Bliss. To bring Fort Bliss's facilities up to the current Army standard for an ABCT, cantonment infrastructure improvements would cost an estimated $195M. Specifically, construction of administrative, supply and maintenance facilities for two battalion-sized elements would be required on Central Fort Bliss. In addition, construction of an extra-large TEMF and parking area for relocated units would be required. New construction and improvements would predominantly occur within existing developed areas and areas containing maintained landscaping and small fragments of shrubland and grassland (See Figure 2.3-2). No new ranges or range upgrades would be required under Alternative 2.

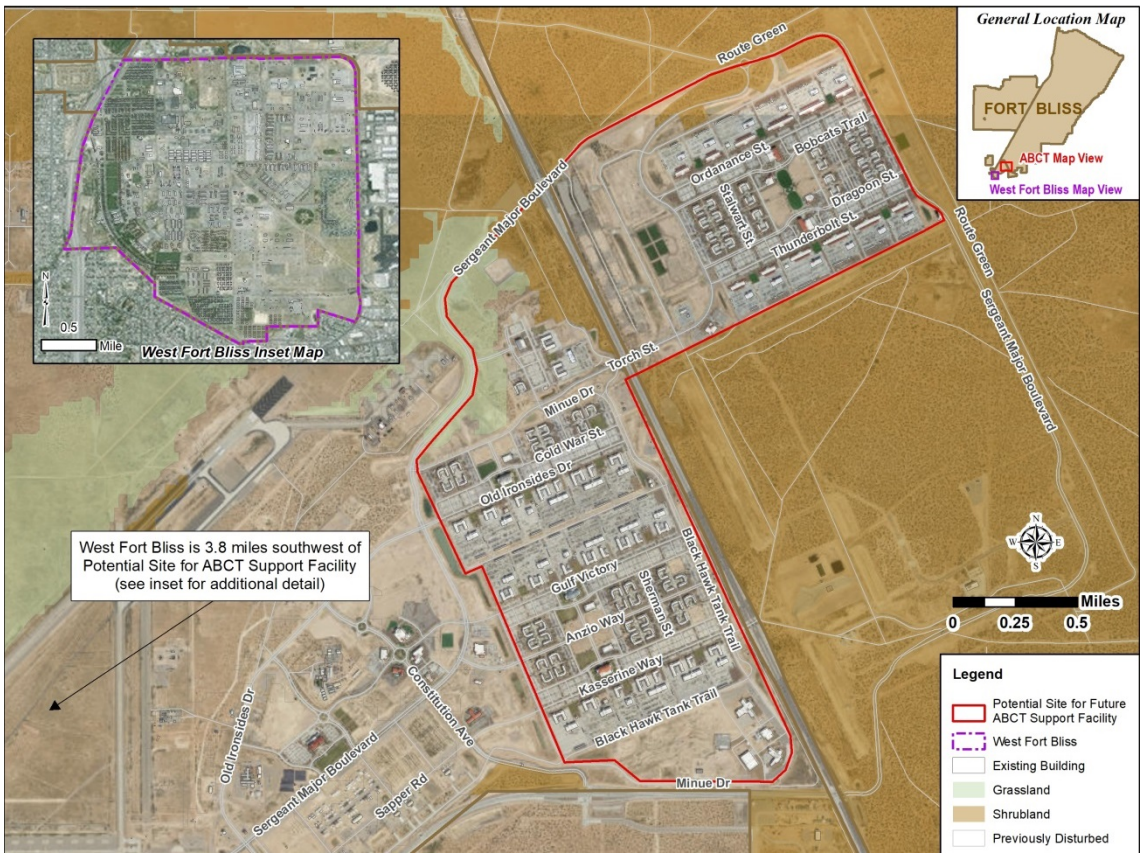

Figure 2.3-2. Future Infrastructure Improvements under Alternative 2

Fort Bliss possesses the range and maneuver land capacity to support an additional ABCT. Doctrinal MIM calculations for Fort Bliss's three existing BCTs equal 357,000 MIMs. The addition of an ABCT under Alternative 2 would increase BCT MIMs by 130,000, totaling 487,000 MIMs (an approximate 36 percent increase).

2.3.4. Alternative 3 – Reassign Fort Carson IBCT to Fort Hood and Convert to ABCT

The Army would reassign Fort Carson's IBCT to Fort Hood, convert into an ABCT, and station it at Fort Hood under Alternative 3.

2.3.4.1. IBCT Loss at Fort Carson

Refer to Section 2.3.3.1.

2.3.4.2. ABCT Gain at Fort Hood

Fort Hood would gain an ABCT under Alternative 3. Fort Hood is home to three 1st Cavalry (CAV) Division (CD) BCTs:

- 1st Armored Brigade Combat Team (1-1 ABCT);
- 2nd Armored Brigade Combat Team (2-1 ABCT);
- 3rd Armored Brigade Combat Team (3-1 ABCT), and
- is also home to the 3rd CAV Regiment (SBCT), which is under the command of III Corps.

Implementation of Alternative 3 would increase the BCT force structure, resulting in one SBCT and four ABCTs stationed at Fort Hood.

Fort Hood's Soldier population would increase by 4,182 under Alternative 3. In addition, there would be an increase in tracked vehicle densities on Fort Hood. Specifically, tracked vehicles would increase by 132 Bradley Infantry Fighting Vehicles, 87 M1 Abrams Tanks, 18 155-mm Self-propelled Howitzers, and 18 120-mm self-propelled mortars.

To assign the IBCT to the garrison, and convert the IBCT to ABCT at the installation, no new garrison construction would be required during the implementation phase of Alternative 3. Fort Hood has the capacity to host an additional BCT unit in existing legacy facilities. The planned inactivation of 85 Civil Affairs Brigade (CA BDE) in 2018, as well as the previous inactivation of 4/1 CD in 2013, set conditions for facility support for the additional ABCT. Fort Hood has a detailed brigade-stationing plan that includes the possible increase of one ABCT by FY19. This plan includes the required barracks; Battalion and Brigade HQ; motor pool; and dining facilities to support the current Fort Hood mission, and the addition of an ABCT.

To bring Fort Hood's facilities up to the current Army standard for an ABCT, cantonment infrastructure improvements would cost an estimated $185M. Construction requirements include vehicle maintenance shops; barracks; company, battalion, and brigade HQs; unit storage and classrooms; and a tactical unmanned aerial vehicle (UAV) hangar. New construction and improvements would predominantly occur within existing developed areas and areas of maintained landscaping (See Figure 2.3-3).

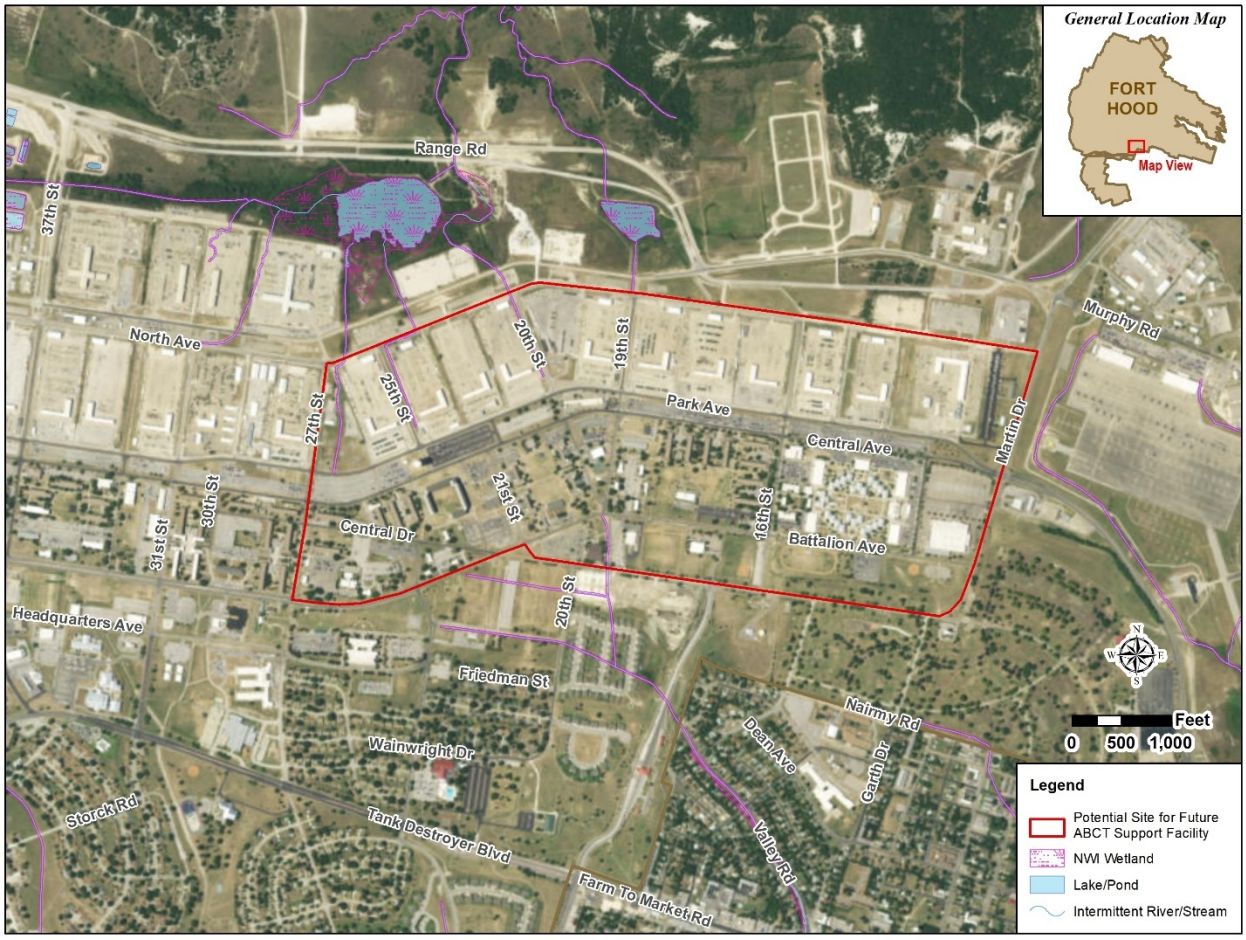

Figure 2.3-3. Future Infrastructure Improvements under Alternative 3

No new ranges or range upgrades would be required under Alternative 3. Fort Hood does, however, plan to modify 27 ranges due to life cycle replacement regardless of whether the 16th ABCT comes to the installation. These ranges are not in the scope of this PEA. They will be covered by other NEPA analyses, as required.

Fort Hood possesses the range and maneuver land capacity to support an additional ABCT. Doctrinal MIM calculations for Fort Hood's four existing BCTs equal 487,000 MIMs. The addition of an ABCT under Alternative 3 would increase BCT MIMs by 130,000, totaling 617,000 MIMs (an approximate 27 percent increase).

2.3.5. Alternative 4 – Reassign Fort Carson IBCT to Fort Riley and Convert to ABCT

The Army would reassign Fort Carson's IBCT to Fort Riley, convert into an ABCT, and station it at Fort Riley under Alternative 4.

2.3.5.1. IBCT Loss at Fort Carson

Refer to Section 2.3.3.1.

2.3.5.2. ABCT Gain at Fort Riley

Fort Riley would gain an ABCT under Alternative 4. Fort Riley is home to two 1st ID ABCTs:

- the 1st ABCT (1-1 ABCT), and
- 2nd ABCT (2-1 ABCT).

Implementation of Alternative 4 would increase the BCT force structure, resulting in three ABCTs stationed at Fort Riley.

Fort Riley's Soldier population would increase by 4,182 under Alternative 4. In addition, there would be an increase in tracked vehicle densities on Fort Riley. Specifically, tracked vehicles would increase by 132 Bradley Infantry Fighting Vehicles, 87 M1 Abrams Tanks, 18 self-propelled Howitzers, and 18 self-propelled mortars.

To assign the IBCT to the garrison, and convert the IBCT to ABCT at the installation, no new garrison construction would be required during the implementation phase under Alternative 4. Fort Riley would use some existing facilities left vacant from the "Foreign Security Force Transition Team" moving to Fort Polk, LA.

To bring Fort Riley's facilities up to the current Army standard for an ABCT, cantonment infrastructure improvements would cost an estimated $475M. Construction requirements include vehicle maintenance shops; barracks; company, battalion and brigade HQs; unit storage and classrooms; a tactical UAV hangar; and petroleum, oil, and lubricant (POL) storage. No building removal would be required and new construction would predominantly occur within existing developed areas and areas of maintained landscaping (See Figure 2.3-4).

Figure 2.3-4. Future Infrastructure Improvements under Alternative 4

Fort Riley has ample buildable acreage to construct additional facilities in support of an added BCT. Fort Riley would utilize new relocatable buildings as an interim stationing solution until new permanent facilities are constructed.

No new ranges or range upgrades would be required under Alternative 4. The addition of an ABCT would create M1 throughput challenges because of the lack of contractor-provided digital range time. Current 1 ID deployment and Operations Tempo would mitigate challenges.

Fort Riley possesses the range and maneuver land capacity to support an additional ABCT. Doctrinal MIM calculations for Fort Riley's two existing BCTs equal 260,000 MIMs. The addition of an ABCT under Alternative 4 would increase BCT MIMs by 130,000, totaling 390,000 MIMs (50 percent increase).

2.3.6. Alternative 5 – Reassign Fort Carson IBCT to Fort Stewart and Convert to ABCT

The Army would reassign Fort Carson's IBCT to Fort Stewart, convert it into an ABCT, and station it at Fort Stewart under Alternative 5.

2.3.6.1. IBCT Loss at Fort Carson

Refer to Section 2.3.3.1.

2.3.6.2. ABCT Gain at Fort Stewart

Fort Stewart would gain an ABCT under Alternative 5. Fort Stewart is home to two 3rd ID ABCTs:

- 1st Armored Brigade Combat Team (1-3 ABCT), and
- 2nd Armored Brigade Combat Team (2-3 ABCT).

Implementation of Alternative 5 would increase the BCT force structure, resulting in three ABCTs stationed at Fort Stewart.

Fort Stewart's Soldier population would increase by 4,182 under Alternative 5. In addition, there would be an increase in tracked vehicle densities on Fort Stewart. Specifically, tracked vehicles would increase by 132 Bradley Infantry Fighting Vehicles, 87 M1 Abrams Tanks, 18 self-propelled Howitzers, and 18 self-propelled mortars.

Some garrison construction would be required during the implementation phase of IBCT reassignment and conversion into an ABCT under Alternative 5. Fort Stewart would predominantly reutilize existing facilities for personnel and equipment, although two buildings

would require renovation and relocation. New construction would predominantly occur within existing developed areas and areas of maintained landscaping (See Figure 2.3-5).

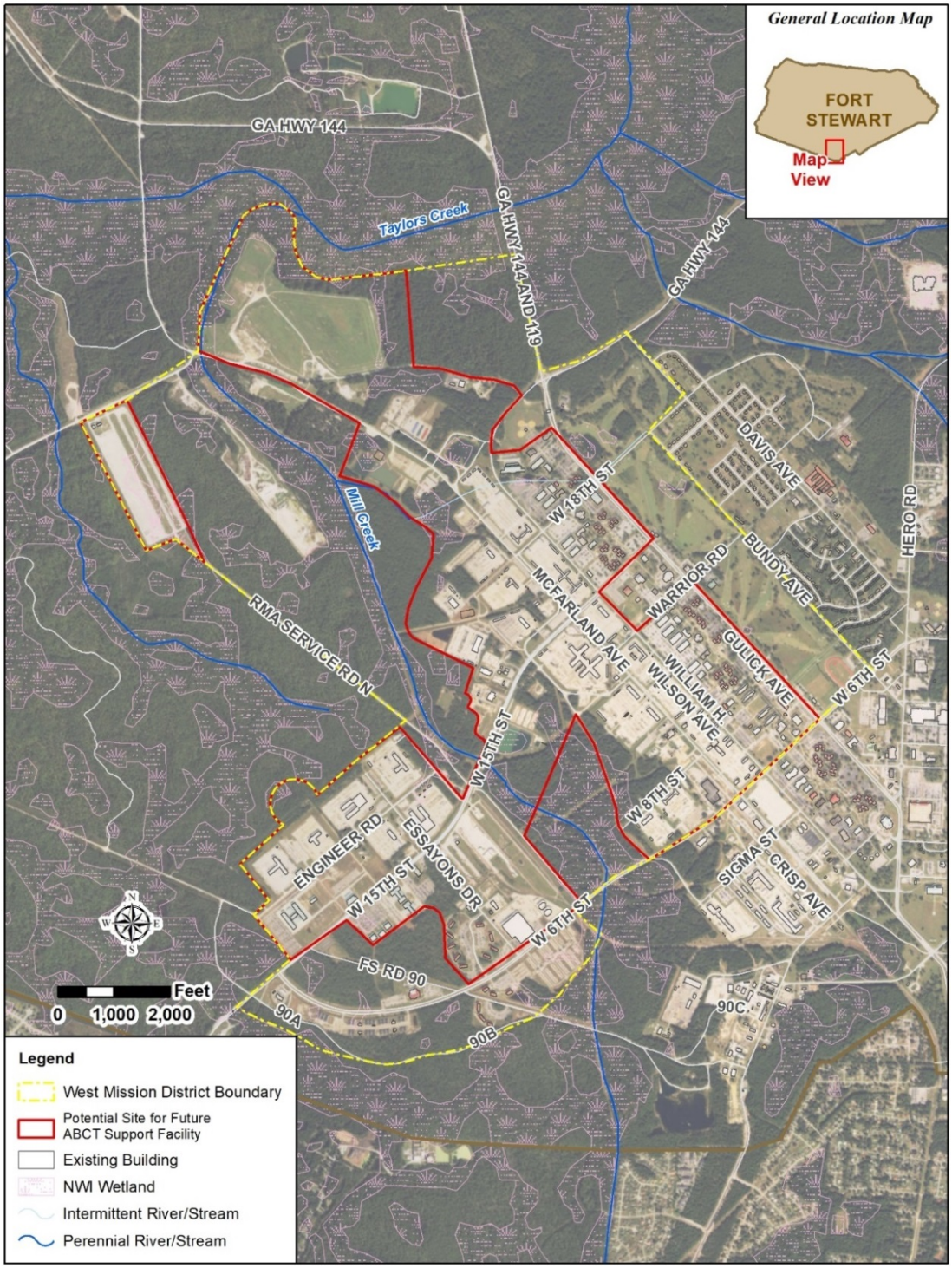

Figure 2.3-5. Future Infrastructure Improvements under Alternative 5

To bring Fort Stewart's facilities up to the current Army standard for an ABCT, cantonment infrastructure improvements would cost an estimated $396M. Construction requirements include vehicle maintenance shops; barracks; company, battalion; and brigade HQs; unit storage and classrooms; a tactical UAV hangar; and physical fitness center.

Construction would take place within the notional growth area identified in the 2016 West Mission District Area Development Plan on a combination of previously disturbed and undisturbed land. The existing road and utility network in this district has the capability to handle the additional capacity. The West Mission District is identified in the Fort Stewart Real Property Master Plan Vision Framework Plan.

To provide training support for three ABCTs, Fort Stewart requires a Targetry Range Automated Control and Recording (TRACR) upgrade to instrumentation and Targetry; replacement of legacy Multipurpose Range Complex (MPRC) – Heavy; an additional conduct of fire and call for fire trainer simulation facility; and additional training support and range warehouse capacity. Fort Stewart possesses the range and maneuver land capacity to support an additional ABCT. Doctrinal MIM calculations for Fort Stewart's two existing BCTs equal 260,000 MIMs. The addition of an ABCT under Alternative 5 would increase BCT MIMs by 130,000, totaling 390,000 MIMs (50 percent increase).

2.4. Alternatives Eliminated from Further Review

The Army considered and eliminated ten additional installations from this analysis based on the screening criteria in Section 2.1. None of the eliminated installations passed the ABCT Presence, Mission Enabler, and Operational Urgency screening criteria. One of the four screening criteria, construction requirements, was not considered in Table 2.4-1 because these installations did not meet all three of the other criteria. A comparison of the eliminated alternatives against the applied screening criteria is shown in Table 2.4-1.

Another possibility was stationing the ABCT in Europe. This course of action would not have met the need for the Proposed Action for a number of reasons. Facilities are not available and would have to be built. This unreasonably extends the date the unit could be established. It also greatly increases cost. The ABCT presence in Europe can be met through unit rotations.

Table 2.4-1. Comparison of Eliminated Alternatives versus Evaluation Criteria

Installation	**Screening Criteria**		
**state abbreviations are postal codes*	**ABCT Presence**	**Mission Enablers**	**Operational Urgency**
Fort Benning, GA	None	None	Does Not Meet
Fort Bragg, NC	None	82nd Airborne Division HQ	Does Not Meet
Fort Campbell, KY	None	101st Airborne Division HQ	Does Not Meet
Fort Drum, NY	None	10th Mountain Division HQ	Does Not Meet
Fort Knox, KY	None	None	Does Not Meet
Fort Lewis, WA	None	7th Infantry Division HQ	Does Not Meet
Fort Polk, LA	None	None	Does Not Meet
Fort Richardson, AK	None	None	Does Not Meet
Fort Wainwright, AK	None	None	Does Not Meet
Schofield Barracks, HI	None	25th Infantry Division HQ	Does Not Meet

3. AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This chapter provides a consolidated discussion of the affected environment (baseline environmental conditions) at each installation, and the environmental and socioeconomic impacts anticipated because of the implementation of the alternatives. Section 3.1 provides the framework for description of baseline conditions and impact assessment. Sections 3.2 through 3.6 present a discussion of each installation considered under this Proposed Action: Fort Carson (Section 3.2), Fort Bliss (Section 3.3), Fort Hood (Section 3.4), Fort Riley (Section 3.5), and Fort Stewart (Section 3.6), respectively.

3.1. Impact Assessment Methodology

Section 3.1.1 provides a description of baseline and data sources used to prepare this PEA. Section 3.1.2 discusses the Army's range and training land management that the PEA factors in consideration for assessing the extent and potential for impacts. Section 3.1.3 discusses impact assessment methodology including thresholds of significance.

The Army determined that several resources would not be affected by the Proposed Action Alternatives. Therefore, a detailed analysis of these topics is not presented in this chapter. Section 3.1.4 presents a discussion of valued environmental considerations (VECs) carried through for further analysis within this PEA and justification for those VECs dismissed from further discussion.

3.1.1. Introduction and Description of Baseline Data and Sources

The baseline for the Proposed Action is considered the installation's current condition in 2018 to include the implementation of HQDA stationing decisions that have been made, but not implemented. The PEA incorporates the following types of data to characterize the affected environment discussion and to assess Army and installation-level management of resources:

- Installation Integrated Natural Resources Management Plans (INRMPs), which detail natural resources on the installation and guide the implementation of a natural resources program to ensure compliance with applicable environmental laws and regulations. The INRMPs include procedures and best management practices (BMPs) used by the installation to ensure that potential impacts to the environment from construction, training, and operational activities are minimized.

- Installation Integrated Cultural Resources Management Plans (ICRMPs), which detail the cultural history of the installation and discuss installation cultural resources. The ICRMPS also guide the implementation of a cultural resources program at each installation to ensure compliance with applicable laws and regulations.
- Installation Fugitive Dust Control Plans, which focus on control measures to minimize construction- and training-related fugitive dust emissions and to avoid exceeding the threshold levels established by state regulations. These plans describe fugitive dust sources and the technologically feasible and economically reasonable control measures and operating procedures that the installation can use to minimize dust on the installation.
- Installation Real Property Management Plan (RPMP), which focuses on the long-term planning of where facilities go on the installation, and includes various parameters related to land use and construction that help reduce potential environmental impacts.
- Installation Stormwater Management Plans (SWMPs), which outline management practices, control techniques, system designs, engineering methods, and other provisions appropriate for the control of pollutants in discharges. These plans also include the BMPs that the installation can implement for stormwater quality and quantity control.
- Installation Operational Noise Management Plans (IONMPs), which provide a methodology for the installation to analyze exposure to noise and safety hazards associated with military operations, and present land use guidelines for achieving compatibility between the Army and surrounding communities. Elements of the plans include discussions of noise and vibration, mitigation techniques, noise abatement procedures, encroachment/training issues, recommendations for working with local communities, and noise modeling.
- Installation-agency agreements (e.g., programmatic agreements [PA]; Biological Opinions). These agreements outline processes to ensure appropriate consideration of cultural and biological resources on the installation in accordance with the National Historic Preservation Act of 1966 (NHPA) and Section 7 of the Endangered Species Act (ESA), respectively, during military training.

- Public information from databases and publications managed and authored by U.S. Environmental Protection Agency (USEPA), U.S. Army Public Health Command (USAPHC), National Wetland Inventory (NWI), U.S. Census, Bureau of Economics, and Department of Transportation.
- Regional and local reports, including Natural Resources Conservation Service (NRCS) Soil Surveys.
- Previous NEPA documentation.
- Additional publications, research, and surveys.
- County Planning Department/county records/online databases and plans.
- Agency consultation.

3.1.2. Range and Training Land Management

3.1.2.1. Military Training and Assessment of Impacts

Military training exercises such as off-road maneuvers, digging of foxholes, establishment of bivouac areas and range firing can have negative effects on land resources. Maneuvering heavy tracked and wheeled vehicles across even the best-suited landscapes can cause damage to vegetation, cultural resources, soils, surface water, and wetland resources. These types of resource disturbances include:

- Loss or damage to vegetation from crushing and shearing plants, damage to root systems, spread of invasive species, and increased potential for wildfire;
- Impacts to surface water and wetland features (e.g., streambank/streambed/wetland disturbance, changes to drainage and surface hydrology), and degradation of water quality and wetlands from erosion and sedimentation;
- Loss or degradation of terrestrial and aquatic habitat, loss of species (including incidental take of protected species), nests and burrows, or species avoidance during training events;
- Loss of a cultural resource or integrity of the resource;
- Soil compaction, displacement, erosion and formation of erosion gullies; and/or
- Loss of soil productivity including fertility and topsoil.

The intensity, severity, and types of resulting environmental impacts depend largely upon the type of units involved in training, where training activities are concentrated, and the duration of the action. Low impact activities are those that generally do not disturb the vegetation or soils and require no rehabilitation. Medium impact activities may cause some disturbance or change that may require minor rehabilitation or may recover over time without aid. High impact activities typically cause substantial change to the soils or vegetation of the area, which require timely attention to avoid or minimize long-term alteration of existing conditions. Some training activities may be conducted at different levels of disturbance.

As stated in Section 2.3.1.4, installations balance the use of maneuver training areas based on frequency and intensity of use, environmental impacts, and mission requirements, resulting in land condition assessments. As part of this effort, installations adhere to the Army's Sustainable Range Program (SRP) as outlined in Army Regulation (AR) 350-19, and implement the Integrated Training Area Management (ITAM) program, both of which would apply to ABCT training and use of maneuver and training lands.

3.1.2.2. ITAM Program

ITAM integrates the mission requirements derived from the Range and Training Land Program (RTLP) with environmental requirements, environmental management practices, and land maintenance requirements to optimize training. ITAM also establishes policies and procedures to achieve optimum, sustainable use of training and testing lands by implementing a uniform land management program. The ITAM program monitors training activities, institutes projects to minimize training damage, and educates units to limit damage to training lands. ITAM is a dynamic program with a goal of ensuring no net loss in the capability of installation training land to support the military missions of the installation.

3.1.2.3. Scheduling of Training Events

It is in the Army's interest to sustain installation lands for future training activities. As part of training land management, units coordinate training exercise plans with the environmental and Range Operations offices to develop site-specific stewardship controls for the unit. This coordination results in maintaining training areas in a way that meets the mission training goals, and avoids environmental impacts that would compromise the training mission or conflict with state or federal regulations.

The Army considers several factors when implementing its training mission and when selecting sites for training exercises. Some of the factors considered include climatic, biological, water, and cultural resource conditions in the training areas, and troop safety. For example, in order to avoid sensitive areas such as wetlands or cultural sites, some areas may be restricted to dismounted training or have off-road vehicle maneuvers prohibited. Temporary restrictions may occur due to protected species or conservation laws surrounding certain species (e.g., nesting golden eagles protected under the Bald and Golden Eagle Protection Act [BGEPA]). This includes notifying trainers at radio control and posting a Notice to Airmen (NOTAM) to pilots of the seasonal restrictions around active golden eagle nests. In addition, temporary restrictions may be implemented to allow for recovery time due to natural occurrences (e.g., heavy precipitation).

3.1.2.4. Land Restoration

Unit leaders are responsible for informing Soldiers of their environmental responsibilities such as cleanup of bivouac areas, assembly areas, command post locations, logistics facilities, and all other areas that are occupied or traversed. Commanders are responsible for ensuring that all field entrenchments or earthworks are filled in and mounded and that all items such as barbed wire, ammunition, pyrotechnics, and explosives are removed from the training areas. After completing training exercises, units must undergo a Range Operations clearance inspection to ensure all affected areas are restored to their original configuration. In some cases, units may be required to seed dig sites. This coordination and follow up inspection process helps to preclude erosion and to reduce the possibility of sedimentation runoff in the watershed.

Five basic management techniques can be used to minimize military training effects to the land resources: (1) limit total use, (2) redistribute use, (3) modify kinds of uses, (4) alter the behavior of use, and (5) manipulate resources for increased durability.

3.1.3. Approach for Analyzing Impacts

Context and intensity are taken into consideration in determining a potential impact's significance, as defined in 40 CFR 1508.27. The context means that the significance of an action must be analyzed in several contexts such as the affected region, the affected interests, and the locality. The intensity of a potential impact refers to the impact's severity and includes consideration of beneficial and adverse impacts, the level of controversy associated with a

project's impacts on quality of the human environment, whether the action establishes a precedent for future actions with significant effects, the level of uncertainty about project impacts, and whether the action threatens to violate Federal, state, or local law requirements enacted for the protection of the environment. The severity of environmental impacts is characterized as none/negligible, minor, moderate, significant, or beneficial as described:

- **None/Negligible** – No measurable impacts are expected to occur. A negligible impact may locally alter the resource, but would not measurably change its function or character.
- **Minor** – Primarily short-term but measurable adverse impacts are expected. Impacts on the resource may be slight.
- **Moderate/ less than significant** – Noticeable adverse impacts that would have a measurable effect on a wide scale (e.g., outside the footprint of disturbance or on a landscape level). If moderate impacts were adverse, they would not exceed limits of applicable local, state, or Federal regulations.
- **Significant** – A significant impact may exceed limits of applicable local, state, or Federal regulations or would untenably alter the function or character of the resource. These impacts would be considered significant unless managed by mitigation efforts to a less-than-significant level.
- **Beneficial** – Impacts would benefit the resource/issue.

The PEA considers impacts that range from none to moderate and beneficial as less than significant. Chapter 4 provides a summary of environmental impacts. Each alternative sub-section within this chapter includes a table of anticipated impacts associated with the respective installation.

In order to enable a managed and systematic analysis, the resource areas have been categorized into 12 VECs, as identified in Table 3.1-1. To maintain consistent evaluation of impacts in this PEA, the Army established thresholds of significance for each resource area (see Table 3.1-1). The Army developed these thresholds to take into account substantive environmental regulations and ensure an objective analysis of anticipated impacts. Although some thresholds have been so designated based on legal or regulatory limits or requirements, others reflect some discretionary

judgment on the part of the Army. Quantitative and qualitative analyses have been used, as appropriate, in determining whether, and the extent to which, a threshold is exceeded.

It must be remembered, however, that significance is a matter of context and intensity. Loss of a small number of trees in an arid area with few trees could be significant while loss of the same number of trees in a forested area might not. Any variation in the significance criteria is set out in the discussion of impacts for specific locations. In addition, an impact may trigger one of these thresholds, but mitigation could reduce the impact to less-than-significant. Also, note that regions of influence (ROI) may vary at installations because of specific circumstances. In addition, the context of the affected environment at a given installation may mean that a site-unique threshold is applicable.

Based on the selected alternative, additional installation site-specific analyses will be conducted, if required, to address actions described in Chapter 2 necessary for the installation to support ABCT stationing (e.g., MILCON, range/facility upgrades). Implementation of the selected alternative may require site-specific follow-on NEPA analysis to evaluate local siting considerations and other environmental issues.

3.1.4. VECs Considered for Analysis

In compliance with the NEPA and CEQ regulations, the description of the affected environment focuses on those resources and conditions potentially subject to effects from implementing the Proposed Action. CEQ regulations encourage NEPA analyses to be as concise and focused as possible. This is in accordance with CEQ regulations at 40 CFR 1500.1(b) and 1500.4(b): "…NEPA documents must concentrate on the issues that are truly significant to the action in question, rather than amassing needless detail….prepare analytic rather than encyclopedic analyses."

Table 3.1-1 presents each VEC and corresponding ROI and thresholds of significance. The table also identifies which VECs are analyzed in this PEA and which VECs are dismissed from further analysis; each includes an accompanying rationale. In conducting this analysis, a qualified subject matter expert (SME) reviewed the potential direct and indirect effects of the No Action Alternative and the Proposed Action Alternatives relative to each VEC. The SME carefully analyzed and considered the existing conditions of each VEC within the Proposed Action's ROI. Through this analysis, it was determined that, for several VECs and VEC sub-components,

negligible adverse effects would occur. This included land use, noise, geology, groundwater, floodplains, airspace, facilities, energy demand and generation, utilities, hazardous materials, hazardous waste, and human health and safety. Section 3.1.5 provides a more detailed description of VECs carried forth for further analysis within Sections 3.2 through 3.6 of this PEA.

Table 3.1-1 VEC Assessment Criteria and Level of Assessment

VEC	ROI	Thresholds of Significance	Dismissed from further Analysis?	Rationale for Analyzing Further or Not
Land Use	Land use within and adjacent to the installation.	Impacts to land use would be considered significant if the land use were incompatible with existing military land uses and designations (including recreation). These impacts may conflict with Army land use plans, policies, or regulations, or conflict with land use off-post.	Yes	The Proposed Action would not pose conflicts with off-post land uses. Required garrison construction to support the ABCT would occur within existing cantonment areas. Live-fire and maneuver training activities would be similar to the types of training of existing ABCTs at the installations and occur within existing range and training lands. Sustainability of training lands would continue to be managed and monitored according to the Army's Sustainable Range Program and through ITAM Program (see Section 3.1.2). Therefore, no further analysis is required.
Air Quality and Greenhouse Gases (GHG)	Installation-specific Air Quality Control Region.	An impact to air quality would be considered significant if the Proposed Action were to generate emissions which: • Did not meet Clean Air Act §176 conformity determination requirements to conform with the SIP/TIP • Substantially increase GHG emissions, or • Contribute to a violation of any Federal, state, or local air regulation.	No	The addition of an ABCT would result in increased stationary source and vehicle emissions and potentially an increase in fugitive dust emissions at the selected installation. This resource area is further discussed in each installation section.
Noise	Areas adjacent to and within the installation.	Impacts would be considered significant if noise from Army actions were to cause harm or injury to on- or off-post communities, or exceed applicable environmental noise limit guidelines.	Yes	All five installations currently have at least one ABCT. As the Proposed Action does not introduce new types of training noise or equipment within the installation, peak noise levels would not change. Live-fire and maneuver training associated with the Proposed Action would be conducted within existing range and training lands already used for ABCT training. The addition of an ABCT, however, would increase the number of rounds fired within the installation by approximately 3,300 155-mm artillery rounds and 8,000 120-mm tank

VEC	ROI	Thresholds of Significance	Dismissed from further Analysis?	Rationale for Analyzing Further or Not
				rounds. As these activities would occur on locations frequently used for ABCT training, noise contours within the installation would not be anticipated to increase greater than 20 percent, and noise impacts would be minor. An additional ABCT unit would not change existing noise zones within on-post communities or within communities adjacent to the installation. The Army would continue to maintain their Army Compatible Use Buffer program to prevent conflicts with adjacent off-post land users including effects of military training noise. Garrison construction activities would be temporary and both construction and training activities would abide by the installation's IONMP. The selected installation would update noise contours based on the additional ABCT unit training to ensure noise effects are minimized and training activities conform to the installation's IONMP.
Natural Resources	Biological resources within the cantonment, range, and maneuver training areas.	Impacts to biological resources would be considered significant if Army actions were to result in: • Substantial permanent conversion or net loss of habitat at the landscape scale, • Long-term loss or impairment of a substantial portion of local habitat (species-dependent), • Loss of populations of species, or • Unpermitted or unlawful "take" of ESA protected threatened or endangered species, or species protected under the BGEPA or MBTA.	No	The Proposed Action and related construction and training activities could adversely impact natural resources at the installation from increased ground disturbance and the potential for related vegetation loss, habitat degradation, and potential spread of invasive species. As a result, this resource area is further discussed in each installation section.
Cultural Resources	Cultural Resources within the cantonment, range,	Impacts to cultural resources would be considered significant if they cause direct or indirect alteration of the	No	Significant impacts would occur if there were substantial concerns raised by Indian Tribes regarding potential impacts to properties of religious and cultural

VEC	ROI	Thresholds of Significance	Dismissed from further Analysis?	Rationale for Analyzing Further or Not
	and maneuver training areas.	characteristics that qualify a property for inclusion on the NRHP (may include physical destruction, damage, alteration, removal, change in use or character within setting, neglect causing deterioration, transfer, lease, sale), and fail to follow the existing Section 106 process.		significance to those tribes or organizations; or direct or indirect alteration of the characteristics that qualify a property for inclusion in the NRHP (may include physical destruction, damage, alteration, removal, change in use or character within setting, neglect causing deterioration) without appropriate mitigation."
Geology and Soils	Geology and Soils within the cantonment, range, and maneuver training areas.	Impacts on geology, topography, and soils would be considered significant if: • The landscape could not be sustained for military training over a wide area, or • Excessive soil losses were to impair plant growth.	Yes (geology) No (soils)	Training would be similar to existing ABCT training at the installation and in designated training and maneuver areas. Both construction and training activities would have the potential for surficial (soil) impacts but impacts to geological resources are not anticipated. As a result, no further analysis is required for geology. Soil resources are further discussed in each installation section.
Socio-economics	Socioeconomic and Environmental Justice factors within the installation, and immediate surrounding communities and counties.	Impacts to socioeconomics and environmental justice would be considered significant if they were to cause: • Substantial change to the sales volume, income, employment or population of the surrounding ROI, • Disproportionate adverse economic, social, or health impacts on minority or low-income populations, or • Substantial disproportionate health or safety risk to children.	No	The Proposed Action could potentially affect socioeconomic conditions within and surrounding the installation by addition of a brigade unit or loss of an entire brigade (Fort Carson only). As a result, this resource area is further discussed in each installation section.
Traffic and Transportation	Public roadways and key access points within and near the installation; roadways within installation boundaries.	Impacts to traffic and transportation would be considered significant if Army actions: • Substantially degrades traffic flow during peak hours, or • Substantially exceed road capacity and design.	No	The addition of an ABCT and related Soldier and civilian support populations could adversely affect traffic conditions and the integrity of local roadways. As a result, this resource area is further discussed in each installation section.

VEC	ROI	Thresholds of Significance	Dismissed from further Analysis?	Rationale for Analyzing Further or Not
Water Resources	Watersheds, state-designated stream segments, and groundwater aquifers associated with the installation. USACE jurisdictional "waters of the U.S." and wetland resources within the installation.	Impacts to water resources would be considered significant if Army actions: • Result in an excess sediment load in installation waters, affecting impaired resources, • Result in unpermitted direct impacts to waters of the U.S., • Substantially affect surface water drainage or stormwater runoff, including floodwater flows, • Substantially affect groundwater quantity or quality, or • Do not comply with policies, regulations, and permits related to wetlands conservation and protection.	No (surface waters) No (wetlands) Yes (groundwater) Yes (floodplains)	The Proposed Action and related training and construction activities could adversely impact surface water and wetland resources within the installation from training and construction activities generating ground disturbance. Surface water quality could be directly impacted by the Proposed Action and indirectly by sedimentation/erosion. As a result, this resource area is further discussed in each installation section. Training or construction activities under the Proposed Action would not change the quality or use of groundwater aquifers. Incidental spills from equipment would be managed through installation Spill Prevention Control and Countermeasures Plan. In addition, the Proposed Action would not result in adverse impacts associated with the occupancy and modification of floodplains per EO 11988, *Floodplain Management*. Therefore, no further analysis is required for groundwater and floodplains.
Airspace	Airspace above and surrounding the installation.	An impact to airspace would be considered significant if the Proposed Action violates Federal Aviation Administration safety regulations or causes a substantial infringement of private, or commercial flight	Yes	No change would occur to existing airspace designations. Therefore, no further analysis is required.
Facilities, Energy Demand and Generation, and Utilities	Facilities within the installation. Utilities within the installation and immediate surrounding communities and counties.	Impacts to facilities, energy demand and generation, and utilities would be considered significant if the Proposed Action were to cause an impairment of utility service to local communities, homes, or businesses.	Yes	The Proposed Action would not result in significant changes to facilities or infrastructure usage, result in substantial increases in solid waste generation, or result in significant increases in energy or fuel usage. Therefore, no further analysis is required.

VEC	ROI	Thresholds of Significance	Dismissed from further Analysis?	Rationale for Analyzing Further or Not
Hazardous Materials and Hazardous Waste and Health and Safety	Installation lands, including the proposed areas within the installation.	Impacts to hazardous materials and hazardous waste would be considered significant if substantial additional risk to human health or safety would be attributable to Army actions, including direct human exposure, substantial increase in environmental contamination or violation of applicable Federal, state, DoD, and local regulations.	Yes	No appreciable increase of waste would occur during proposed training operations, and any waste generated during training would be comparable to existing ABCT unit generation and would be properly managed in accordance with Federal, state, and applicable Army and garrison-level regulations. In addition, construction-related debris associated with future facility improvements would be non-substantial and disposed of per applicable regulations in approved landfills. Therefore, no further analysis of hazardous materials and hazardous waste is required.

BGEPA = Bald and Golden Eagle Protection Act; CO_2 = carbon dioxide; DoD = Department of Defense; EO = Executive Order; ESA = Endangered Species Act; IONMP = Installation Operational Noise Management Plan; LOS = level of service; MBTA = Migratory Bird Treaty Act; NRHP = National Register of Historic Places; ROI = region of influence; SHPO = State Historic Preservation Office; USACE = U.S. Army Corps of Engineers

3.1.5. Description of VECs Carried forward for Detailed Analysis

3.1.5.1. Air Quality and Greenhouse Gases

Air resources are affected by gases and particulates from stationary and mobile sources and are influenced by meteorological conditions such as prevailing wind, sunlight, and temperature inversions. The Clean Air Act (CAA), the primary federal statute regulating air emissions, applies fully to the Army and all its activities. The primary pollutants that the CAA regulates include criteria pollutants and hazardous air pollutants (HAPs). Criteria pollutants include ozone (O_3), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), carbon monoxide (CO), lead (Pb), and particulate matter ($PM_{2.5}$ and PM_{10}). HAPs include over 180 compounds that have been determined to cause cancer and other serious health effects (USEPA 2017a).

Under the CAA, the USEPA has established National Ambient Air Quality Standards (NAAQS) (40 CFR 50) for these pollutants. The NAAQS represent the maximum levels of background pollution that are considered safe, including an adequate margin of safety, to protect public health and welfare. Short-term standards (1-, 3-, 8-, and 24-hour periods) are established for pollutants contributing to chronic health effects. Table 3.1-2 presents the NAAQS.

In addition to the NAAQS for criteria pollutants, national standards exist for HAPs that are regulated under Section 112(b) of the 1990 CAA Amendments. The National Emission Standards for Hazardous Air Pollutants (NESHAP) regulate HAP emissions from stationary sources (40 CFR 61 & 63).

Table 3.1-2 National Ambient Air Standards (40 CFR 50)

Pollutant	Primary/ Secondary	Averaging Time	Level	Form
Carbon Monoxide (CO)	primary	8 hours	9 ppm	Not to be exceeded more than once per year
		1 hour	35 ppm	
Lead (Pb)	primary and secondary	Maximum arithmetic 3-month mean concentration for a 3 year period	0.15 µg/m^3 (1)	Not to be exceeded
Nitrogen Dioxide (NO_2)	primary	1 hour	100 ppb	98th percentile of 1-hour daily maximum concentrations,

Pollutant		Primary/ Secondary	Averaging Time	Level	Form
					averaged over 3 years
		primary and secondary	1 year	53 ppb (2)	Annual Mean
Ozone (O_3)		primary and secondary	8 hours	0.070 ppm (3)	Annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years
Particle Pollution (PM)	$PM_{2.5}$	primary	1 year	12.0 µg/m^3	Annual mean, averaged over 3 years
		secondary	1 year	15.0 µg/m^3	Annual mean, averaged over 3 years
		primary and secondary	24 hours	35 µg/m^3	98th percentile, averaged over 3 years
	PM_{10}	primary and secondary	24 hours	150 µg/m^3	Not to be exceeded more than once per year on average over 3 years
Sulfur Dioxide (SO_2)		primary	1 hour	75 ppb (4)	99th percentile of 1-hour daily maximum concentrations, averaged over 3 years
		secondary	3 hours	0.5 ppm	Not to be exceeded more than once per year

Source: USEPA 2016a

(1) In areas designated nonattainment for the Pb standards prior to the promulgation of the current (2008) standards, and for which implementation plans to attain or maintain the current (2008) standards have not been submitted and approved, the previous standards (1.5 µg/m^3 as a calendar quarter average) also remain in effect.
(2) The level of the annual NO_2 standard is 0.053 ppm. It is shown here in terms of ppb for the purposes of clearer comparison to the 1-hour standard level.
(3) Final rule signed October 1, 2015, and effective December 28, 2015. The previous (2008) O_3 standards additionally remain in effect in some areas. Revocation of the previous (2008) O_3 standards and transitioning to the current (2015) standards will be addressed in the implementation rule for the current standards.
(4) The previous SO_2 standards (0.14 ppm 24-hour and 0.03 ppm annual) will additionally remain in effect in certain areas: (1) any area for which it is not yet 1 year since the effective date of designation under the current (2010) standards, and (2) any area for which an implementation plan providing for attainment of the current (2010) standard has not been submitted and approved and which is designated nonattainment under the previous SO_2 standards or is not meeting the requirements of a SIP call under the previous SO_2 standards (40 CFR 50.4(3)). A SIP call is an USEPA action requiring a state to resubmit all or part of its State Implementation Plan to demonstrate attainment of the required NAAQS.

Defining an ROI for air quality requires knowledge of:

1) The type of emissions,
2) Location(s) of the sources of emissions (for stationary sources) and the horizontal and vertical extent of emissions from mobile sources, such as motor vehicles,
3) Emission rates of the pollutant sources,

4) The proximity of existing emission sources to those sources associated with the Proposed Action, and

5) Local and regional climate conditions.

The ROI for emissions can vary from less than a mile (1.6 km) to more than 30 miles (48.3 km), depending on the pollutant. For the air quality analysis in this PEA, the applicable portions of the Air Quality Control Region (AQCR) that the installation is located in will serve as the ROI. This is likely to include the city or county(ies) in which the installation is located, but may not include the entire AQCR, which can be quite large.

Conformity. The CAA (Section 176[c]) prohibits federal activities from taking various actions in areas that have been designated by USEPA as nonattainment or maintenance areas for one or more criteria pollutants unless they first demonstrate conformance with the applicable State Implementation Plan (SIP). Regardless of compliance with other environmental regulations, failure to satisfy the requirements of the conformity rule can, by itself, preclude an installation from moving forward with the project. A conformity review is a multi-step process used to determine and document whether the conformity rule applies to a Proposed Action. Some Army installations are located in non-attainment areas or maintenance areas. An air conformity review would be conducted in order to implement the Action. This analysis cannot be done until the number of Soldiers and Civilians, equipment, facilities requirements, and stationing dates are known. At many installations, formal conformity determinations will not be required because the action emissions will be exempt or below *de minimis* thresholds.

New Source Review. There are three types of New Source Review (NSR) permitting requirements. A source may have to meet one or more of these permitting requirements.

- PSD permits are required for new major sources or a major source making a major modification in areas that meet the NAAQS,
- Nonattainment NSR permits which are required for new major sources or major sources making a major modification in areas that do not meet one or more of the NAAQS, and
- Minor source permits.

3.1.5.2. Mobile Sources

The primary source of air emissions from implementation of the Proposed Action are mobile source emissions, which would be generated by construction equipment, commuter vehicles, and military tactical vehicles. The predominant emissions from mobile sources are criteria pollutants, carbon dioxide (CO_2), and HAPs.

The primary control methodologies for HAPs from mobile sources involve reducing their content in fuel and altering the engine operating characteristics to reduce the volume of pollutant generated during combustion. Any mobile source HAPs that would be emitted as a result of the Proposed Action would be in very small quantities relative to criteria pollutant emissions, occur over a widespread area, and would be considered negligible. As a result, HAPs are not analyzed further in this PEA.

3.1.5.3. Greenhouse Gases

Greenhouse gases (GHGs) are gas emissions that trap heat in the atmosphere. Anthropogenic GHG emissions result from the burning of fossil fuels for energy, deforestation, emissions released by landfills, the production of certain industrial products, the application of agricultural fertilizers, and the raising of livestock. GHGs from fossil fuel combustion include CO_2, methane, and nitrous oxide (USEPA 2017b).

This EA looks at GHG emissions as a category of air emissions. It also looks at issues of temperature and precipitation trends to determine whether the installations' affected environment or proposed action would be affected. This EA does not attempt to measure the actual incremental impacts of GHG emissions as there is a lack of consensus on how to measure incremental impacts. Existing models have substantial variation in output and do not measure the actual incremental impacts of a project on the environment. There are also no established criteria identifying values that are to be considered significant for NEPA purposes.

Executive Order (EO) 13693, "Planning for Federal Sustainability in the Next Decade," outlines policies intended to ensure that federal agencies evaluate resilience to climate change and manage the short- and long-term effects of climate change on their operations and mission. The EO also requires agencies within the DoD to reduce agency-wide direct and indirect GHG emissions from their activities. The U.S. Department of Energy reports that between FY 2008

and FY 2015, the DoD has reduced GHG emissions by 11.9 percent (DOE, 2016). Overall, the Army has a goal to reduce Scope 1 and 2 GHG emissions by 34 percent by 2020, as compared to FY 2008 GHG emissions (U.S. Army 2016a).

3.1.5.4. Biological Resources

Biological resources refer to the living landscape and include vegetation and wildlife, both of which have species classified as threatened and endangered. The purpose of biological resources management within installation lands is to maintain high-quality lands for training, biodiversity, and recreation. The Army makes management decisions on the basis of the best available science and attempts, where practical, to mimic the natural historical disturbance regimes for the installation ecoregion (ecosystem management). Monitoring programs performed by Natural Resources managers indicate effectiveness of measures and strategies in achieving intended objectives. The Army's adaptive management approach preserves natural resources while providing the optimum environmental conditions required to sustain the military mission and realistic training conditions.

Vegetation. For the purposes of programmatic analysis, this PEA uses J.M. Omernik's ecoregion classifications to describe ecosystems (including vegetation) associated with the installations. Ecoregions denote areas within which lands, aquatic areas, vegetation communities, and habitats (and the type, quality and quantity of environmental resources) are generally similar. This hierarchical system, also used by the USEPA, identifies distinct ecoregions on the basis of "the spatial patterns of both the living and non-living components of the region, such as geology, physiography, vegetation, climate, soils, land use, wildlife, water quality and hydrology." The ecoregion classification serves as a spatial framework for research assessment and monitoring of ecosystems and ecosystem components (Omernik, 1987; USEPA, 2017).

Levels have been developed to describe ecoregions at varying scales using a Roman numeral classification scheme that distinguishes between these levels. Level I is the broadest level, dividing North America into 15 ecological regions; Level II divides the continent into 50 levels; and Level III divides the continent into 182 levels. For most of the U.S., the ecoregions have been further subdivided to Level IV, which includes hundreds of levels.

Areas requiring restoration are identified and managed as described in Section 3.1.2. Areas identified for land rehabilitation following unit-training exercises are reseeded using an approved, site-specific seed mix (including native grasses and forbs) to reduce the potential establishment of invasive plant species.

Protected Species and Habitat. Federal agencies (including the Army) must carry out programs to protect species and habitats, including those for threatened and endangered species per Section 7 of the ESA, migratory birds per the Migratory Bird Treaty Act (MBTA), and eagles per the BGEPA. Under the Sikes Act, installations must also develop, maintain, and implement an INRMP, which includes provisions for the conservation of these species and their habitats. Installations manage and monitor federally-protected species and other priority species within their boundaries in compliance with the ESA. Management practices for federally-protected species are often prescribed Biological Opinions or agreements with the U.S. Fish and Wildlife Services (USFWS). Minimization measures to reduce the potential for take (e.g., mortality or harm) of federally-protected species often include coordinating with military units, implementing land use controls and habitat improvement projects, conducting surveys, and avoiding impacts to federally listed species sites.

The PEA includes the following designations of wildlife and plants with special protected status:

- Federally-Listed Threatened and Endangered Species. The ESA provides protection to species listed as endangered or threatened. Endangered species are defined as those species that are at risk of extinction in all or a large portion of their range. Threatened species are those that could be listed as endangered in the near future if declines in populations or available habitats continue.
- State-Listed Threatened and Endangered Species. States maintain their own lists of state endangered and threatened plant and animal species that have shown declines within respective states. These species may or may not be included on federal ESA lists.
- Other-Sensitive Species. These include federal candidates for listing, species proposed for federal listing, and state-listed sensitive species and species of concern – including those recognized as Species of Greatest Conservation Need. The USFWS also has a

species of concern designation. Federal candidate species are those for which the USFWS has sufficient information on biological vulnerability and threats to support proposals to list them as endangered or threatened, but issuance of proposed rules for listing these species is precluded by higher priority listing actions. Federally proposed species are those proposed for listing as endangered and threatened under the ESA, and for which formal ruling is in progress. Species of concern are those identified to receive attention for planning purposes under federal or state agencies. At present, none of those species receives legal protection under the ESA.

- Designated Critical Habitat. "Critical habitat" is a term used under ESA to define a specific geographic area(s) that contains features essential for the conservation of a threatened or endangered species and that may require special management and protection. Critical habitat may include an area that is not currently occupied by the species but that may be needed for its recovery.
- Migratory Bird Species. Including migratory birds and their nesting locations protected under the MBTA.
- Bald and Golden Eagles and their nests protected under the BGEPA.

Noxious, Invasive and Pest Species. EO 13751, which amended EO 13112, *Invasive Species*, directs federal agencies to take steps to prevent the introduction and spread of invasive species, and to support efforts to eradicate and control invasive species that are established. Installations maintain an Integrated Pest Management Plan (IPMP) that identifies and prioritizes pests and their destructive effects to determine particular levels of protection. Equipment, vehicles, and humans can transport seeds of certain plant species on clothing, in soil attached to the bottom of shoes, the under carriage and radiator of vehicles, and in equipment tracks or tires. This plan and the INRMP often contain details on various forms of management techniques for invasive species. Treatment techniques often include spraying with USEPA-registered pesticides, hand pulling and mechanical removal, and prescribed burns. Installations actively monitor species to determine the extent of the species spread and effectiveness of control techniques.

Fire Protection and Prescribed Burning. Installations maintain an Integrated Wildland Fire Management Plan to implement fire management goals within the INRMP. As necessary,

prescribed fires are used to reduce the potential for wildfires from military training and can occur in training areas used by ABCT units. Prescribed habitat burns are conducted to reduce presence of invasive species, improve wildlife habitat, or reduce fuel loads in areas at risk for fire.

3.1.5.5. Cultural Resources

Cultural resources are the non-renewable remnants of past human activities that have cultural or historical value and meaning to a group of people or a society. AR 200-1 guides the management of cultural resources on Army installations. AR 200-1 is specific to the Army's cultural resources programs. Cultural resources include:

- historic properties as defined by the NHPA,
- cultural items as defined by Native American Graves Protection and Reparation Act (NAGPRA),
- archeological resources as defined by Archaeological Resources Protection Act (ARPA), sacred sites as defined in EO 13007 to which access is afforded under American Indian Religious Freedom Act (AIRFA), and
- archeological collections as defined in 36 CFR 79.

The NHPA of 1966, as amended, states that historic resources are "any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion on the National Register of Historic Places (NRHP), including artifacts, records, and material remains related to such property or resource." Cultural resources on Army installations generally refer to buildings, structures, and archaeological sites.

3.1.5.6. Soils

Soil is a natural body comprised of solids (minerals and organic matter), liquid, and gases that occurs on the land surface that has the ability to support rooted plants in a natural environment. For the purposes of the PEA and Proposed Action, the discussion focuses on soil erosion potential. Erosion is the gradual wearing away of land by water, wind, and other general weather conditions, and can be influenced by many military and human activities within a given landscape. Erosion impacts can be influenced by the types of soils, vegetative cover, topography, weather, and climate, and may be amplified by the frequency and types of training.

Soil erosion can be an important concern on military lands where maneuver training involving large vehicles (tracked and wheeled), and large and small arms fire occur. It can undermine the ability of the natural environment to support the Army mission, and once the erosion process has started, the direct effects can usually not be reversed.

The Army has numerous programs and management initiatives to reduce environmental damage to training lands as discussed in Section 3.1.2. The principal mechanism for this management is the ITAM Program, which provides a comprehensive means to address the cumulative effects of soil erosion on Army training lands.

3.1.5.7. Surface Water and Wetlands

Surface water is important for its contributions to the economic, ecological, recreational, and human health of a community or locale. Stormwater flows, which may be exacerbated by high proportions of impervious surfaces (e.g., buildings, roads, and parking lots) or compacted and barren soils from military training, are important to the management of surface water. Stormwater is also important to surface water quality because of its potential to introduce sediments and other contaminants into lakes, rivers, and streams. The Clean Water Act (CWA) gives the USEPA authority to regulate the discharge of pollutants into the waters of the U.S. It set the ground rules for implementing pollution control programs as well as continuing the requirement to set water quality standards for all surface water contaminants. The USEPA establishes thresholds for pollution and contaminants to water bodies that are referred to as Total Maximum Daily Load (TMDL). A TMDL is a calculation of the maximum amount of a pollutant that a water body can receive and still safely meet water quality standards. If these thresholds are exceeded, the water body is classified as impaired.

Army activities subject to CWA regulations include activities involving the collection and discharge of effluents (e.g., discharging pollutants from a point source into waters of the U.S.) or construction activities near waterways or wetlands. Several compliance responsibilities under the CWA result from the types of facilities used by the Army and the range of activities at Army installations.

For regulatory purposes under the CWA, the term wetlands means "those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically

adapted for life in saturated soil conditions (40 CFR 232.2 [r])". There are many different kinds of wetlands including swamps, marshes, bogs, and similar areas.

Wetland definitions can vary by agency, regulations, and policy. Wetland functions are of value to the sustainable management of military lands because of their ecological functions and by providing training realism. Three wetland functions applicable to sustainable management are flood attenuation, groundwater recharge, and improvement of water quality by filtering sediment, nutrients, and toxics.

The NWI of the USFWS has identified and mapped most of the known wetlands in the conterminous U.S., including those on military installations. Department of Defense (DoD) Instruction 4715.3 states that installations will manage for "no net loss" of wetlands. In order to manage wetlands properly, installations have used the NWI and have conducted planning level surveys to determine the extent and location of wetlands across their installation. By identifying wetlands early in the NEPA process, and utilizing a "Go/No-Go" approach where avoidance is preferred to direct or indirect impacts, installations have the ability to avoid costly mitigation and potential delays in implementation of the Proposed Action.

3.1.5.8. Socioeconomics and Environmental Justice

Socioeconomics are the basic attributes and resources associated with the human environment, particularly population and economic activity. Population levels are affected by regional birth and death rates, as well as immigration and emigration, which are often related to regional employment availability. Economic activity typically encompasses employment, personal income, and industrial or commercial growth. Changes in these two fundamental socioeconomic indicators may be accompanied by changes in other components, such as housing availability and the provision of public services. Socioeconomic data at county, state, and national levels permit characterization of baseline conditions in the context of regional, state, and national trends.

The principal factors affecting socioeconomics at Army installations are construction project expenditures; salaries (Soldier, Civilian, and contractor); procurement of goods and services locally and regionally by Soldiers, Civilians, and their Family members; and employment changes. As the Army increases or decreases either expenditures or employment (Soldier or Civilian) at an Army installation, these impacts are felt within the economic ROI by businesses,

local governments, and individuals. Impacts from stationing actions can manifest themselves as a loss or gain in jobs; change in real estate values; change in educational, social, and medical services; or change in state or local tax revenue. Installation changes in Soldier or Civilian employee populations could result in varying degrees of economic impact depending on the economic diversity and size of the regional economy. Socioeconomic impacts are linked through cause-and-effect relationships. With the Proposed Action, there would be direct impacts from proposed military employee (Soldier and Civilian employee) changes. Impacts to jobs, income[2], business volume, and personal spending in the ROI would all be anticipated. These changes in Soldier and government Civilian employee populations would also be associated with some change in the need for contract support and lead to indirect impacts through either an increase or reduction in the overall demand for goods and business services within the region. Increases or decreases in demand for goods and services in turn can result in indirect increases or reductions of other miscellaneous jobs to support demand.

Installation population loss under the Proposed Action would negatively impact regional economies. Cities, towns, and counties in the ROI, whose economies are supported by military employment, contribute to local and regional employment and economic activity and could be adversely affected. Installation personnel reductions would be expected to result in adverse economic impacts due to the loss of jobs, income, and sales in an affected region. In addition, adverse impacts to regional community services and schools could occur because they receive funding, support, time, donations, and tax revenue directly related to the installation military authorizations and their dependents. Population loss could put downward pressure on housing demand and the local housing market, as well as decrease the need for varying public services such as police, fire, emergency, or medical services.

Installation population gains would generally represent beneficial long-term economic impact within the ROI due to increased jobs, income, sales, resources, and associated increases in tax

[2] When assessing direct economic impacts, the average salary estimate of personnel affected (i.e., $41,830) is considered.

revenues. Gains also can have variable impacts to school districts with regard to student population. It would be anticipated that most Soldiers would be accompanied by their Families and that there would be an increase in school student population growth. This increase could also result in more impact aid[3] for the schools. Increases in the number of Army personnel could also decrease housing availability and put upward pressure on housing prices, as well as increase the need for public services.

Increases in construction spending to support population gains would have similar beneficial economic impacts as population gains; however, impacts would generally be short-term and temporary. Increased construction could result in temporary increases in jobs, income, and sales due to increased spending in a given region, and could lead to temporary increases in population if relocation was necessary.

In order to conduct an accurate estimate the total population increase as a result of the Alternatives considered, the total number of Soldier dependents (i.e., spouses and children) who could potentially accompany the Soldiers must also be considered. For each of the five installations, an estimate of the total number of dependents was generated using the latest data from the Defense Manpower Data Center (DMDC). For example, in 2011, 55.8 percent of full-time Army Soldiers were married. All Soldiers had, on average, 0.96 children ages 0-18 (DMDC, U.S. Army, 2013). These percentages of 55.8 percent married and 0.96 children per Soldier were used in estimating the total population of dependents within the ROI. To calculate the number of dependents associated with an installation in the ROI population, the Army multiplied the number of full-time Army Soldiers and civil service employees by 55.8 percent to determine the projected number of spouses. The Army took the same full-time population of

[3] School districts receive federal funding for each student whose parent(s) live or work on federal property. The amount of federal school aid a school district receives depends on the number of federal students the district supports in relation to the total district student population. Schools receive more funding for those students whose parents both live and work on federal property. Total funding varies year by year according to congressional appropriations for the program (U.S. Department of Education, 2017).

military employees and multiplied this number by 0.96 to calculate the number of dependent children associated with the installation population. These two numbers were then added together to obtain the total estimate of dependents likely to be associated with the installation's population in the ROI.

Economic modeling and forecasting provide an estimate of the potential intensity of socioeconomic impacts. Modeling provides a method of qualifying and quantifying certain potential monetary and employment impacts of the Proposed Action. In order to model the socioeconomic impacts of the alternatives evaluated in this PEA, the Army referenced past NEPA stationing actions proposed in the Army 2020 Force Structure Realignment which contained similar levels of Soldier stationing (see Sections 3.2.7, 3.3.7, 3.4.7 and 3.5.7).

Environmental Justice (EO 12898) analysis requires federal agencies to identify and address, as appropriate, disproportionately high and adverse human health or environmental effects of federal agency programs, policies, and activities on minority and low-income populations. Minority populations are identified as Black or African American, American Indian and Alaska Native, Asian, Native Hawaiian and other Pacific Islander, Hispanic, of two or more races, and other. The Proposed Action may have disproportionate or adverse health impacts on low-income or minority populations in that it may involve adverse economic impacts to communities with higher minority populations than the state as a whole. Within the ROI, however, the economic effect would be distributed among community members regardless of race, ethnic origin, or economic status, and therefore is not disproportionate.

In addition, EO 13045 requires federal agencies to identify and assess environmental health risks and safety risks that may disproportionately affect children. Such risks to health and safety are attributable to products or substances that a child would be likely to come in contact with or ingest. The impacts of the alternatives are not projected to have disproportionate adverse impacts on children, because no aspects of the action would be anticipated to increase the risks described in the EO.

3.1.5.9. Traffic and Transportation

Traffic and transportation systems refer to organized means of moving people and commodities. Principal transportation systems include roads and highways, commercial air carriers, waterway and maritime shipping, railroads, and trucking. Army installations, like small cities have

highways and streets throughout. Roadways and traffic are concentrated in areas where there are buildings, such as in cantonment areas. The Army installations under consideration for this PEA also have expansive training areas with roadways dedicated to support traffic and vehicular movement associated with training exercises. In addition, support rail transportation may be present at the installation.

Movement of people by privately owned vehicles (POVs) on a local or regional scale is related to traffic and circulation. In many instances, the location and availability of transportation system hubs and their capacities, can affect or be affected by installation activities. The smooth flow of traffic and the adequacy of on-post and off-post road networks to move people efficiently contribute materially to the quality of the human environment near the installation. Unless mitigation measures are implemented, increased volume can pose an additional risk to the safety of motorists, pedestrians, and bicyclists.

Transportation planning is part of the real property master planning efforts on installations. At most installations, the Main Gate is the most heavily used vehicular access gate, with peak flows occurring at the start and end of the average employee's workday.

Military vehicles use a combination of public roads, installation roads, and military vehicle trails. Vehicle convoys using public roads typically are limited in size and have requirements governing the spacing between each vehicle in the convoy. Convoy procedures are designed to reduce noise levels and prevent the convoy vehicles from dominating local traffic flow for long periods.

The ROI for this resource area is considered those areas within the boundaries of the installation and on nearby, off-post public transportation networks (e.g., roadways). Traffic impacts could include congestion and delays on public roadways and key access points within and near the installation. Site-specific traffic studies may be required for the installation selected to receive additional Soldiers.

The level-of-service (LOS) concept, introduced in the 1965 Highway Capacity Manual (HCM), is a convenient way to describe the general quality of operations on a facility having defined traffic, roadways, and control conditions. The LOS concept uses letter scale terminology, ranging from A to F, to describe operational quality within a given area. The scale, described

below, is often used as a communication tool to help decision makers and the public comprehend complex traffic conditions.

The HCM 2000 defines LOS as "… a quality measure describing operational conditions within a traffic stream, generally in terms of such service measures as speed and travel time, freedom to maneuver, traffic interruptions, and comfort and convenience."

While capacity gives a quantitative measure of traffic, LOS provides a qualitative measure. A term closely related to capacity is service volume. Service volume is the maximum number of vehicles, passengers, or the like that can be accommodated by a given facility or system under given conditions at a given LOS.

LOS qualitatively measures both the operating conditions within a traffic system as well as how drivers and passengers perceive these conditions. It is related to the physical characteristics of the highway along with the different operating characteristics that can occur when the highway carries different traffic volumes. Speed-flow-density relationships are the principal factor affecting the LOS of a highway segment under ideal conditions.

For example, traffic capacity is constant while actual flow can be different for different days and at different times within a day. The intention of LOS is to relate the traffic service quality to a given flow rate of traffic. It is a term that designates a range of operating conditions on a particular type of facility. The HCM divides the quality of traffic into six levels ranging from level A to level F. Level A represents the best quality of traffic where the driver has the freedom to drive with free flow speed and level F represents the worst quality of traffic.

3.1.6. Cumulative Impacts

The CEQ regulations implementing NEPA defines a “cumulative impact” as follows: “… the impact on the environment, which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time (40 CFR 1508.7).”

USEPA guidance to reviewers of cumulative impacts of analyses further adds: “the concept of cumulative impacts takes into account all disturbances since cumulative impacts result in the

compounding of the effects of all actions over time. Thus, the cumulative impacts of an action can be viewed as the total effects on a resource, ecosystem, or human community of that action and all other activities affecting that resource no matter what entity (Federal, non-Federal or private) is taking the action (USEPA, 1999)."

For this PEA, cumulative impacts result from the incremental impacts of the action when added to other past, present, and reasonable foreseeable actions regardless of who takes such actions. Cumulative impacts can result from individually minor, but collectively significant, actions taking place over a period. For the purposes of the cumulative impacts analysis, the Proposed Action and Alternatives ROI includes the installation under discussion and the surrounding area, including cities, towns, and counties

The Army considered a wide range of past, present, and reasonable foreseeable future actions by researching existing literature and contacting local area planners and state and Federal agencies to identify other projects around the installation that could contribute to cumulative environmental effects. The Army considered other past, present, and foreseeable future actions regardless of whether the actions were similar in nature to the Proposed Action and Alternatives or outside the jurisdiction of the Army.

For purposes of this analysis, actions were considered as reasonably foreseeable future actions if they were funded and approved for a minimum period of three years beyond the publication of this PEA.

Actions included in this cumulative impact analysis include all past (occurring during the past three years), present, or reasonably foreseeable actions above a threshold dollar limit of $500,000. The $500,000 threshold is used to identify larger projects, which are most likely to produce or add to cumulative impacts in an ROI.

3.2. Fort Carson, CO

3.2.1. Introduction

Fort Carson is a U.S. Army installation located primarily in El Paso County, Colorado (CO), near the city of Colorado Springs. It was established in 1942 and named after General "Kit" Carson. See Figure 3.2-1.

The approximately 137,000-acre (55,000 ha) installation extends southward from El Paso County into Pueblo and Fremont counties. Fort Carson also manages its sub-installation, PCMS, primarily used to support maneuver training for units stated at Fort Carson than need large contiguous maneuver and training areas.

Fort Carson is the home of the 4th ID, the 10th Special Forces Group, the 440th Civil Affairs Battalion U.S. Army Reserve (USAR), the 71st Ordnance Group, the 4th Engineer Battalion, the 759th Military Police Battalion, the 10th Combat Support Hospital, U.S. Army Medical Activity (MEDDAC) and U.S. Army Dental Activity, the 43rd Sustainment Brigade, the Army Field Support Battalion-Fort Carson, the 423rd Transportation Company (USAR) and the 13th Air Support Operations Squadron of the U.S. Air Force. The post also hosts additional units of the Army Reserve, Navy Reserve, and the Colorado Army National Guard (COARNG).

The Fort Carson garrison is responsible for supporting the living and training requirements of Army troops stationed at the installation. Fort Carson's downrange area is used for weapons qualification and field training. The downrange area comprises the land area outside the cantonment (main post) area, including firing ranges, training areas, and impact areas.

PCMS is located in southeastern Colorado in Las Animas County, approximately 150 miles (241.4 km) southeast of Fort Carson. PCMS is bounded by US Highway 350 (US 350) to the west, Purgatoire River Canyon to the east, Las Animas County Road 54 to the south, and Otero County to the north. Nearby cities include Trinidad to the southwest, and La Junta to the northeast. PCMS includes a small cantonment area at the entrance gate on US 350, containing austere facilities to support training. For reasons set out in chapter 1, PCMS is not in the scope of this analysis.

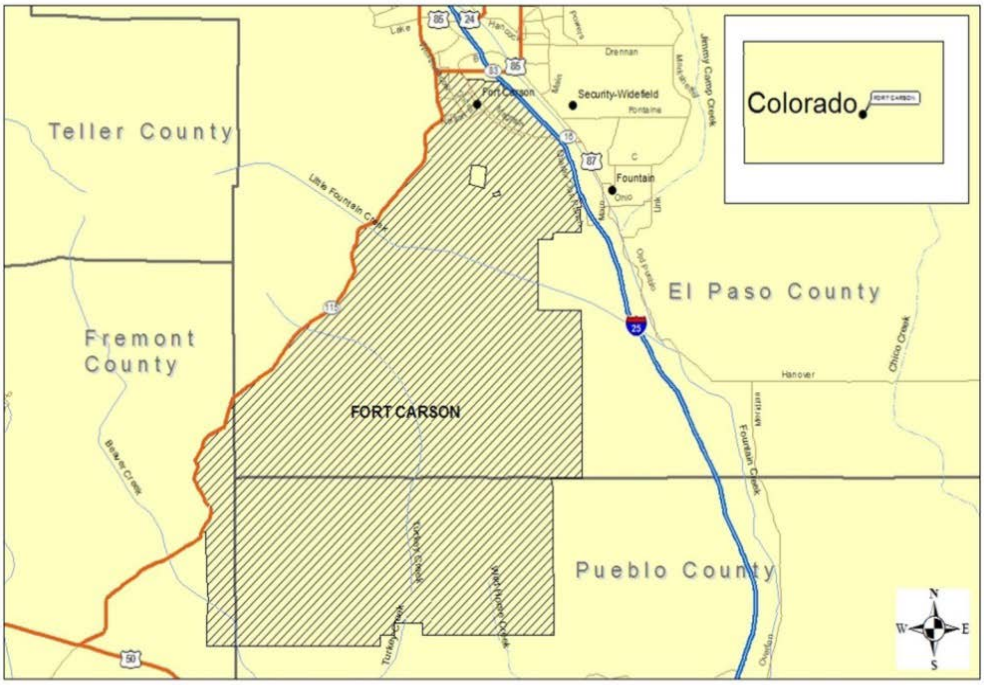

Figure 3.2-1. Location of Fort Carson, Colorado

3.2.2. Air Quality and Greenhouse Gas Emissions

Fort Carson is located in the San Isabel Intrastate AQCR (40 CFR 81.175). The entire AQCR includes the Colorado counties of Chaffee, Custer, El Paso, Fremont, Huerfano, Lake, Las Animas, Park, Pueblo, and Teller. Fort Carson is located in the portion of the AQCR that includes El Paso and Fremont counties. The ROI for air quality analysis includes this portion of the AQCR, which includes the city of Colorado Springs.

3.2.2.1. Affected Environment

The main portion of the installation lies along the southern perimeter of the city of Colorado Springs. Training involving the use of the ABCT tactical vehicles would occur most on the ranges that lie to the south and southeast.

The 2011 emissions inventory for El Paso, Fremont, and Pueblo counties are shown in Table 3.2-1. Volatile organic compound and nitrogen oxides emissions are used to represent ozone generation because they are precursors of ozone. The inventory includes stationary sources, such as industrial sites and residential fuel combustion, as well as mobile sources and area sources such as fires.

Table 3.2-1 County Air Emissions Inventories (2011) in tons per year

Location	NO_x	VOCs	CO	SO_2	PM_{10}	$PM_{2.5}$	CO_2e
El Paso County, CO	21,605	32,833	118,092	9,599	15,106	4,499	3,310,315
Fremont County, CO	3,406	19,952	17,113	1,663	2,869	1,134	286,970
Pueblo County, CO	12,670	23,375	37,841	3,241	7,703	1,915	1,013,784

Source: (USEPA, 2017c)
Key: NO_x = nitrogen oxides; VOCs = volatile organic compounds; CO = carbon monoxide; SO_2 = sulfur dioxide; PM_{10} = suspended particulate matter less than or equal to 10 microns in diameter; $PM_{2.5}$ = fine particulate matter less than or equal to 2.5 microns in diameter; CO_2e = carbon dioxide equivalent;

3.2.2.2. National Ambient Air Quality Standards and Attainment Status

The Colorado Department of Public Health and Environment (CDPHE) has adopted the NAAQS, which are discussed in Section 3.1.5. Colorado also maintains its own ambient air quality standard for sulfur dioxide, which is a three-hour standard of 0.267 parts per million that cannot be exceeded more than once annually (CDPHE 2010).

The northern portion of Fort Carson (main post) is located in a maintenance area for carbon monoxide. The main post of Fort Carson is part of a larger area over the city of Colorado Springs, which was redesignated from nonattainment to attainment on October 25, 1999 (CDPHE 2009). The *Revised Carbon Monoxide Attainment/ Maintenance Plan Colorado Springs Attainment/Maintenance Area* covers Colorado Springs as a maintenance area through calendar year 2019 (CDPHE 2009).

Upon successful completion of the maintenance period, the area will revert to attainment only and general conformity requirements will no long apply. PCMS is also considered part of Fort Carson, and is located in Las Animas County, which is also included in the AQCR.

3.2.2.3. Installation-Wide Emissions

The 2016 total emissions for stationary sources at Fort Carson are summarized in Table 3.2-2. Sources include boilers, generators, surface coating operations, parts washers, smoke generators, munitions, and underground storage tanks.

Table 3.2-2 2016 Estimates of Annual Emissions, Fort Carson, CO

Annual Emissions	Emission Estimates (tons per year)						
	VOCs	**CO**	**NOx**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**	**HAPs**
Actual	26-734	202.117	101.485	1.421	37.621	37.621	9.135

Source: 2016 Fort Carson Air Emissions Inventory

3.2.2.4. Permitting Requirements

Fort Carson holds a Title V Federal Operating Permit that covers emissions of both criteria pollutants (including nitrogen oxides) and HAPs installation-wide. This permit, 95OPEP110, is currently undergoing renewal.

3.2.2.5. Environmental Consequences

3.2.2.5.1. No Action Alternative

Negligible adverse effects would occur at Fort Carson under the No Action Alternative. Fort Carson would not convert the IBCT to an ABCT, and would continue to operate existing stationary sources in accordance with its Title V Permit and mobile source emissions would be generated consistent with current operations.

3.2.2.5.2. Alternative 1

Under Alternative 1, the IBCT at Fort Carson would be converted to an ABCT and remain stationed at Fort Carson. Personnel would decrease by 21. The equipment required for an ABCT would need to be brought on to Fort Carson resulting in an increase of 132 Bradly Infantry Fighting Vehicles, 87 Abrams tanks, 18 howitzers, and 18 mortars. Installation construction projects to accommodate the ABCT include an expansion of two tactical equipment maintenance facilities, which would involve 34,400 SF (3196 m^2) of new construction; 402,120 SF (37358 m^2) of new organizational parking; and construction of a new 8,000 SF (743 m^2) storage building with 4,050 SF (376 m^2) of secured open storage.

3.2.2.5.2.1. Training

Stationary sources that are already located at Fort Carson, such as spray paint booths, could see an increase in activity. It is also possible that the installation would install additional stationary sources used for operations, such as new spray booths, as well as new infrastructure stationary

sources such as boilers and emergency generators. All of these types of stationary sources would need to be evaluated for compliance with the Fort Carson Title V requirements and may result in permit modifications. Increases or changes in munitions used would need to be evaluated to assess any permit modification requirements. Because additional tracked vehicles would be operating on the training ranges, the potential for fugitive dust is increased. Fort Carson is required to manage fugitive dust from these activities so they do not create a nuisance dust problem. The requirements of the Fugitive Dust Control Plan would reduce these emissions through actions such as dust suppression (e.g., using water or a chemical suppressant, and reduced vehicle speed) (Fort Carson, 2016b). During the training component, overall impacts would be minor to moderate/ less than significant adverse on area air quality.

To understand the difference of GHG emissions from IBCT training to ABCT training, this analysis considers authorized barrels of fuel per year for each BCT. An IBCT is authorized to use 6,777 barrels (284,634 gallons) of fuel per year for training, compared to an ABCT, which is authorized to use 24,815 barrels (1,042,230 gallons). The difference is 18,038 barrels (757,596 gallons). Because of funding limitations, the consumption is usually lower, thus making this a very conservative estimate.

The consumption of this fuel by an IBCT would produce 5,692,680 (2,846 tons) of $CO_{2,}$ while an ABCT would produce 20,844,600 pounds (10,422 tons) of CO_2, or 15,151,920 pounds (7,576 tons) net difference between an IBCT and an ABCT. The net increased emissions from the ABCT are roughly equivalent to the annual emissions 1,273 average civilian passenger vehicles.

Table 3.2-3 provides a scaled comparison GHG emissions increase from ABCT conversion at Fort Carson.

Table 3.2-3 GHG Emissions by Scale

Scale	CO_2e Emissions (MMT)	Percent Increase from Proposed Conversion
Global	43,125	0.000024
United States	6,870	0.00015
Colorado	130	0.0058
Army-wide	8.8	0.12

Sources: USEPA 2015, 2017; CDPHE 2014; Army 2016; USAF 2016.
Note: MMT = million metric tons.

GHG emissions associated with personnel would not effectively change, as the installation would only have a decrease of 21 military personnel. Operationally, GHGs may increase because of the use of heavier tracked vehicles, which consume more fuel. This increase would be small. As shown in Table 3.2-3, increases would be negligible regardless of scale considered.

Colorado is in the southwest climate region of the United States, where trending climate variation is expected to contribute to declining water supplies, reduced agricultural yields, and health impacts in its cities due to heat. In addition, increased heat, drought, and insect outbreaks are expected to lead to increased wildfires throughout the region. Annual average temperatures are projected to rise by as much as 5.5°F by 2041 and by 9.5°F by 2099, with the greatest increases in the summer and fall. Summertime heat waves are projected to become longer and hotter, whereas the number of wintertime cold air outbreaks will decrease. Trending climate variation in the region could affect public health through increased risk of heat stress, and could affect urban infrastructure through increased risk of disruptions to electric power generation (Melillo et al. 2014).

Table 3.2-4 outlines potential climate stressors and the extent to which they might be made worse by the Proposed Action.

The operational activities associated with the Proposed Action in and of themselves are only indirectly dependent on any of the elements associated with future climate scenarios (e.g., meteorological changes). At this time, no future climate scenario or potential climate stressor will have greater than minor effects from the Proposed Action.

Table 3.2-4. Effects of Potential Climate Stressors from the Proposed Action

Potential Climate Stressor	Effects from the Proposed Action
More frequent and intense heat waves	Negligible
Longer fire seasons and more severe wildfires	Negligible
Changes in precipitation patterns	Negligible
Increased drought	Negligible
Harm to water resources, agriculture, wildlife, ecosystems	Negligible

Source: Melillo et al. 2014.

The precise way in which these climate stressors will play out, either by themselves or in combination with the effects of the proposed action, is hard to predict. Fort Carson will therefore have to consider a variety of strategies as events unfold Design and mitigation measures for construction projects that might reduce these incremental effects include (1) use of white roofs, shade tree planting, and increased shading; (2) reducing power demand through the use efficient appliances and systems; (3) application of smart grid technologies and addition of solar power generation; and (4) provision of cooling centers and programs to check on at-risk populations; and (5) implementation of water conservation principals into building design and through education. The Army would incorporate resiliency measures, and systematically avoid effects of trending climate variation by siting use away from areas that might be affected. For example, if more flash floods might occur in the area, facilities and infrastructure would not be built in or adjacent to streambeds. The installation may also have to adjust its Integrated Wildland Fire Management Plan in the face of increased fire risk. Adjustments might also have to be made to the installation's ecosystem management plan.

3.2.2.5.2.2. Construction

The proposed location for the ABCT construction on Fort Carson is outside of the maintenance area for CO, and therefore a general conformity analysis for would not be necessary. Air emissions generated during construction would result from non-road construction equipment (dozers, backhoes, excavators, etc.), fugitive dust from equipment operating on bare ground, construction worker vehicles, as well as dump trucks, concrete trucks and trucks hauling

materials to the site. These activities also could produce minor and temporary GHG emissions. While these emissions would generate an increase in localized emissions of criteria pollutants, the increase would be relatively small and temporary. Because many of these vehicles would travel off the installation into the city of Colorado Springs, their operation would be directly linked to the Proposed Action construction. Additional emissions may be related to temporary power sources (e.g., generators) and other fuel-powered equipment. The overall adverse impacts for the construction component would be short-term and minor. The Army would incorporate design and mitigation measures for construction projects discussed above to reduce the effects of these emissions.

3.2.2.5.3. Alternatives 2 - 5

Under Alternatives 2-5, another installation would receive the ABCT. The relocation of over 4,000 personnel away from Fort Carson would have a small but beneficial impact on air quality due to the reduction in commuter traffic to and from the installation, the loss of IBCT emissions, and a reduction in traffic in the area generally because of the relocation of Families and their vehicles. Because the local impact in Colorado Springs would be a reduction in air emissions, there is no need to evaluate impacts further in the maintenance area of Colorado Springs, as the de minimis threshold of 100 tpy for CO would not be exceeded. Sections 3.3.2, 3.4.2, 3.5.2, and 3.6.2 discuss GHG emissions and effects of climate variation for stationing at the respective installations.

3.2.2.6. Summary of Mitigation

No mitigation efforts are anticipated to be required.

3.2.3. Biological Resources

3.2.3.1. Affected Environment

3.2.3.1.1. Vegetation

Fort Carson is in the Central Shortgrass Prairie ecoregion, that is dominated by shortgrass species such as buffalo grass (*Buchloe dactyloides*), blue grama (*Bouteloua gracilis*), and western wheatgrass (*Pascopyrum smithii*) (Fort Carson, 2014). The ecoregion encompasses approximately 56 million acres (22.7 million ha) and includes parts of Colorado, Kansas, Nebraska, New Mexico, Oklahoma, Texas, and Wyoming.

Fort Carson consists of a combination of grasslands, shrublands, forest, and woodlands (Fort Carson, 2014). The remaining lands are classified as non-vegetation (e.g., developed or barren lands). Fort Carson has built up areas and barren areas.

At least 30 state-listed species of noxious weeds have invaded both natural and urbanized landscapes at Fort Carson (Fort Carson, 2014). Fort Carson uses Integrated Pest Management to manage invasive plant populations including the control techniques of biological control, herbicide application, burning, and mowing.

3.2.3.1.2. Wildlife and Aquatic Life

Seventy species of mammals are known to occur on Fort Carson (Fort Carson, 2014). Fort Carson supports a relatively intact large-mammal community (e.g., elk, mountain lion, pronghorn, bighorn sheep, black bear, mule, and white-tailed deer). Eleven species of native fish are known to occur on Fort Carson.

3.2.3.1.3. Protected Species under the ESA

The Fort Carson INRMP contains information on sensitive species of flora and fauna known to occur, or having the potential to occur, on Fort Carson (Fort Carson, 2014). This includes federally-protected species, state-protected species, species at risk, and species of concern. The federally-threatened Mexican spotted owl (*Strix occidentalis lucida*) and federally-endangered black-footed ferret (*Mustela nigripes*) are the only listed species known to occur at Fort Carson. Protections for the owl include resource management and limiting the types of training and recreational activities that can occur in immediate areas occupied by the owl (Fort Carson, 2014). The ferrets, which may migrate or hunt from a neighboring reintroduction site near Fort Carson, are managed under the USFWS's October 23, 2013, Programmatic Safe Harbor Agreement and associated Biological Opinion of October 18, 2013. This agreement, which precludes the need for active ferret management by Fort Carson, covers all incidental takes from all lawful activities (including all forms of military training), and ensures Fort Carson is not now and shall not be subject to land use restrictions or training limitations. There are no known federal candidate species on Fort Carson or the PCMS (Fort Carson, 2014). Only one candidate species, the Arkansas darter (*Etheostoma cragini*), is known to occur and is found within the northern third of the Fort Carson installation (Fort Carson, 2014).

3.2.3.1.4. Management of Natural Resources

The purpose of natural resources management at Fort Carson is to maintain high-quality lands for training, biodiversity, and recreation. Fort Carson manages natural resources through the INRMP that outlines plans, goals, and objectives regarding natural resources programs on Fort Carson and integrates conservation management actions with Army military mission activities in order to meet natural resource management goals.

Fort Carson uses an adaptive ecosystem management strategy to protect, conserve, enhance, and monitor resources and to adjust INRMP management objectives based upon the effects of training activities. Management decisions are made based on the best available science and attempt, where practical, to mimic the natural historical disturbance regimes for the ecoregion. Ecosystem management is an evolving management scheme. As new information and ideas are gleaned from current research, Fort Carson's resource management will change to reflect the best information available. Monitoring programs indicate whether management measures and strategies are effective in achieving intended objectives. This adaptive management approach preserves natural resources while providing the optimum environmental conditions required to sustain the military mission and realistic training conditions (Fort Carson, 2015).

Management of natural resources also involves the ITAM program, which establishes a uniform land management program and includes inventorying and monitoring land condition, integrating training requirements with land carrying capacity while training to standard, educating land users to minimize adverse impacts, and prioritizing and implementing rehabilitation and maintenance projects. Fort Carson's ITAM is governed by AR 350-19 and Fort Carson (FC) Regulation 350-9, Integrated Training Area Management.

3.2.3.2. Environmental Consequences

3.2.3.2.1. No Action Alternative

Negligible adverse effects would occur at Fort Carson as a result of the implementation of the No Action Alternative. Fort Carson would not convert the IBCT to an ABCT, and would continue to adhere to its existing resource management plans to 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 activities that are prohibited within certain areas.

3.2.3.2.2. Alternative 1

3.2.3.2.2.1. Training

As stated in Section 3.1.2, maneuver and live-fire exercise training can negatively affect biological resources. This includes loss or degradation of vegetation and habitat from maneuver training and disruption to wildlife from field equipment training and live-fire exercises. The conversion of an IBCT to an ABCT stationed at Fort Carson could result in greater intensity of vegetation disturbance and impacts to biological resources due to its use of heavier, tracked vehicles (compared to the existing IBCT), especially if those maneuvers are conducted by heavy, tracked and wheeled vehicles in wet conditions. As discussed in Section 2.2.2, the addition of an ABCT at Fort Carson would increase MIMs by 65,000, totaling 357,000 MIMs (an approximate 22 percent increase). Long-term increases in training intensity requiring large maneuver footprints due to heavy tracked and wheeled vehicles could potentially result in a conversion or net loss of habitat. This could occur at landscape scale through vegetation loss and conversion over widespread areas if areas are not adequately rotated, or given necessary recovery times for re-vegetation activities supporting soil stabilization.

In addition, the intensity of Soldiers and equipment associated with ABCT training (compared to an IBCT) could also result in adverse impacts to wildlife species within Fort Carson. Species in these areas would flush and temporarily avoid areas in which units would be training, returning to the area once training activities have ceased; however, as this type of training currently exists on the installation, overall impacts to these species would be minor.

The increase of ABCT training could also adversely affect aquatic species and aquatic habitat. As discussed in Sections 3.3.5.2 and 3.3.6.2, increased ABCT training would increase the potential for impacts to surface water quality and wetland habitats from increased potential for sedimentation. Impacts to aquatic resources and habitat would be reduced by implementation of avoidance and minimization measures discussed in Sections 3.3.5.2 and 3.3.6.2. Minor adverse impacts would be expected.

In summary, overall adverse impacts to biological resources from training at Fort Carson and the PCMS would be moderate/ less than significant. Fort Carson would mitigate the potential for significant adverse effects to biological resources through management of ABCT training

and management of biological resources in accordance with the INRMP, which includes compliance with the ESA, MBTA, and BGEPA. This also includes (Fort Carson, 2014):

- Continued restrictions on troop training on Fort Carson and the PCMS per Fort Carson Regulation 350-10 (Maneuver Damage Control Program), FC Regulation 385-63 (Firing Ammunition for Training, Target Practice, Administration and Control of Ranges and Training Areas), and FC Regulation 350-1 (Mountain Post Training). These existing regulations would reduce the potential for landscape-level disturbance or loss of local, species-dependent habitat by avoiding sensitive or unique habitats.

- Use of supplemental maps, which delineate off-limits and limited-use areas and are updated periodically. This existing practice would avoid impacts to sensitive habitats and to protected species.

- Coordination of units with DPTMS during the training scheduling process for site-specific restrictions needed for safety and compliance purposes (e.g. permission to dig large excavations, no-fly buffer if an eagle nest is occupied, avoidance of wetland areas or saturated soils, regularly scheduled Maneuver Damage Control classes). This existing practice would avoid impacts to sensitive habitats and to protected species.

- Continued implementation of the limited-use (Rest/Rotation or Deferment) program to include areas heavily degraded by military training temporarily in the limited-use program to allow for recovery under the ITAM program. This existing program would reduce the potential for landscape-level disturbance by allowing land to recover.

3.2.3.2.2.2. Construction

As stated in Section 2.3.2, no new ranges, range upgrades, or garrison construction would be required during the implementation phase of IBCT reassignment and conversion into an ABCT under Alternative 1. ABCT personnel and equipment would be located within the converted IBCT's administrative and operational footprint located near Wilderness Road. Fort Carson, however, would require future cantonment infrastructure improvements within the IBCT's existing and previously analyzed footprint near Wilderness Road. This includes expanding two existing tactical equipment maintenance facilities; construction of additional organizational parking; and constructing a new distribution company storage building with loading dock and

secure open storage. Vegetation and habitat occurring within new construction footprints would be permanently lost to accommodate the new facility.

As shown on Figure 2.3-1, these construction activities would occur mostly within previously disturbed and developed areas along Wilderness Road that are comprised of marginal quality shrubland and grassland habitat. The overall adverse impacts during the construction component to biological resources would be minor. In addition, Fort Carson would adhere to MBTA requirements to avoid construction-related disturbance impacts to migratory bird nesting areas, if present.

Fort Carson would identify specific locations and provide designs of these future infrastructure improvements. Site selection and design would incorporate Real Property Master Plan and other master planning processes and policies including the use of strategic siting (e.g., avoidance of sensitive habitat), and implementation of sustainable design and construction. These future infrastructure improvements would be subject to other NEPA analyses, as required.

3.2.3.2.3. Alternatives 2, 3, 4, and 5

Under these alternatives, Fort Carson would lose an IBCT and not gain an ABCT. The ABCT would be stationed at another installation. As a result, there would be a decrease in the level of training at Fort Carson. As shown in Table 2.3-6, Fort Carson's BCT MIMs would decrease by 65,000 or 22 percent. The decrease use of range and training lands could be beneficial to biological resources, as lands would potentially be less-intensively used by training.

3.2.3.3. Summary of Mitigation

No new mitigation measures are needed nor have any been identified. The Army will continue to adhere to legal and regulatory requirements, and continue to implement its approved management plans, standard operating procedures (SOPs) and BMPs related to biological resources.

3.2.4. Cultural Resources

3.2.4.1. Affected Environment

Based on the Fort Carson ICRMP (Fort Carson, 2017), as of March 2017, Fort Carson has surveyed approximately 85 percent of Fort Carson-managed lands, resulting in the identification of approximately 2,092 known archaeological resources archaeological resources at Fort Carson. Fort Carson has three designated historic districts, with a total of ten buildings or structures that are considered eligible for the NRHP. This includes the Turkey Creek Ranch Historic District, located within the Turkey Creek Complex; the Incinerator Complex, located on Main Post; and the Turkey Creek Rock Art District. The Turkey Creek Rock Art District is listed on the NRHP. The Turkey Creek Rock Art District is located downrange west of the digital multipurpose range complex.

3.2.4.1.1. Management of Cultural Resources

Management of cultural resources for Fort Carson is detailed in ICRMP (Fort Carson ICRMP, 2017). Fort Carson manages cultural resources associated with all major prehistoric and historic cultural periods recognized on the southern Great Plains and Rocky Mountains at Fort Carson. Cultural resources management on installation encompasses conservation and preservation of historic properties, as well as PRTCI to Native Americans, which include sites and areas designated as Traditional Cultural Properties (TCPs) and sacred sites.

In order to streamline the Section 106 process in accordance with 36 CFR 800.14(b), Fort Carson developed a PA for locations on both Fort Carson and the PCMS:

- *Programmatic Agreement Among the U.S. Army Garrison Fort Carson, the Colorado State Historic Preservation Officer, and the Advisory Council on Historic Preservation Regarding Construction, Maintenance, and Operations Activities for Areas of Fort Carson, Colorado* (Fort Carson, 2013). This PA (referred to as the Fort Carson Built Environment PA) streamlines the Section 106 consultation process for certain undertakings that occur within the following built environment areas on Fort Carson: the Main Post area south to Rock Creek, Scout Camp, Bird Farm Recreation Area, Townsend Reservoir, Haymes Reservoir, the Wildlife Demonstration Area, Turkey

Creek Recreation Area, and Camp Red Devil. In addition, it establishes a requirement to prepare an annual report of undertakings and actions completed during the fiscal year.

- *Programmatic Agreement among U.S. Army Garrison Fort Carson, Colorado State Historic Preservation Officer, and the Advisory Council on Historic Preservation regarding Military Training and Operational Support Activities Down Range Fort Carson, Colorado* (Fort Carson, 2014a). This PA (referred to as the Fort Carson Downrange PA) streamlines the Section 106 consultation process for certain undertakings that occur within the 122,503-acre (49,575 ha) parcel, referred to as downrange Fort Carson. In addition, it establishes site monitoring and protection procedures for archaeological resources located within downrange Fort Carson. It also requires annual cultural resources awareness training and an annual report of activities.

Stipulations within these PAs establish protection measures, monitoring strategies, and a list of activities exempted from further consultation. Fort Carson analyzes effects on historic properties and protected properties from military training, other activities, and natural processes. In cases where Section 106 consultation would be necessary, review, evaluation, and analysis regarding the potential for adverse effects to historic properties would consider all characteristics that qualify a site for inclusion on the NRHP.

3.2.4.2. Environmental Consequences

3.2.4.2.1. No Action Alternative

Impacts to cultural resources under the No Action Alternative are anticipated to be negligible. Fort Carson would not convert the IBCT to an ABCT. Prior to the initiation of ground-disturbing activities, Fort Carson's Cultural Resources Manager evaluates all activities to identify resources that might be affected, determines effects, and initiates the Section 106 consultation process as mandated by the NHPA. At Fort Carson, the inventory and evaluation of historic properties through the Cold War era is ongoing. Activities with the potential to affect cultural resources are monitored and regulated through a variety of preventative and minimization measures.

3.2.4.2.2. Alternative 1

3.2.4.2.2.1. Training

As stated in Section 3.1.2, maneuver and live-fire exercise training can adversely affect cultural resources. This includes disturbance to archaeological sites from ground disturbance or historic structures from training and live-fire exercises. The conversion of an IBCT to ABCT at Fort Carson could result in greater intensity of ground disturbance and impacts to cultural resources due to its use of heavier, tracked vehicles (compared to the existing IBCT).

Overall adverse impacts to cultural resources in the training component would be minor. Fort Carson would mitigate the potential for significant adverse effects to cultural resources through continued management of training and cultural resources in accordance with the PAs. This includes continued management and monitoring of cultural resources to PA conditions and consideration of locations of historic properties, sacred sites, and traditional cultural properties locations during planning of training events for avoidance by mounted training activities. By following the stipulations in the PAs, no significant adverse impacts to cultural resources are anticipated as a result of the proposed IBCT conversion and ABCT stationing at Fort Carson. Fort Carson's Inadvertent Discovery of Archaeological, Cultural, or Paleontological Materials SOPs would apply for training activities. Units would use existing designated ABCT training areas and would follow Fort Carson SOPs for range use and scheduling.

3.2.4.2.2.2. Construction

Overall adverse impacts to cultural resources in the construction component would be negligible. Fort Carson's Inadvertent Discovery of Archaeological, Cultural, or Paleontological Materials SOP would apply for any construction activities. In addition, the Fort Carson Built Environment PA includes exemptions for new construction, maintenance and repair, and demolition within the Main Post.

As stated in Section 2.3.2 no new ranges, range upgrades or garrison construction would be required during the implementation phase of IBCT reassignment and conversion into an ABCT under Alternative 1. ABCT personnel and equipment would be located within the converted IBCT's administrative and operational footprint located near Wilderness Road. Fort Carson, however, would require future cantonment infrastructure improvements within the IBCT's

existing and previously analyzed footprint near Wilderness Road to bring facilities up to current Army standards for an ABCT. Construction could cause a direct or indirect alteration of the characteristics that qualify a property for inclusion on the NRHP through activities such as ground disturbance to an archaeological site or alternation to a historic structure or viewshed.

As shown on Figure 2.3-1, Fort Carson anticipates construction of future facilities within previously disturbed areas and within locations determined to have no cultural resources along Wilderness Road and that are outside of historic districts, historical homestead and/or ranch complexes, and PRTCIs. Overall adverse impacts to cultural resources would be negligible. Fort Carson would identify specific locations and provide designs of these future cantonment infrastructure improvements. Site selection and design would incorporate Real Property Master Plan and other master planning processes, including the use of strategic siting (e.g., avoidance of cultural resources) and design to adhere to cultural resource management according to the PAs. These future infrastructure improvements would be subject to appropriate follow-on NEPA analyses, as required.

3.2.4.2.3. Alternatives 2, 3, 4, and 5

Under these alternatives, Fort Carson would lose an IBCT and not gain an ABCT. The ABCT would be stationed at another installation. As a result, there would be a decrease in the level of training at Fort Carson. The decrease use of range and training lands could be beneficial for cultural resources as the potential for disturbance to cultural resources would be reduced and lands would potentially be less-intensively used by training.

3.2.4.3. Summary of Mitigation

No new mitigation measures are needed nor have any been identified. The Army will continue to adhere to legal and regulatory requirements, and continue to implement its approved management plans, PA, SOPS, and BMPs related to cultural resources.

3.2.5. Soils

3.2.5.1. Affected Environment

3.2.5.1.1. Soils and Erosion

Soil types commonly occurring in the Fort Carson region are also aridisol (dry, desert-like soils) and entisol (soils that do not show any profile development and which are largely unaltered from their parent rock) soils. These soil types are characterized by moderate-to-severe erodibility, landslides, and unstable clay formation movement due to variations in moisture content and temperature. Soil erosion is a problem at Fort Carson. Soils of greatest concern for erosion are clays, silty clays, and clay loams. In particular, the eastern portion of Fort Carson, located within the Fountain Creek Watershed, and the southwest corner of the post draining to Beaver Creek, contain soils that have been identified as being moderately to highly susceptible to erosion.

Additional information on Fort Carson and the PCMS soil types can be found in the INRMP, and specific information can be obtained from the NRCS soil surveys for El Paso, Pueblo, Fremont, and Las Animas counties.

3.2.5.1.2. Soil and Erosion Management

Natural resource management at Fort Carson focuses on maintaining the structure and integrity of soil resources, while maintaining high-quality lands for training, biodiversity, and recreation. Fort Carson manages natural resources, including soils, through the INRMP. The INRMP outlines plans, goals, and objectives for the natural resources programs on Fort Carson, and integrates conservation management actions with Army mission.

Fort Carson uses an adaptive ecosystem management strategy to protect, conserve, enhance, and monitor resources and to adjust INRMP management objectives based upon the effects of training activities. Management decisions are made based on the best available science and attempt, where practical, to mimic the natural historical disturbance regimes for the ecoregion. Monitoring programs generate the soils and land recovery data needed to determine whether the management measures and strategies are effective in achieving their intended goals and objectives. These include maintaining sustainable training lands and minimizing soil movement, minimizing soil loss from water and wind erosion.

Units are briefed prior to each training event regarding sensitive areas on post such as highly-erodible soils, and what is allowed or prohibited within certain areas. This management approach preserves soil resources while also providing the optimum environmental conditions required to sustain the military mission and realistic training conditions (Fort Carson, 2015).

Management of natural resources also involves the ITAM program that establishes a uniform land management program and includes inventorying and monitoring land condition. The program also involves integration of training requirements with land carrying capacity while at the same time training to Army standard; educating land users to minimize adverse impacts; and prioritizing and implementing rehabilitation and maintenance projects. Fort Carson's ITAM is governed by AR 350-19 and FC Regulation 350-9, Integrated Training Area Management.

3.2.5.2. Environmental Consequences

3.2.5.2.1. No Action Alternative

Negligible adverse effects would occur at Fort Carson as a result of the implementation of the No Action Alternative. Fort Carson would not convert the IBCT to an ABCT, and would continue to adhere to its existing resource management plans to minimize and monitor any potential effects. Units are briefed prior to each training event regarding sensitive areas on post, such as highly-erodible soils, and what is allowed or prohibited within certain areas.

3.2.5.2.2. Alternative 1

3.2.5.2.2.1. Training

As stated in Section 3.1.2, maneuver and live-fire exercise training can negatively affect soil resources. This includes degradation of soils and potential for increased soil erosion (water and wind) from maneuver training, field equipment training, and live-fire exercises. The conversion of an IBCT to an ABCT stationed at Fort Carson could result in greater intensity of soil disturbance and impacts to soil resources due to its use of heavier, tracked vehicles (compared to the existing IBCT), especially if those maneuvers are conducted by heavy tracked and wheeled vehicles during wet conditions. As discussed in Section 2.2.2, the addition of an ABCT at Fort Carson would increase MIMs by 65,000 per year, totaling 357,000 MIMs (an approximate 22 percent increase). This potentially correlates to a 22 percent increase in soil maneuver impacts and required repair costs over a given training year.

Long-term increases in training intensity requiring large maneuver footprints due to heavy tracked and wheeled vehicles could potentially result in disturbance to soil resources at Fort Carson. This could occur at the landscape scale through degradation of soils and the potential for increased soil erosion over widespread areas if areas are not adequately rotated or given necessary recovery times for re-vegetation activities supporting soil stabilization.

In addition, the Soldiers and equipment associated with additional ABCT training (compared to an IBCT) could also result in adverse impacts to soil resources within Fort Carson from increased training throughput. The most critical effect to soils would be the potential for increased soil compaction, soil rutting, and soil erosion (wind and water) as the result of ABCT training (compared to an IBCT). Potential effects could include sedimentation and run-off to adjacent waterways, soil stability, and fertility.

Overall adverse impacts to soil resources from training at Fort Carson would be moderate/ less than significant when compared with the No Action Alternative. Fort Carson would mitigate the potential for significant adverse effects to soil resources through management of ABCT training and management of soil resources in accordance with the INRMP. This includes coordinating training events that comply with the following policies that would benefit soil resources and sustainability (Fort Carson, 2017):

- Continued restrictions on troop training on Fort Carson and the PCMS per Fort Carson Regulation 350-10 (Maneuver Damage Control Program), FC Regulation 385-63 (Firing Ammunition for Training, Target Practice, Administration and Control of Ranges and Training Areas), FC Regulation 350-1 (Mountain Post Training), and FC Regulation 350-4 (Training at the PCMS). These guidelines seek to reduce damage to soils from maneuver training activities by establishing conditions (e.g., wet soils) and locations (limited-use, off-limits, and dismount-only areas) when training is limited to trails, roads, and dismounted operations and restoring maneuver damage to soils following training events.

- The use of supplemental maps delineating off-limits and limited-use areas, and are updated periodically. This existing practice would avoid impacts to sensitive soil resources.

- Coordination of units with DPTMS during the training scheduling process for site-specific restrictions needed for safety and compliance purposes (e.g., permission to dig large excavations, avoidance of saturated soils). This existing practice would avoid impacts to sensitive soil resources.

- Continuation of the limited-use (Rest/Rotation or Deferment) program to include heavily-degraded-by-military-training areas in the limited-use program, temporarily, to allow for recovery under the ITAM program. This existing program would reduce the potential for landscape-level disturbance by allowing land to recover.

Fort Carson would also continue to adopt additional soil mitigation measures contained within the 2015 PCMS EIS ROD to avoid the potential for significant impacts from ABCT training at PCMS.

3.2.5.2.2.2. Construction

As stated in Section 2.2.3, no new ranges, range upgrades, or garrison construction would be required during the implementation phase of IBCT reassignment and conversion into an ABCT under Alternative 1. ABCT personnel and equipment would be located within the converted IBCT's administrative and operational footprint located near Wilderness Road. Fort Carson, however, would require future cantonment infrastructure improvements within the IBCT's existing and previously analyzed footprint near Wilderness Road. This includes expanding two existing tactical equipment maintenance facilities; construction of additional organizational parking; and constructing a new Distribution Company storage building with loading dock and secure open storage. Construction could cause a temporary increase in soil erosion, sedimentation and run-off, as well as permanent loss of soils in areas of new impervious surface. Soil resources occurring within construction footprints would be permanently disturbed to accommodate the future cantonment infrastructure improvements.

As shown on Figure 2.3-1, these construction activities would occur within developed areas along Wilderness Road containing previously disturbed soils. The overall adverse impacts to soil resources in the construction component would be minor. Fort Carson would identify specific locations and provide designs of these future infrastructure improvements. During construction, Fort Carson would implement appropriate erosion and sediment control BMPs

(e.g., silt fencing, wetting of exposed soils, site stabilization, bank sloping, use of geotextile and/or rip-rap, management of erosion control features) to minimize the potential for construction-related erosion and sedimentation.

Construction projects at Fort Carson are authorized to discharge stormwater runoff from construction sites under a National Pollutant Discharge Elimination System (NPDES) Construction General Permit (refer to Section 3.3.6.2 for details about NPDES permit requirements). In addition to complying with the NPDES Construction General Permit, contractors must develop and implement a Stormwater Pollution Prevention Plan (SWPPP) for each project and comply with the additional BMPs set forth in Fort Carson's SWMP. BMPs include construction of low-impact development features, infiltration basins, bioretention basins, vegetated swales, and permeable pavers.

Long-term minor effects would result from permanent loss of soils in areas containing new impervious surfaces associated with new buildings. Site selection and design would incorporate Real Property Master Plan and other master planning processes, including the use of strategic siting, and implementation of sustainable design and construction. These future cantonment infrastructure improvements would be subject to appropriate follow-on NEPA analyses, as required.

3.2.5.2.3. Alternatives 2, 3, 4, and 5

Under these alternatives, Fort Carson would lose an IBCT and not gain an ABCT. The ABCT would be stationed at another installation. As a result, there would be a decrease in the level of training at Fort Carson. As shown in Table 2.3-6, Fort Carson's BCT MIMs would decrease by 65,000 or 22 percent. The decrease use of range and training lands could be beneficial to soil resources, as lands would potentially be less-intensively used by training.

3.2.5.3. Summary of Mitigation

No new mitigation measures are needed nor have any been identified. The Army will continue to adhere to legal and regulatory requirements, and continue to implement its approved management plans, SOPs and BMPs related to soil resources.

3.2.6. Surface Water and Wetlands

3.2.6.1. Affected Environment

3.2.6.1.1. Surface Waters

The northern and eastern portions of Fort Carson are located within the Fountain Creek watershed of the Arkansas River Basin and drain southeasterly into Fountain Creek. Stormwater runoff in the northern portion of the installation flows into one of four main drainages: B-Ditch, Clover Ditch, Infantry Creek, or Rock Creek, which are all tributaries to Fountain Creek. The southern and western portions of the installation drain directly into the Arkansas River to the south (Fort Carson Grow the Army [GTA] EIS, 2009).

These northern drainages have historically been considered ephemeral or intermittent, in which no flow occurs in some reaches for long periods during the year, and with the high flow occurring between April and September (Fort Carson GTA EIS, 2009). Modern day conditions within the watershed, however, have changed the system dynamics, which now typically exhibit perennial flows in most areas of these drainages. The majority of flows in these drainages consist of runoff from precipitation and snowmelt that have increased due to the higher percentages of impervious areas within the watershed. Groundwater seepage and return flows also contribute to baseflows in these drainages (Fort Carson GTA EIS, 2009).

3.2.6.1.2. Water Quality

Teller Reservoir, the largest downrange water body, has been listed as an impaired water body on Colorado's CWA Section 303(d) list and is on Colorado's Monitoring and Evaluation List to be re-evaluated. The impairment is the result of a fish consumption advisory that has been imposed because of mercury-contaminated soils leading to biological accumulation of mercury in plants, and fish tissues (CDPHE, 2016). The 303(d) list does not identify the source of mercury contamination.

3.2.6.1.3. Wetlands

Wetlands identified on Fort Carson are generally characterized as linear (e.g., streambeds) or small and isolated. Linear wetlands on Fort Carson occur along intermittent and perennial stream channels and tributaries, primarily of Rock, Little Fountain, Turkey, Little Turkey, Red, Sand, and Wild Horse creeks. The current estimate of wetlands on Fort Carson is

approximately 1,028 acres (416 ha) (Fort Carson INRMP, 2014). Isolated wetlands usually occur where a dam has been built for erosion control or for water storage. Most of these areas are 1-2 acres (0.4-0.8 ha) in size. The largest downrange wetland is on the upper reaches of Teller Reservoir, encompassing approximately 100 acres (40.5 ha). In addition to cattails, common wetland species are cottonwood and willow. Some wetlands have been invaded by tamarisk, a noxious weed of primary wetland management concern. About six springs occur on Fort Carson, and they have very small associated wetlands. There are also a number of wetland areas scattered throughout the area, typically in natural or stormwater runoff drainages and in an area south of Butt's Airfield Army (BAAF) (Fort Carson GTA EIS, 2009).

3.2.6.1.4. Surface Water and Wetlands Management

As described in the INRMP, water resources at Fort Carson and the PCMS are managed in coordination with the USGS, NRCS, USFWS, Department of Interior (DOI), USACE, Colorado Department of Wildlife (CDOW), and Colorado State Division of Water Resources. The water resources management program includes watershed and sedimentation monitoring, watershed and sedimentation management and enhancement, project reviews for erosion and sediment control, and compliance with federal and state laws and regulations (Fort Carson GTA EIS, 2009). Application of existing land management programs, including training land rotations, limited-use areas, dismounted-only areas, off-limit areas, and Land Rehabilitation and Maintenance (LRAM) efforts, including maintaining erosion control structures, are employed to offset the impact of training to water quality by reducing the potential for sedimentation into surface waters (PCMS Training and Operations EIS, 2015).

Wetland management on Fort Carson and the PCMS consists of all elements related to compliance with the CWA, Section 404, as well as applicable EOs, Army regulations, and state laws (Fort Carson INRMP, 2014). The wetlands management program adheres to provisions of the CWA to ensure protection from irresponsible and unregulated discharges of dredged or fill material that could permanently alter or destroy valuable water resources on Fort Carson and the PCMS. EO 11990, *Protection of Wetlands* (1977), DoD instruction 4715.03, and the CWA require no net wetland losses on federal lands in the United States. The goal of the wetlands management program is no net loss of wetlands on Fort Carson or the PCMS (Fort Carson INRMP, 2014).

Fort Carson has an Army Regional Permit No. SPA-2008-00058-SCO from the USACE, which allows most erosion control activities on Fort Carson and the PCMS to occur without separate permitting actions (Fort Carson INRMP, 2014). This regional permit authorizes Fort Carson to conduct erosion control activities that may result in minimal individual and cumulative effects to wetlands from dredge and fill activities. Typical erosion control measures include erosion control and stock watering impoundments, bank sloping of erosion courses, check dams, rock armor, hardened crossings, culverts and bridges, erosion control terraces and water diversions, water turnouts, and other erosion control activities approved by USACE.

3.2.6.2. Environmental Consequences

3.2.6.2.1. No Action Alternative

Negligible adverse effects would occur at Fort Carson as a result of the implementation of the No Action Alternative. Fort Carson would not convert the IBCT to an ABCT, and would continue to adhere to its existing resource management plans to 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 activities that are prohibited within certain areas.

3.2.6.2.2. Alternative 1

3.2.6.2.2.1. Training

As stated in Section 3.1.2, maneuver and live-fire exercise training can negatively affect surface water and wetland resources. This includes physical degradation of surface water features, water quality, and wetlands from maneuver training, field equipment training, and live-fire exercises. The conversion of an IBCT to an ABCT stationed at Fort Carson could result in greater intensity of impacts to surface water and wetland resources due to its use of heavier, tracked vehicles (compared to the existing IBCT), especially if maneuvers are conducted in wet conditions. As discussed in Section 2.3.1.5, the addition of an ABCT at Fort Carson would increase MIMs by 65,000, totaling 357,000 MIMs (an approximate 22 percent increase). Long-term increases in training intensity requiring large maneuver footprints due to heavy tracked and wheeled vehicles could potentially result in effects to surface water and wetland resources at Fort Carson. As stated in Section 3.2.5.2, ABCT training activities could cause widespread disturbance to soils resulting in excess sediment loads in surface waters and wetlands, changes

to drainage patterns, and increased stormwater runoff. This could adversely affect surface water quality within Fort Carson, within the Arkansas River basin, and impact wetland quality and hydrology.

Impacts associated with operation of armored vehicles and heavy equipment for ABCT training to surface waters would be greater during wet conditions, particularly when crossing intermittent drainages. These activities could modify drainage structures through erosion and compaction resulting in increased erosion potential and indirect impacts to water quality.

Overall adverse impacts to surface water and wetland resources from training at Fort Carson would be moderate/ less than significant. Fort Carson would mitigate the potential for significant adverse effects to surface water and wetland resources through management of ABCT training and management of surface water and wetland resources in accordance with the INRMP and ITAM program. This includes coordinating training events that comply with the following policies (Fort Carson INRMP, 2014):

- Continued restrictions on troop training on Fort Carson and the PCMS per Fort Carson Regulation 350-10 (Maneuver Damage Control Program), FC Regulation 385-63 (Firing Ammunition for Training, Target Practice, Administration and Control of Ranges and Training Areas), FC Regulation 350-1 (Mountain Post Training), and FC Regulation 350-4 (Training at the PCMS). These existing regulations would reduce the potential for adverse effects to surface waters and wetlands by avoiding these resources and by reducing the potential for widespread soil erosion (see Section 3.3.5.2) and permanent rutting and changes to surface hydrology.

- The use of supplemental maps, which delineate off-limits and limited-use areas and are updated periodically. This existing practice would avoid impacts to sensitive surface water and wetland resources.

- Coordination of units with DPTMS during the training scheduling process for site-specific restrictions needed for safety and compliance purposes (e.g., permission to dig large excavations at or near waterbodies, avoidance of wetland areas or saturated soils). This existing practice would avoid impacts to sensitive surface water and wetland resources.

- Continuation of the limited-use (Rest/Rotation or Deferment) program to include areas heavily degraded by military training areas in the limited-use program temporarily to allow for recovery under the ITAM program. This existing program would reduce the potential for adverse effects to surface waters and wetlands by reducing the potential for widespread soil erosion (see Section 3.3.5.2) and sedimentation, permanent rutting, and changes to surface hydrology by allowing land to recover.

The ITAM program would continue to be used during maneuvers to reduce soil erosion and sedimentation into adjacent surface waters and wetlands. Potential surface water contamination could occur due to accidental spills of hazardous materials associated with vehicles and equipment (e.g., oil, fuels, and solvents). Fort Carson would continue to implement AR 200-1 and BMPs to manage and reduce potential impacts. Additionally, FC Regulation 200-1 includes stipulations for protection and conservation of wetlands and streams by following maps, posted signs, and water crossing requirements.

Vehicles would be operated and maintained to minimize leaking fluids that could contaminate soils and waterbodies. Vehicle and equipment fueling and maintenance would be restricted to approved locations unless emergency field maintenance is required. If emergency maintenance were required, applicable control and containment measures would be implemented to prevent accidental contamination of surface water. Such controls include locating activities away from surface waters and stormwater inlets or conveyances, providing secondary containment (e.g., spill berms, decks, and spill containment pallets) and cover where applicable, and/or having spill kits readily available.

3.2.6.2.2.2. C**onstruction**

As stated in Section 2.2.3, no new ranges, range upgrades, or garrison construction would be required during the implementation phase of IBCT reassignment and conversion into an ABCT under Alternative 1. ABCT personnel and equipment would be located within the converted IBCT's administrative and operational footprint located near Wilderness Road. Fort Carson would require future cantonment infrastructure improvements within the IBCT's existing and previously analyzed footprint near Wilderness Road. This includes expanding two existing tactical equipment maintenance facilities; construction additional organizational parking; and constructing a new Distribution Company storage building with loading dock and secure open

storage. Construction could cause a temporary increase in soil erosion and permanent increases in impervious surfaces that could increase stormwater runoff and adversely affect surface water quality due to sedimentation.

As shown on Figure 2.3-1, these construction activities would occur within previously disturbed and developed areas along Wilderness Road containing no surface water or wetland resources. No direct impact to these resources would occur from construction. The potential for indirect impacts from construction site stormwater runoff and sedimentation are further described below.

Fort Carson would identify specific locations and provide designs of these future infrastructure improvements. Long-term minor effects would result from new impervious surfaces associated with new buildings resulting in increased stormwater runoff and adversely affect surface water quality due to sedimentation and run-off. Fort Carson will comply with Section 438 of the EISA. This requires use of a variety of stormwater management practices, often referred to as "green infrastructure" or "low impact development" practices. These include reducing impervious surfaces, using vegetative practices, porous pavements, cisterns, and green roofs." Fort Carson would continue to follow BMPs and impact-reduction measures described within the Fort Carson INRMP and SWMP. Construction projects at Fort Carson are authorized to discharge stormwater runoff from construction sites under a NPDES Construction General Permit. To obtain coverage under the general permit, contractors performing work at Fort Carson must submit a NOI for each construction project that disturbs one acre (0.4 ha) or more of land. In addition, contractors must develop and implement a SWPPP for each project and comply with the additional BMPs set forth in Fort Carson's SWMP. Erosion and sediment control BMPs could include silt fencing, wetting of expose soils, site stabilization, bank sloping, use of geotextile and/or rip-rap, and management of erosion control features (Fort Carson INRMP, 2014). BMPs also include construction of low-impact development features, infiltration basins, bioretention basins, vegetated swales, and permeable pavers (Fort Carson SWMP, 2016).

Site selection and design would incorporate Real Property Master Plan and other master planning processes and policies including the use of strategic siting, and implementation of sustainable design and construction. These future cantonment infrastructure improvements

would be subject to appropriate follow-on NEPA analyses, as required. Overall adverse impacts to water resources in the construction component at Fort Carson would be minor.

3.2.6.2.3. Alternatives 2, 3, 4, and 5

Under these alternatives, Fort Carson would lose an IBCT and not gain an ABCT. The ABCT would be stationed at another installation. As a result, there would be a decrease in the level of training at Fort Carson. As shown in Table 2.3-6, Fort Carson's BCT MIMs would decrease by 65,000 or 22 percent. Overall impacts to surface water and wetland resources could be beneficial due to the decreased use of range and training lands would potentially be less-intensively used by training.

3.2.6.3. Summary of Mitigation

No new mitigation measures are needed nor have any been identified. The Army will continue to adhere to legal and regulatory requirements, and continue to implement its approved management plans, SOPs and BMPs related to surface water and wetland resources.

3.2.7. Socioeconomics

3.2.7.1. Affected Environment

This PEA considers the ROI for socioeconomics to include both Fort Carson the PCMS within the discussion of fire and medical services that relate to potential ABCT training at the PCMS. As Soldiers, their Families, and Civilians are stationed at and located outside of the Fort Carson Main Post, other socioeconomic factors only consider the Fort Carson Main Post.

3.2.7.1.1. Population and Housing

Fort Carson's population includes 24,303 permanent party, transient military, and rotational military. The Civilian working population is 6,691 and includes Army Civilians, contractors, and other Civilians. There are 36,010 Family members in total.

In 2015, the population of the ROI was approximately 863,000. Between 2010 and 2015, the population increased in El Paso and Pueblo counties, and slightly decreased in Fremont County (see Table 3.2-5).

Table 3.2-5 Population in the Fort Carson ROI

Region of Influence Counties	Population (2015)	Population Change 2010–2015 (percent)
El Paso County	655,024	5.0
Pueblo County	161,519	1.52
Fremont County	46,809	-0.03

Sources: U.S. Census Bureau, 2016a; U.S. Census, 2010

Fort Carson currently has 3,287 accompanied Soldiers residing in Family housing with 12,211 Family members residing in them. Fort Carson has 3,415 Family housing units that are 95 percent occupied. Housing is managed through the Residential Communities Initiative (RCI) partnership. Unaccompanied Personnel Housing (UPH) has 6,771 single Soldiers (unaccompanied) living in on-post barracks. All unaccompanied Soldiers, Staff Sergeant and above, must live off-post.

A summary of housing units in the ROI is shown in Table 3.2-6.

Table 3.2-6 Housing Characteristics in the Fort Carson ROI

Housing Characteristic	El Paso County	Pueblo County	Fremont County
Total Housing Units	261,745	69,959	19,240
Occupied Housing Units	245,287	62,888	16,342
Owner-Occupied	153,354	40,369	11,584
Renter-Occupied	91,933	22,519	4,758
Average Household Size (owner occupied)	2.66	2.48	2.18
Average Household Size (renter occupied)	2.50	2.52	2.30
Vacant Housing Units	16,458	7,071	2,898
Homeowner Vacancy Rate (percent)	1.5	2.0	3.0
Rental Vacancy Rate (percent)	4.4	6.4	6.1

Source: U.S. Census Bureau, 2016b

3.2.7.1.2. Public Services and Schools

Schools. Fort Carson has 11,429 school-aged children of military service members attending school in seven local school districts (not including other districts, private schools, or home

schools). The seven districts included Academy D-20, Cheyenne Mountain D-12, Colorado Springs D-11, Falcon D-49, Fountain-Fort Carson, D-8, Harrison D-2, and Widefield D-3. The highest percent of dependents attended Fountain-Fort Carson D-8 with 43 percent of the total in attendance.

Police, Fire, and Emergency Services. Fort Carson's Directorate of Emergency Services (DES) enhances safety, security, and increases force protection by providing 24-hour police and fire support to the Fort Carson community. Police, fire, and emergency services are provided off-post by various departments throughout El Paso, Pueblo, and Fremont counties.

The PCMS is served by 15 fire departments, including three departments in Huerfano County, eight departments in Las Animas County, and four departments in Otero County. Fort Carson's on-post fire department also serves PCMS and maintains multiple mutual aid agreements for fire protection at the PCMS.

Medical Facilities. Evans Army Community Hospital opened in 1986 and serves all Active Duty personnel, their dependents, and retirees. It also serves the Fort Carson's Warrior Transition Unit and Army elements in Pueblo, Colorado and Utah. The hospital was first accredited in October 1954, and has placed in the top 10 percent of all healthcare organizations in the country during its most recent accreditation.

The PCMS is served by the Spanish Peaks Regional Health Center in Walsenburg (Huerfano County), Mt. San Rafael Hospital in Trinidad (Las Animas County), and Arkansas Valley Regional Medical Center in La Junta (Otero County).

Family Support Services. Fort Carson Army Community Services is a human service organization with programs and services dedicated to assisting Soldiers and their Families under the FMWR. The FMWR is a comprehensive network of support and leisure services designed to enhance the lives of Soldiers (Active, Reserve, and Guard), their Families, Civilian employees, military retirees, and other eligible participants. Services at Fort Carson include family, child and youth programs, recreation, sports, entertainment, and leisure activities. The Child, Youth, and School Services is a division within the FMWR that provides Child Development Centers for children ages six weeks to five years; School Age Services for ages six to 10 years, and middle school and teen programs for ages 11 to 18 years, as well as sports and instructional classes.

3.2.7.1.3. Environmental Justice and Protection of Children

Table 3.2-7 summarizes the minority and low-income populations for the counties within the Fort Carson ROI and the state of Colorado. See Section 3.1.5 on EO 13045, Protection of Children From Environmental Health Risks and Safety Risks.

Table 3.2-7 Minority and Low Income Populations within the Fort Carson ROI

Demographic	El Paso County (%)	Pueblo County (%)	Fremont County (%)	Colorado (%)
Hispanic or Latino	16.0	42.3	13.0	21.1
Black or African American	5.7	1.8	5.1	3.9
American Indian/Alaska Native	0.4	0.5	1.3	0.5
Asian	2.7	0.7	0.7	2.8
Native Hawaiian/ Pacific Islander	0.3	0.03	0.06	0.1
Some Other Race	0.2	0.2	0.3	0.2
Two or More Races	4.1	1.6	1.6	2.3
Total Minority Population	29.4	47.0	22.0	30.9
Population below Poverty Level	11.8	19.8	17.4	12.7

U.S. Census Bureau, 2016c; U.S. Census Bureau, 2016d

3.2.7.1.4. Economic Development and Employment

Income and employment patterns provide insight into local economic conditions, including the strength of the local economy and well-being of residents. Summary statistics covering these economic parameters are shown in Table 3.2-8. Table 3.2-9 shows ROI employment by sector.

Table 3.2-8 Income and Employment Conditions in the Fort Carson ROI

Income and Employment Conditions	El Paso County	Pueblo County	Fremont County	Colorado
2015 Per Capita Personal Income ($)	29,659	22,191	18,619	32,217
2015 Median Household Income ($)	58,206	41,286	40,423	60,629
Labor Force	328,796	72,632	15,295	3,023,493

Income and Employment Conditions	El Paso County	Pueblo County	Fremont County	Colorado
Change in Employment, 2010-2017 (%)	12.5	7.9	3.2	15.2
2017 Unemployment (%)	2.7	3.5	3.4	2.3

Source: U.S. Census, 2016e; BLS 2017.

Table 3.2-9 Fort Carson ROI Employment Distribution by Sector

Employment Sector	El Paso County (%)	Pueblo County (%)	Fremont County (%)	Colorado (%)
Agriculture, forestry, fishing and hunting, and mining	0.8	1.4	2.9	2.6
Construction	6.8	7.5	6.6	7.4
Manufacturing	6.5	7.6	4.6	7.0
Wholesale trade	2.0	2.1	1.0	2.6
Retail trade	11.3	13.5	13.5	11.1
Transportation and warehousing, and utilities	4.0	4.2	4.0	4.5
Information	2.8	2.1	1.0	3.0
Finance and insurance, and real estate and rental and leasing	6.6	4.4	5.0	6.9
Professional, scientific, and management, and administrative and waste management services	12.9	8.6	7.6	13.5
Educational services, and health care and social assistance	21.9	27.0	23.9	20.5
Arts, entertainment, and recreation, and accommodation and food services	10.8	10.6	9.6	10.8
Other services, except public administration	6.2	3.8	4.5	5.1
Public administration	7.5	7.1	15.8	4.9

Source: U.S. Census, 2016e.

3.2.7.2. Environmental Consequences

3.2.7.2.1. No Action Alternative

Negligible adverse effects would occur at Fort Carson under the No Action Alternative. Fort Carson would not convert the IBCT to an ABCT, and Fort Carson would continue to operate with its existing force. Fort Carson's continuing operations represent a beneficial source of regional economic activity. No additional impacts to housing, public services, schools, or public safety are anticipated.

3.2.7.2.2. Alternative 1

Under Alternative 1, Fort Carson would experience a decrease of up to 21 Soldiers, an estimated 12 spouses, and an estimated 20 dependent children, for a total population decrease of 53. This decrease would result in negligible socioeconomic impacts from slight decreases in employment, sales volume, income, sales tax revenue, and school enrollment. Overall impacts would be negligible and barely perceptible in the larger ROI.

3.2.7.2.3. Alternatives 2, 3, 4, and 5

Under these Alternatives, the ABCT would be stationed at another installation. Fort Carson would experience a decrease of up to 4,203 Soldiers, an estimated 2,312 spouses and 4,035 dependent children, for a total population decrease of 10,550. Decreases in Soldier and dependent population would lead to long-term moderate/ less than significant adverse socioeconomic impacts due to a decrease in economic activity within the ROI, particularly in towns closest to the installation such as Fountain, Security, and Widefield where military populations are highest.

3.2.7.2.4. Socioeconomic Impacts

A decrease in up to 10,550 Soldiers and dependents would result in long-term adverse economic impacts at Fort Carson. This decrease would be within the magnitude analyzed in the 2020 Supplemental PEA completed in 2014, which considered a decrease of up to 16,000 Soldiers and another 24,288 dependents, for a total population reduction of 40,288. It would also be within the magnitude of reductions analyzed in the 2013 PEA, a decrease of up to 8,000 Soldiers and a total population reduction of 20,144. Specific impacts are described in detail below.

Population and Housing. Alternatives 2 - 5 would result in a decrease in population of 10,550 in the ROI. This would represent an approximate one percent decrease in population in the region, and is a smaller decrease than was considered in the 2013 Army 2020 PEA and its 2014 Supplement. The 2013 PEA found that the population loss would produce a significant impact. This was because the 2.44% population decrease exceeded its significance threshold of a 1.57% loss. Using extrapolation, the 10,550 loss under Alternatives 2-5 would result in a 1.27% loss. This is under the 1.57% threshold and would therefore be moderate, less than significant.

Population decreases would lead to a reduction in demand for housing. This would increase availability of single occupancy barracks and single Soldier housing, as well as possible vacancies in on-post Family housing. Once Active Duty military waiting lists are empty, remaining on-post units would be filled according to the "waterfall" priority. If there are not any Soldiers with dependents on the waiting list, housing would be made available other service members assigned to other installations, retirees, and DoD Civilians. Overall there would be minor adverse impacts to the housing and rental market in the region. Impacts would be concentrated mostly in El Paso County where current military tenant populations are highest.

Public Services and Schools. The decreased population scenario under Alternatives 2 - 5 would lower school enrollment, decrease the need for teachers, staff, and administrators, and decrease federal and DoD funding which is based on the number of military-connected children the supports. These effects would be minor under these Alternatives in Academy D-20, Cheyenne Mountain D-12, Colorado Springs D-11, Falcon D-49, Harrison D-2, and Widefield D-3. Potential moderate adverse economic impacts, however, would occur under to Fountain-Fort Carson D-8 as it supports about 4,300 Fort Carson dependents (43 percent of the total student population). There are six other local school districts within the ROI (PPACG, 2008). Fort Carson anticipates less than significant adverse impacts to school funding in the region as a whole if Alternatives 2 - 5 are implemented.

Decreased population would reduce demand for public services (i.e., police, fire, emergency, and medical services) both on- and off-post. There would continue to be demand for these services, and overall impacts to public services under Alternatives 2 - 5 would be minor.

Economic Development and Employment. Alternatives 2 - 5 would result in a direct reduction in 4,203 jobs in the region, which would result in a decrease of $176 million in

personal income, based on average annual Soldier salary. Losses of direct employment and decreased spending would also lead to employment reductions in the form of military contract service jobs and other miscellaneous jobs as a result of a decrease in the demand for goods and services. This would result in reductions in regional sales volume, income, and sales tax revenue. Impacts would be negligible in the greater Colorado Springs area, but there could be moderate adverse impacts to the communities that surround the installation (i.e., Security, Widefield, Fountain) where military populations are highest.

Environmental Justice. Alternatives 2 - 5 would not have disproportionately high adverse impact to minorities, economically disadvantaged populations, or children. Fort Carson anticipates that job losses would be felt across economic sectors and at all income levels and spread geographically throughout the ROI.

3.2.7.3. Summary of Mitigation

Overall beneficial effects would occur under Alternative 1 and less than significant under Alternatives 2 through 5; no mitigation would be required.

3.2.8. Traffic and Transportation

The ROI of the affected environment for traffic and transportation aspects of the Proposed Action for the potential loss of an IBCT or the change from an IBCT to an ABCT at installation encompasses an area located in El Paso, Pueblo, and Fremont counties, in Colorado. Colorado Springs and Pueblo, Colorado are the largest cities located near Fort Carson. The ROI for this include Fort Carson and the western portion of El Paso County, to include the communities of Colorado Springs, Stratmoor, Cimarron Hills, and other nearby communities. Major roads that border Fort Carson are I-25 to the east, State Highway 115 to the west, and Academy Boulevard to the north. Other major routes in the area include U.S. 24, State Highway 85, State Highway 16, and State Highway 21. Convoys would be used to transport Stryker vehicles to PCMS, and rail transport would be used to move tracked vehicles such as Abram M1 tanks and Bradleys to PCMS.

3.2.8.1. Affected Environment

3.2.8.1.1. Existing Roadway Network Surrounding the Installation

A number of improvements have been made to the roadways surrounding Fort Carson to accommodate the projected traffic increases resulting from the 2005 BRAC and various stationing initiatives. These include completed major capacity improvements on State Highway 16 and Academy Boulevard as well as ongoing safety and capacity improvements to State Highway 115. The combined projects along these three routes are anticipated to meet projected off-post traffic demands.

Other known planned or ongoing projects that will affect the ROI include several Colorado Department of Transportation (DOT) projects providing expansion of major roadways and intersections, which should reduce traffic congestion and increase economic activity.

3.2.8.2. Environmental Consequences

3.2.8.2.1. No Action Alternative

Overall impacts to transportation resources from the No Action Alternative would be negligible, as. Fort Carson would not convert the IBCT to an ABCT.

3.2.8.2.2. Alternative 1

The ABCT is stationed at Fort Carson. The action causes a negligible decrease in the current Fort Carson Soldier population (21). The overall impact on the transportation operations of the installation would be negligible. Traffic congestion during peak hours would not be noticeably affected. Neither would related delays at the access gates and along major on-post roadways. There would be no increased demand for POV parking. The LOS would not be affected by the conversion of the ICBT to an ABCT.

3.2.8.2.3. Alternatives 2, 3, 4, and 5

This alternative moves the current IBCT stationed at Fort Carson to another installation with no replacement of the IBCT at Fort Carson. Fort Carson would not gain an ABCT. The volume of traffic at Fort Carson would decrease by approximately 17.5 percent, due to the loss of 4,203 Soldiers and their Families (estimated at a total of 10,550 individuals). The overall impact on the transportation operations of the installation would be a significant beneficial change. In

addition, the numbers of convoys to PCMS on public roads and transportation of equipment by rail for IBCT training would be reduced.

3.2.8.3. Summary of Mitigation

No mitigation efforts would be required.

3.2.9. Cumulative Effects

3.2.9.1. Region of Influence

The ROI for this cumulative impact analysis of the potential loss of an IBCT or the change from an IBCT to an ABCT at the installation encompasses an area located in El Paso, Pueblo, and Fremont counties, in Colorado. Colorado Springs and Pueblo are the largest cities located near Fort Carson and provide the center for commercial, manufacturing, transportation, and medical activities in the ROI. Fort Carson has long been a key component of the economy of the metropolitan area, employing several thousand Soldiers and Civilians within the ROI. PCMS and its surrounding communities are not included in the ROI because it is unlikely that traffic from the Colorado Springs area would have any effect on PCMS, which is 150 miles (241.4 km) southeast of Fort Carson. Cumulative impacts to include traffic for PCMS are discussed in the 2015 EIS.

Numerous planned or Proposed Actions within the ROI have the potential to add cumulative impacts to the possible loss of an IBCT or the change from an IBCT to an ABCT at Fort Carson. These actions are either recently completed, currently occurring, or are reasonably foreseeable during the next three years.

A list of projects below presents those projects, which may add to the cumulative impacts for implementation of the Fort Carson alternative.

3.2.9.2. Fort Carson Projects

The following projects are recently completed, currently under design, or construction at Fort Carson:

- Consolidated BN HQ,
- Flight simulator facility,

- General Support Aviation Battalion Hangar,
- Assault BN Hangar,
- Unmanned Aircraft Systems (UAS) Hangar,
- Central Energy Plant,
- Consolidated Fire-Safety-Security Facility,
- Interim Aircraft Maintenance Facility
- Attack Hangar and Shadow UAS Range
- Renovation of Buildings 7416 & 7418
- Special Operations Forces (SOF) Battalion Operations Facility Complex
- SOF Language Training Facility
- Rotary Wing Taxiway
- 9633 Hangar Foam Fire protection
- Barracks (Buildings A, B, C)
- Repair/renew Building 9621
- Trap/skeet Range
- Building 1959 renovation

The following projects are reasonably foreseeable during the next three years:

- Install High Efficiency Boilers at various Facilities
- Arms Supply Point Expansion
- SOF Mountaineering Facility
- National Intrepid Center of Excellence Satellite Infrastructure Support
- 4th ID CAB/Butts airfield storm water management
- Automated infantry platoon battle course

- Attack battalion maintenance hangar
- Shadow UAS range training facility
- Battlefield weather support facility
- 13 Automated Surface Observing System Expansion
- COARNG readiness center
- SOF Human performance training facility
- Regional Maintenance hangar

3.2.9.3. Other Actions

Other known planned or ongoing projects that will cumulatively affect the ROI include several Colorado DOT projects providing expansion of major roadways and intersections, which should reduce traffic congestion and increase economic activity. Within Colorado Springs, 45 different projects meet the threshold size requirement (e.g., $500,000 or more) for inclusion in this cumulative impact analysis. These projects are all within the ROI, which is experiencing growth in construction of new homes and businesses. They range from the construction of a new junior high school to the addition of 154 student-housing units at the Colorado College East Campus. Dozens of new housing units are being planned and constructed throughout the ROI. These include numerous apartment buildings and single-family home developments. The airport is doing substantial upgrades to its runway and facilities.

3.2.9.3.1. No Action Alternative

Negligible cumulative effects would occur at Fort Carson as a result of the implementation of the No Action Alternative. Fort Carson would not convert the IBCT to an ABCT.

3.2.9.3.2. Alternative 1

Under Alternative 1, the IBCT assigned to Fort Carson would be converted to an ABCT, and be stationed at Fort Carson. Cumulative impacts as a result of the implementation of Alternative 1, the change from an IBCT to an ABCT at Fort Carson, range from minor to less than significant adverse impacts. In the VEC area of Socioeconomics, it is anticipated that under both the

training and construction components of Alternative 1 the cumulative impact would be negligible.

As a result of the implementation of Alternative 1, the Army anticipates negligible to minor adverse cumulative impacts in the following VECS: Air Quality/ GHG – construction component, Cultural Resources, and Traffic and Transportation. The Army anticipates minor to moderate/ less than significant cumulative impacts for the following VECs: Air Quality/ GHG – training component, Biological Resources, Soils, Surface Water and Wetlands.

Cumulative impacts will be controlled through existing measures including the continued compliance with existing plans and programs that protect the resource areas considered.

3.2.9.3.3. Alternatives 2, 3, 4 and 5

Under these alternatives, the ABCT would be stationed at another installation. Overall impacts would be minor beneficial cumulative impacts in all of the VECs except Socioeconomics. Due to a loss in personnel, socioeconomic cumulative impact is likely to see a long-term adverse cumulative effect across the ROI. This is due to a forecast downturn in economic growth and sustainability caused by the loss of 4,182 Soldiers and other associated support personnel at Fort Carson, with the Soldiers moving to another installation. Cumulative socioeconomic impacts at Fort Carson would be adverse, but less than significant.

3.3. Fort Bliss, TX

3.3.1. Introduction

Fort Bliss is a U.S. Army post located in the states of New Mexico (NM) and Texas (TX) with its headquarters located in El Paso, TX. Fort Bliss was originally established in 1848 and officially named in 1854. The installation was named in honor of Lieutenant Colonel William Bliss (1815-1853). See Figure 3.3-1.

Fort Bliss has an area of about 1,088,000 acres (440,000 ha). It is the largest installation in U.S. Army Forces Command (FORSCOM) and second largest in the Army overall (the largest being the adjacent White Sands Missile Range). Fort Bliss is used as a training area by all branches of the military.

Fort Bliss provides the largest contiguous tract (1,500 square miles [sq. mi]) or 3,900 square kilometers [km^2]) of restricted airspace in the continental U.S., used for missile and artillery training and testing, and at 992,000 acres (401,448 ha) has one of the largest maneuver areas.

The following units are associated with Fort Bliss:

- United States Army 1st Armored Division (AD)
- 1st BCT, 1st AD
- 2nd BCT, 1st AD
- 3rd BCT, 1st AD
- Combat Aviation Brigade (CAB)
    - 3-6 Calvary
    - 1AD CAB 2-501st
- 1st AD Sustainment BDE
- 31st Combat Support Hospital
- 32nd Army Air and Missile Defense Command
- 93 Military Police Battalion
- 5th Armor BDE

(Fort Bliss homepage https://bliss.army.mil) [*Note: you may have to add a security exception to access this site from some computers.*]

The mission at Fort Bliss Training Center includes providing a training environment for a wide variety of equipment and training, sustaining and deploying members of the joint team.

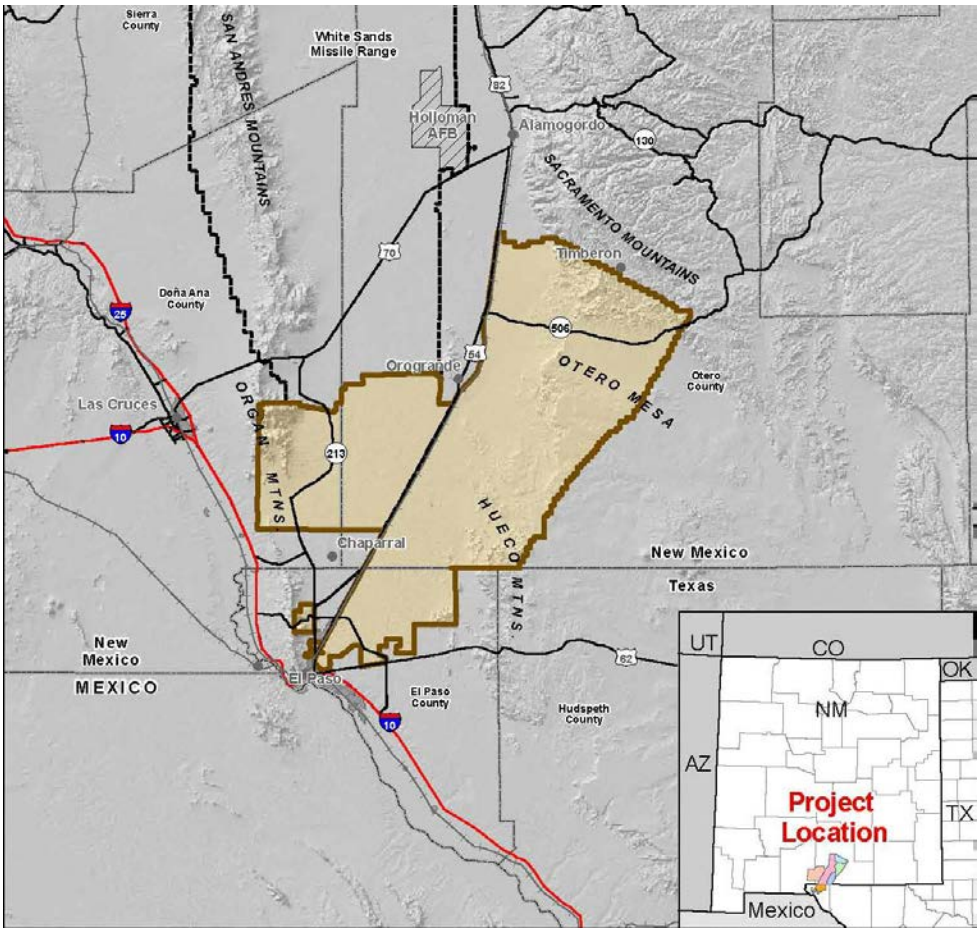

Figure 3.3-1. Location of Fort Bliss, Texas

3.3.2. Air Quality and GHG Emissions

Fort Bliss is located in the El Paso-Las Cruces-Alamogordo AQCR (40 CFR 81.82). The entire AQCR includes the Texas counties of Brewster, Culberson, El Paso, Hudspeth, Jeff Davis, and Presidio; and the New Mexico counties of Doña Ana, Lincoln, Otero, and Sierra. Fort Bliss is located in the portion of the AQCR that includes El Paso County in Texas and Doña Ana and Otero counties in New Mexico. The ROI for air quality analysis includes this portion of the AQCR, which includes the city of El Paso.

3.3.2.1. Affected Environment

The cantonment of the installation lies directly adjacent to the city of El Paso, Texas. This central part of the installation complex would be where any proposed construction activity would occur. Training involving the use of the ABCT tactical vehicles would occur predominantly on the ranges that lie to the north and east and which are predominantly located in New Mexico.

The 2011 emissions inventory for El Paso County, Texas and Doña Ana and Otero counties in New Mexico are shown in Table 3.3-1. Volatile organic compounds (VOCs) and nitrogen oxides (NO_x) emissions are used to represent ozone generation because they are precursors of ozone. The inventory includes stationary sources, such as industrial sites and residential fuel combustion, as well as mobile sources and area sources such as fires.

Table 3.3-1 County Air Emissions Inventories (2011) in tons per year

Location	NO_x	VOCs	CO	SO_2	PM_{10}	$PM_{2.5}$	CO_2e
El Paso County, TX	19,512	36,661	87,565	588	16,915	3,025	3,858,331
Dona Ana County, NM	11,506	78,432	61,665	209	6,065	8,346	1,899,898
Otero County, NM	5,533	129,858	110,153	708	39,751	10,348	1,732,420

Source: (USEPA, 2017c)

Key: NO_x = nitrogen oxides; VOC = volatile organic compounds; CO = carbon monoxide; SO_2 = sulfur dioxide; PM_{10} = suspended particulate matter less than or equal to 10 microns in diameter; $PM_{2.5}$ = fine particulate matter less than or equal to 2.5 microns in diameter; CO_2e = carbon dioxide equivalent.

3.3.2.2. National Ambient Air Quality Standards and Attainment Status

The Texas Commission on Environmental Quality (TCEQ) has adopted the NAAQS, which are discussed in Section 3.1.5.

Fort Bliss, while located in parts of each of three counties in the AQCR, is not itself located in a nonattainment or maintenance area. Local areas designated as nonattainment include a narrow strip of the city of El Paso along the Rio Grande, adjacent to Ciudad Juarez, Mexico that is designated as a "maintenance area" for CO, and the city of El Paso, which is designated as moderate nonattainment for PM_{10}. The USEPA also has classified Doña Ana and Otero counties in New Mexico (40 CFR 81.344) for criteria pollutants. A portion of Doña Ana County (Anthony, New Mexico) is designated as moderate nonattainment for PM_{10}.

3.3.2.3. Installation-Wide Emissions

The 2016 total emissions for stationary sources at Fort Bliss are summarized in Table 3.3-2. Sources include internal combustion engines, fossil fuel-fired boilers and heaters, surface coating operations, processes using organic solvents, liquid fuel storage tanks, abrasive blasting operations, unpaved roads, and other miscellaneous activities.

Table 3.3-2 2016 Estimates of Actual Annual Emissions, Fort Bliss, TX

Annual Emissions	Emission Estimates (tons per year)						
	VOCs	**CO**	**NOx**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**	**HAPs**
Actual	54.93	33.43	44.98	0.53	15.86	12.91	8.33

Source: 2016 data for Fort Bliss Air Emissions

3.3.2.4. Permitting Requirements

Fort Bliss holds a Title V Federal Operating Permit that covers emissions of both criteria pollutants (including NO_x) and HAPs installation-wide. The permit, No. O-2865, covers sources located in Texas only and is currently undergoing renewal.

3.3.2.5. Environmental Consequences

3.3.2.5.1. No Action Alternative

Negligible adverse effects would occur at Fort Bliss under the No Action Alternative. Fort Bliss would not receive an additional ABCT and would continue to operate with its existing force. Fort Bliss would continue to operate existing stationary sources in accordance with its Title V Permit and mobile source emissions would be generated consistent with current operations.

3.3.2.5.2. Alternatives 1, 3, 4, and 5

Under Alternatives 1, 3, 4, and 5, another installation would receive the ABCT, not Fort Bliss. Similar to the No Action Alternative, negligible adverse effects would occur, as Fort Bliss would not receive an additional ABCT. Sections 3.2.2, 3.4.2, 3.5.2, and 3.6.2 discuss emissions and effects of climate variation for stationing at the respective installations.

3.3.2.5.3. Alternative 2

Under Alternative 2, the Army would reassign the IBCT from Fort Carson to Fort Bliss and convert it into an ABCT stationed at Fort Bliss. This would involve the relocation of 4,182 military personnel. Tracked vehicles located on Fort Bliss would increase by 132 Bradley Infantry Fighting Vehicles, 87 M1 Abrams Tanks, 18 Howitzers, and 18 mortars.

3.3.2.5.3.1. Training

Once the ABCT is located at Fort Bliss, the installation would be subject to an overall increase in emissions due to the additional training activity. Stationary sources that are already located at Fort Bliss, such as spray paint booths, could see an increase in activity. It is also possible that the installation would install additional stationary sources used for operations, such as new spray booths, as well as new infrastructure stationary sources such as boilers and emergency generators. All of these types of stationary sources would need to be evaluated for compliance with the Fort Bliss Title V requirements and may result in permit modifications. Other sources of emissions associated with the ABCT that would not be covered under a stationary source permit include carbon monoxide, carbon dioxide, lead, and small amounts of HAPs from the detonation of munitions, particulate matter from on- and off-road vehicle operations, increased vehicular traffic on- and off-post as a result of the increase in population of 4,182 military personnel. In addition, while some of these individuals may live on base, many would live off-post and resultant increases in traffic and emissions in the El Paso area would be anticipated from the additional Soldiers and their Families. This increase would be permanent and need to be accounted for in a general conformity applicability analysis to ensure that the de minimis thresholds for PM_{10} and CO were not exceeded. Fort Bliss could also institute proactive emission reductions in the form of carpooling or transit services for commuting staff, in keeping with Army goals to reduce commuter emissions (U.S. Army 2014). While an overall increase in emissions for the Fort Bliss and El Paso areas would occur, these increases are not anticipated to result in violations of the NAAQS for the criteria pollutants.

In summary, overall adverse impacts to area air quality from training activities are expected be minor to moderate/ less than significant.

As with criteria pollutants, GHG emissions would increase; first due to construction activity and then due to the increase in personnel activities and training operations. As discussed in Section

3.2.2.5.2.1, an ABCT is authorized to use 24,815 barrels of fuel per year for training, which would produce 20,844,600 pounds (10,422 tons) of CO_2. Table 3.3-3 provides a scaled comparison GHG emissions increase from ABCT conversion at Fort Bliss. As shown in the table, increases would be negligible regardless of scale considered. The ABCT's Soldiers and Families will obviously have private vehicles that they will drive in and around Fort Bliss. The mileage for this activity and resulting GHG emissions are hard to estimate, and are expected to be negligible compared to the fuel use by the ABCT. At an Army-wide, United States, or Global level, there would be no difference since Army is essentially moving nearly the same number of people from one place to another within the region of influence.

Table 3.3-3 GHG Emissions by Scale

Scale	CO_2e Emissions (MMT)	Percent Increase from Proposed Conversion
Global	43,125	0.000024
United States	6,870	0.00015
Texas	625.8	0.0017
Army-wide	8.8	0.12
Sources: USEPA 2015, 2017; CDPHE 2014; Army 2016; USAF 2016. Note: MMT = million metric tons.		

Texas is in the southern portion of the great plains climate region of the United States, where trending climate variation is expected to contribute to increased demand for water and energy. This increase in demand could constrain development, stress natural resources, and increase competition for water among users such as communities, agriculture, energy production, and ecological systems. In addition, the quadrupling of high temperature extremes (maximum temperatures more than 100°F) occurrence by mid-century will have negative consequences including increases in surface water losses, heat stress, demand for air conditioning, and increase insect outbreaks. These negative consequences would offset any benefits to warmer winters. Large parts of Texas are projected to see longer dry spells (up to 5 more days on average by mid-century) (Melillo et al. 2014).

Table 3.3-4 outlines potential climate stressors and their effects from the Proposed Action. The operational activities associated with the Proposed Action in and of themselves are only

indirectly dependent on any of the elements associated with future climate scenarios (e.g., meteorological changes). At this time, no future climate scenario or potential climate stressor will have greater than minor effects from the Proposed Action.

Table 3.3-4 Effects of Potential Climate Stressors from the Proposed Action

Potential Climate Stressor	Effects from the Proposed Action
More frequent and intense heat waves	Minor
Longer fire seasons and more severe wildfires	Negligible
Changes in precipitation patterns	Negligible
Increased drought	Minor
Harm to water resources, agriculture, wildlife, ecosystems	Minor

Source: Melillo et al. 2014.

3.3.2.5.3.2. Construction

Construction or renovation of administrative, supply, and maintenance facilities for two battalion-sized elements would be required on Central Fort Bliss. In addition, construction of an extra-large TEMF and parking area; and approximately five motor pools would be required.

Air emissions generated during construction would result from non-road construction equipment (dozers, backhoes, excavators, etc.), fugitive dust from equipment operating on bare ground, construction worker vehicles, as well as dump trucks, concrete trucks and trucks hauling materials to the site. While these emissions would generate an increase in localized emissions of criteria pollutants, the increase would be relatively small and temporary. Because many of these vehicles would travel off the installation into the city of El Paso, their operation would be directly linked to the Proposed Action construction. The emissions associated with these vehicles would require quantification for a general conformity applicability analysis. The levels of emissions from the anticipated scale of vehicular activity would be unlikely to exceed the de minimis thresholds of 100 tons per year (tpy) for PM_{10} (nonattainment) or CO (limited maintenance area). The overall adverse impacts for the construction phase would be expected to be short-term and minor. The Army would incorporate design and mitigation measures for construction projects to reduce incremental effects of GHGs as discussed in Section 3.2.2.5.2.1.

3.3.2.6. Summary of Mitigation

No mitigation measures have been identified.

3.3.3. Biological Resources

3.3.3.1. Affected Environment

3.3.3.1.1. Vegetation

The majority of Fort Bliss lies within the Chihuahuan Desert ecoregion, with the exception of the north end of Fort Bliss that lies within the Arizona-New Mexico Mountains ecoregion. The Chihuahuan Desert Ecoregion covers approximately 174 million acres (70,415,300 ha) from Mexico to southwestern Texas and southern New Mexico and is one of the most biologically diverse desert ecoregions of the world with a high degree of endemism (Fort Bliss, 2016).

Fort Bliss's varied topography and large size (approximately 1.12 million acres or 453,248 ha) supports a high level of biodiversity including approximately 300 nonvascular (lichen, mosses, liverworts) and 1,200 vascular (ferns, fern allies, ephedras, conifers, flowering plants) species of vegetation (Fort Bliss, 2016). Shrubland is the dominant community at 67 percent, followed by 31 percent grasslands, and less than 1 percent woodlands.

Invasive Species. Seven exotic plant species are established within areas of Fort Bliss (Fort Bliss, 2016). These include African rue (*Peganum harmala*) which has become established in the cantonment area and on Otero Mesa, and is the only actively controlled invasive species on the installation. This species invades disturbed sites and, once successfully established, can spread, and outcompete native grasses. Russian thistle (*Salsola tragus*) is another species that has established on disturbed ground and exists throughout Fort Bliss. Salt cedar (*Tamarix ramosissima*) exists at some stocktanks and at other widely scattered locations on Fort Bliss. Malta star thistle (*Centaurea melitensis*) is another potential problem plant that grows along U.S. Highway 54, and may occur along other roadways on Fort Bliss. Other exotic species of concern include Johnson grass (*Sorghum halepense*) which occurs in some drainages on Fort Bliss, Bermuda grass (*Cynodon dactylon*) which is found on some abandoned farmland that is no longer irrigated, and Kochia (*Bassia scoparia*), which occurs on Otero Mesa.

To help control the growth and spread of these exotic plant species, Fort Bliss completes annual monitoring and targeted weed control. Preventive and control measures are presented in the Fort Bliss IPMP to reduce the possibility of exotic species invasions and the detrimental effects caused by those species. Surveys to detect and control exotic and noxious weed species on Fort Bliss are ongoing at selected localities (US Army, Fort Bliss, 2010).

3.3.3.1.2. Wildlife and Aquatic Life

Fort Bliss supports a relatively high faunal diversity with approximately 335 species of birds, 58 species of mammals, 39 species of reptiles, and eight species of amphibians. Many of the birds and mammals (and a good proportion of the herpetofauna [the reptiles and amphibians of a particular region or habitat]) found on Fort Bliss are those generally found in the intermountain west, with a substantial great plains influence (Fort Bliss, 2016).

3.3.3.1.3. Protected Species under the ESA

The Fort Bliss INRMP contains a list of the 53 sensitive species of flora and fauna of protected status known to occur, or having the potential to occur, on Fort Bliss (Fort Bliss, 2016). Because of the diversity of habitats on Fort Bliss, there is the potential that species may occur that have not been identified or confirmed on post. Continued monitoring and improved documentation of Fort Bliss' natural environment ensures that sensitive species receive adequate protection in the event that a new population is discovered. Protected species occurring on Fort Bliss property are managed by guidance contained within the Endangered Species Management Plan (ESMP) component of the INRMP.

Of the 53 sensitive plant and animal species, nine have federal protection status. Six of these nine species are federally-listed as endangered: the Sneed's pincushion cactus (*Escobaria sneedii var. sneedii*), Kuenzler hedgehog cactus (*Echinocereus fendleri var. kuenzleri*), interior least tern (*Sternula antillarum athalassos*), northern aplomado falcon (*Falco femoralis septentrionalis*), southwestern willow flycatcher (*Empidonax traillii extimus*), and the piping plover (*Charadrius melodus*). An additional two species, the Mexican spotted owl (*Strix occidentalis lucida*) and yellow-billed cuckoo (*Coccyzus americanus*) are listed as federally-threatened, and the Sprague's pipit (*Anthus spragueii*) is a candidate for federal listing. Only the federally-endangered Sneed's pincushion cactus (*Escobaria sneedii var. sneedii*) has been documented to occur on Fort Bliss. The other eight federally-protected species may occur on Fort Bliss,

however, have not been identified or confirmed on post. Survey and monitoring of existing populations of Sneed's pincushion cactus have occurred continuously since 1980. Populations occur on South Hill, North Hill, and Webb Gap on Fort Bliss (Fort Bliss, 2016).

3.3.3.1.4. Management of Natural Resources

Fort Bliss manages its natural resources according to the Fort Bliss INRMP (Fort Bliss, 2016). This includes an adaptive management approach with consideration for the interrelationships between the components of the ecosystem, the requirements of the military mission, and other land use activities. Natural resource management at Fort Bliss focuses on maintaining the structure, diversity, and integrity of the biological communities, while recognizing the military mission. An adaptive management strategy is integral to monitor the temporal and spatial dynamics of ecosystems and to adjust the management measures and strategies based on improved knowledge and data. The monitoring programs generate the data needed to determine whether the management measures and strategies are effective in achieving their intended goals and objectives. This management approach preserves the natural resources while providing the optimum environmental conditions for sustaining Fort Bliss's military training mission.

Specifically to training, units are briefed prior to each training event regarding sensitive areas on-post, such as protected species habitat, and what is allowed or prohibited within certain areas. These areas might include a protective buffer surrounding sensitive species during certain times of the year.

Management of natural resources also involves the ITAM program, which establishes a uniform land management program and includes inventorying and monitoring land condition, integrating training requirements with land carrying capacity while training to standard, educating land users to minimize adverse impacts, and prioritizing and implementing rehabilitation and maintenance projects.

3.3.3.2. Environmental Consequences

3.3.3.2.1. No Action Alternative

Negligible adverse effects would occur at Fort Bliss under the No Action Alternative. Fort Bliss would not receive an additional ABCT and would continue to operate with its existing force.

Fort Bliss would continue to adhere to its existing military land use and resource management plans to minimize and monitor any potential effects from training of existing units.

3.3.3.2.2. Alternatives 1, 3, 4, and 5

Similar to the No Action Alternative, negligible adverse effects would occur, as Fort Bliss would not receive an additional ABCT.

3.3.3.2.3. Alternative 2

3.3.3.2.3.1. Training

As stated in Section 3.1.2, maneuver and live-fire exercise training can negatively affect biological resources. This includes loss or degradation of vegetation and habitat from maneuver training and disruption to wildlife from field equipment training and live-fire exercises. The addition of an ABCT at Fort Bliss would increase the frequency of both current maneuver and live-fire exercises, which in turn, would increase the potential for adverse effects on biological resources as a result of ABCT training activities. As discussed in Section 2.3.3, the addition of an ABCT at Fort Bliss would increase MIMs by 130,000, totaling 487,000 MIMs (an approximate 36 percent increase). Long-term increases in training intensity requiring large maneuver footprints due to heavy tracked and wheeled vehicles could potentially result in a conversion or net loss of habitat. This could occur at landscape scale through vegetation loss and conversion over widespread areas if areas are not adequately rotated, or given necessary recovery times for re-vegetation activities supporting soil stabilization.

In addition, the Soldiers and equipment associated with an additional ABCT training could also result in adverse impacts to wildlife species within Fort Bliss from increased training throughput. Species in these areas would flush and temporarily avoid areas in which units would be training, returning to the area once training activities have ceased; however, as this type of training currently exists on the installation, overall impacts to these species would be minor.

The increase of ABCT training could also adversely affect aquatic species and aquatic habitat. As discussed in Sections 3.2.5.2 and 3.2.6.2, increased ABCT training would increase the potential for impacts to surface water quality and wetland habitats from increased potential for sedimentation. Impacts to aquatic resources and habitat would be reduced by implementation of

avoidance and minimization measures discussed in Sections 3.2.5.2 and 3.2.6.2. Minor adverse impacts would be expected.

In summary, overall adverse impacts to biological resources from training activities associated with an additional ABCT unit at Fort Bliss would be moderate/ less than significant. Fort Bliss would mitigate the potential for significant adverse effects to biological resources through management of ABCT training and management of biological resources in accordance with the INRMP and ESMP component, which includes compliance with the ESA, MBTA, and BGEPA. This also includes coordinating training events to avoid or comply with restrictions to the following areas (Fort Bliss, 2016):

- Off-limit Areas (OLAs) include 466 acres (187 ha) that are restricted due to natural resources concerns, primarily endangered species habitat. OLAs are marked in the field by signs and seibert stakes (distinctly colored fiberglass cylinders atop t-posts). This existing management practice would avoid potential adverse impacts to protected species.

- Limited Use Areas (LUAs) include much of the Otero Mesa grasslands, playas, wildlife watering locations (tanks and troughs), arroyo-riparian habitat, and cultural sites. LUAs on Fort Bliss exist to protect biological and cultural resources, and to limit certain operations to maintain sustainability of those lands for training. Approximately 328,754 LUA acres (133,042 ha) are restricted from the following military training activities: static vehicle positions; concentrations of vehicles; all logistical, training unit assembly areas; fuel depots; digging or excavations; field fortifications; bivouac areas; Tactical Operations Centers; any other proposed concentrations of vehicles, personnel or ground disturbing activities. This existing management practice would reduce the potential for landscape-level disturbance or loss of local, species-dependent habitat by avoiding sensitive or unique habitats.

Fort Bliss would continue to implement the *Fort Bliss Mitigation and Monitoring Plan* that was initially adopted pursuant to the 2007 ROD for the 2010 Fort Bliss Army Growth and Force Structure Realignment EIS (Fort Bliss, 2010). This plan identifies measures undertaken by the Army to mitigate impacts associated with training-initiated land use and provides program-level guidance for implementing mitigation measures based on scientific information and proven

methods, principles and standards. The intent of the Mitigation and Monitoring Plan is to reduce significant training impacts, minimize environmental harm, and support sustainable training lands (Fort Bliss, 2010).

3.3.3.2.3.2. Construction

As stated in Section 2.3.3, no new ranges, range upgrades, or garrison **construction** would be required during the implementation phase of IBCT reassignment and conversion to an ABCT under Alternative 2. Fort Bliss would use its current excess facility capacity to absorb personnel and equipment of the additional ABCT. Fort Bliss would require future cantonment infrastructure improvements within Central Fort Bliss to bring facilities up to current Army standards for an ABCT, including construction of administrative, supply, TEMF, and maintenance facilities for two battalion-sized elements. Vegetation and habitat occurring within new building footprints would be permanently lost to accommodate the new facility.

As shown on Figure 2.3-2, these construction activities would occur within previously disturbed areas within Fort Bliss containing marginal quality habitat (maintained landscaping and small fragments of shrubland and grassland). The overall adverse impacts to biological resources would be minor. In addition, Fort Bliss would adhere to MBTA requirements to avoid construction-related disturbance impacts to migratory bird nesting areas, if present.

Fort Bliss would identify specific locations and provide designs of these future cantonment infrastructure improvements. Site selection and design would incorporate Real Property Master Plan and other master planning processes and policies including the use of strategic siting (e.g., avoidance of sensitive habitat), and implementation of sustainable design and construction. These future cantonment infrastructure improvements would be subject to follow-on NEPA documentation, tiered off this document, to ensure impacts to biological resources are less than significant.

3.3.3.3. Summary of Mitigation

No new mitigation measures are needed nor have any been identified. The Army will continue to adhere to legal and regulatory requirements, and continue to implement its approved management plans, SOPs, and BMPs related to biological resources.

3.3.4. Cultural Resources.

3.3.4.1. Affected Environment

Fort Bliss contains over 20,600 identified archaeological sites and approximately 4,340 structures; of which 3,567 archaeological sites and 507 buildings and structures are listed or eligible for listing on the NRHP (Fort Bliss, 2017). Fort Bliss has three archaeological sites that are listed on the NRHP: Hot Well Pueblo, the Sgt. Doyle Site (pueblo), and Fusselman Canyon (rock art). The installation also contains eight historic districts eligible for listing in the NRHP, one of which is listed (Fort Bliss Main Post Historic District), and seven historic districts that are separate and distinct of the Fort Bliss Main Post District (7000 Area Residential Community Historic District at William Beaumont Medical Center and Early Cold War Guided Missile Instruction Historic Districts – Areas A-E). Fort Bliss has established five viewsheds and 12 historic landscapes.

3.3.4.1.1. Management of Cultural Resources

Fort Bliss, the New Mexico and Texas State Historic Preservation Officers (SHPOs), and the Advisory Council on Historic Preservation (ACHP) operate under a Programmatic Agreement (PA) (2015-2025) which details how Fort Bliss meets cultural resources requirements under Sections 106 and 110 of the NHPA. The PA streamlines compliance under Section 106, outlining undertakings that do not require project-by-project review by SHPOs; however, 36 CFR 800 is followed when addressing Section 106 with federally-recognized tribes. The PA includes SOPs that provide for consistent, day-to-day management of mission undertakings carried out on the installation that may affect historic properties, including those resulting from training activities (Fort Bliss, 2017).

Fort Bliss also maintains an ICRMP to protect and manage the installation's cultural resources in compliance with various federal laws and regulations. It integrates those management responsibilities with the installation's military training, construction, maintenance, and other mission-related activities. The ICRMP also includes an action plan whose goals include integrating preservation compliance requirements with planning and conducting military training, and surveying for and evaluating sites on McGregor Range and other areas where change in military training will have the greatest impact. The goals also include minimizing

and/or mitigating adverse effects on all eligible properties in concert with the execution of military training and support activities (Fort Bliss, 2017).

3.3.4.2. Environmental Consequences

3.3.4.2.1. No Action Alternative

Negligible adverse effects would occur at Fort Bliss under the No Action Alternative. Fort Bliss would not receive an additional ABCT and would continue to operate with its existing force. Fort Bliss would continue to adhere to the PA and manage cultural resources according to the ICRMP to minimize and monitor any potential effects from training of existing units.

3.3.4.2.2. Alternatives 1, 3, 4 and 5

Similar to the No Action Alternative, negligible adverse effects would occur, as Fort Bliss would not receive an additional ABCT.

3.3.4.2.3. Alternative 2

3.3.4.2.3.1. Training

As stated in Section 3.1.2, maneuver and live-fire exercise training can adversely affect cultural resources. This includes disturbance to archaeological sites from ground disturbance or historic structures from training and live-fire exercises. The addition of an ABCT at Fort Bliss would increase the frequency of both current maneuver and live-fire exercises and the potential for adverse effects from ABCT training to cultural resources.

Overall adverse impacts to cultural resources from training would be minor. Fort Bliss would mitigate the potential for significant adverse effects to cultural resources through continued management of ABCT training and management of cultural resources in accordance with the ICRMP and PA. More specific issues would not need to be addressed until the project is underway.

This includes coordinating training events to avoid or comply with restrictions to the following areas (Fort Bliss INRMP, 2016):

- OLAs that include 14,125 acres (5716 ha) of archaeological sites and specific mission activities where training does not occur. OLAs are marked in the field by signs and seibert stakes (distinctly colored fiberglass cylinders atop t-posts). This existing

management practice would avoid potential for direct or indirect alteration of the characteristics that qualify a property for inclusion on the NRHP.

- LUAs that include cultural resources areas. Approximately 14,765 LUA acres (5975 ha) are restricted from the following activities due to cultural resource concerns: static vehicle positions; concentrations of vehicles; all logistical, training unit assembly areas; fuel depots; digging or excavations; field fortifications; bivouac areas; Tactical Operations Centers; any other proposed concentrations of vehicles, personnel or ground disturbing activities. This existing management practice would reduce the potential for direct or indirect alteration of the characteristics that qualify a property for inclusion on the NRHP.

Units would use existing designated ABCT training areas and would follow SOPs for range use and scheduling including adherence to OLAs and LUAs and Soldier education awareness. The existing ICRMP and PA would cover ABCT training activities.

3.3.4.2.3.2. Construction

As stated in Section 2.3.3, no new ranges, range upgrades, or garrison construction would be required during the implementation phase of IBCT reassignment and conversion into an ABCT under Alternative 2. Fort Bliss would use its current excess facility capacity to absorb personnel and equipment of the additional ABCT. Fort Bliss, however, would require future cantonment infrastructure improvements within Central Fort Bliss to bring facilities up to current Army standards for an ABCT, including construction of administrative, supply and maintenance facilities for two battalion-sized elements. Construction could cause a direct or indirect alteration of the characteristics that qualify a property for inclusion on the NRHP. These activities might include ground disturbance to an archaeological site or alternation to a historic structure or viewshed.

As shown on Figure 2.3-2, Fort Bliss anticipates construction of future facilities within previously disturbed areas within Fort Bliss and outside of historic districts and historic viewsheds and landscapes. Overall adverse impacts to cultural resources from construction would be negligible. Fort Bliss would identify specific locations and designs of these future cantonment infrastructure improvements. Site selection and design would incorporate Real

Property Master Plan and other master planning processes and policies including the use of strategic siting (avoidance of cultural resources) and design to adhere to cultural resource management according to the ICRMP and PA. These future cantonment infrastructure improvements would be subject to other NEPA analyses, as required.

3.3.4.3. Summary of Mitigation

No new mitigation measures are needed nor have any been identified. The Army will continue to adhere to legal and regulatory requirements, and continue to implement its approved management plans, PA, SOPS, and BMPs related to cultural resources.

3.3.5. Soils

3.3.5.1. Affected Environment

3.3.5.1.1. Soils and Erosion

Most of Fort Bliss is located in a large intermontane basin formed by the Tularosa and Hueco basins of southern New Mexico and west Texas. The basins lie between the Franklin and Organ mountains to the west, and the Sacramento and Hueco mountains to the east. Elevation on the basin floor is approximately 3,800 feet (1158 meters) above sea level, rising to more than 8,000 feet (2438 meters) in the Organ Mountains. The region is part of the Basin and Range Province of the western U.S., as well as the northern part of the Chihuahuan Desert, an interior continental desert that receives most of its rainfall during the hot summer months.

The majority of soils in the Fort Bliss area are broadly classified as either poorly developed rocky desert soils (aridisols) or unconsolidated sediment of sand and/or very fine gravel (entisols), although a few areas do have more developed soils with an organic layer (mollisols) and are usually associated with grassland areas. Desert soils, or aridisols, have a very low concentration of organic matter, and developed under conditions of low moisture, reflecting the scantiness of vegetative production on these dry soils (Fort Bliss, 2016).

More detailed information on Fort Bliss soils can be found in the Fort Bliss Soil Survey, which includes physical, chemical, and engineering properties, as well as limitations for military uses and ecological site descriptions and classifications (Fort Bliss, 2016). The soil survey contains data characterizing current conditions of soils, vegetation, and overall ecology, which may be useful in planning military actions and selecting sites for construction or training purposes.

Wind and water erosion are currently the most important processes affecting soils in the Fort Bliss area. The soil surface is dry, sandy, and sparsely vegetated, particularly in areas that have been denuded by military vehicle traffic (Fort Bliss, 2010). Soils unprotected by vegetation are susceptible to erosion from wind and water runoff, to dust generation, and dune formation. Gullying is the most visible form of erosion on the installation (Fort Bliss, 2016).

3.3.5.1.2. Soil and Erosion Management

Fort Bliss manages its soil resources according to the Fort Bliss INRMP (Fort Bliss, 2016) and through coordination of the Fort Bliss Directorate of Public Works-Environmental Division (DPW-E) and ITAM, under the Directorate of Plans, Training, Mobilization, and Security (DPTMS). Plans to control or mitigate water and/or wind erosion consider effects on vegetative community, grazing, cultural resources, and natural resources, especially threatened and endangered species (Fort Bliss, 2010). Specifically to training, units are briefed prior to each training event regarding sensitive areas on post such as highly-erodible soils, and what is and is not allowed within certain areas.

Management of soil resources also involves the ITAM program that establishes a uniform land management program and includes inventorying and monitoring land condition, integrating training requirements with land carrying capacity while training to standard, educating land users to minimize adverse impacts, and prioritizing and implementing rehabilitation and maintenance projects.

Natural resource management at Fort Bliss focuses on maintaining the structure and integrity of soil resources, while recognizing the military mission. An adaptive management strategy is integral to monitor the temporal and spatial dynamics of ecosystems and to adjust the management measures and strategies based on improved knowledge and data. The monitoring programs generate the soils and land recovery data needed to determine whether the management measures and strategies are effective in achieving their intended goals and objectives, which includes maintaining sustainable training lands and minimization of soil movement, loss, and wind erosion. This management approach preserves soil resources while providing the optimum environmental conditions for sustaining Fort Bliss's military training mission.

3.3.5.2. Environmental Consequences

3.3.5.2.1. No Action Alternative

Negligible adverse effects would occur at Fort Bliss under the No Action Alternative. Fort Bliss would not receive an additional ABCT and would continue to operate with its existing force. Fort Bliss would continue to adhere to its existing military land use and resource management plans to minimize and monitor any potential effects from training of existing units.

3.3.5.2.2. Alternatives 1, 3, 4 and 5

Similar to the No Action Alternative, negligible adverse effects would occur, as Fort Bliss would not receive an additional ABCT.

3.3.5.2.3. Alternative 2

3.3.5.2.3.1. Training

As stated in Section 3.1.2, maneuver and live-fire exercise training can negatively affect soil resources. This includes degradation of soils and potential for increased soil erosion (water and wind) from maneuver training, field equipment training, and live-fire exercises. The addition of an ABCT at Fort Bliss would increase the frequency of both current maneuver and live-fire exercises and the potential for adverse effects from ABCT training to soil resources. As discussed in Section 2.2.3, the addition of an ABCT at Fort Bliss would increase MIMs by 130,000, totaling 487,000 MIMs (an approximate 36 percent increase); this potentially correlates to a 36 percent increase in soil maneuver impacts and required repair costs over a given training year. Long-term increases in training intensity requiring large maneuver footprints due to heavy tracked and wheeled vehicles could potentially result in disturbance to soil resources. This could occur at the landscape scale through degradation of soils, and the potential for increased soil erosion over widespread areas if areas are not adequately rotated, or given necessary recovery times for re-vegetation activities supporting soil stabilization. Training management could mitigate the loss to less than significant.

In addition, the Soldiers and equipment associated with an additional ABCT training could also result in adverse impacts to soil resources within Fort Bliss from increased training throughput. The most critical effect to soils would be the potential for increased soil compaction, soil rutting,

and soil erosion (wind and water) as the result of an additional ABCT training. Effects could occur to sedimentation and run-off, and soil stability and fertility.

Overall adverse impacts to soil resources from training at Fort Bliss would be moderate/ less than significant. Fort Bliss would mitigate the potential for significant adverse effects to soil resources through management of ABCT training and management of soil resources in accordance with the INRMP. This includes coordinating training events that comply with the following soils policies (Fort Bliss, 2016) to minimize the impact of land uses on soil erosion and sedimentation when and where possible to include:

- Locate physically intensive land disturbing activities on the least erodible soils.
- Use climatic/seasonal changes in soil erosion as a factor in scheduling intensive mission operations and real property management activities.

Training events as applicable would comply with the following soils BMPs (Fort Bliss, 2016):

- Maintenance of vegetative cover whenever possible to help limit soil and wind erosion.
- Control dust and soil erosion on sites where training activities are concentrated by using materials from offsite including gravel, fabrics, riprap, and recycled concrete and pavement that are environmentally safe.
- Maintain constant soil moisture by utilizing water trucks with water spreader bars to wet down road surfaces before, during, and after vehicle maneuvers.

Fort Bliss would also continue to implement the Soil Erosion and Sediment Control Component (SESCC) of the Fort Bliss INRMP. The SESCC to the Fort Bliss INRMP addresses the policy found in AR 200-1 regarding the management and sustainability of soil resources.

3.3.5.2.3.2. Construction

As stated in Section 2.2.3, no new ranges, range upgrades, or garrison construction would be required during the implementation phase of IBCT reassignment and conversion into an ABCT under Alternative 2. Fort Bliss would use its current excess facility capacity to absorb personnel and equipment of the additional ABCT. Fort Bliss, however, would require future cantonment infrastructure improvements within Central Fort Bliss to bring facilities up to current Army

standards for an ABCT, including construction of administrative, supply and maintenance facilities for two battalion-sized elements. Construction could cause a temporary increase in soil erosion, sedimentation and run-off, and permanent loss of soils in areas of new impervious surface, which could increase stormwater runoff and adversely affect surface water quality. Soil resources occurring within new building footprints would be permanently disturbed to accommodate the new facility.

As shown on Figure 2.3-2, these construction activities would occur within areas of Fort Bliss containing predominantly previously disturbed soil resources. The overall adverse impacts to soils from construction would be minor. Fort Bliss would identify specific locations and provide designs of these future cantonment infrastructure improvements. Long-term minor effects would result from new impervious surfaces associated with new buildings. Site selection and design would incorporate Real Property Master Plan and other master planning processes and policies including the use of strategic siting, and implementation of sustainable design and construction. These future cantonment infrastructure improvements would be subject to other NEPA analyses, as required.

Fort Bliss would continue to follow the erosion and sediment control BMPs and impact-reduction measures described in the Fort Bliss INRMP, including the SESCC of the INRMP. BMPs such as maintenance of vegetative cover, dust control, silt fencing, wetting of exposed soils, and site stabilization, would minimize the potential for construction-related erosion and sedimentation. Fort Bliss would maintain permitting requirements under the New Mexico Pollutant Discharge Elimination System (NMPDES) General Permit for Discharges from Construction Activities and Texas Pollutant Discharge Elimination System (TPDES) General Permit No. TXR040000.

3.3.5.3. Summary of Mitigation

No new mitigation measures are needed nor have any been identified. The Army will continue to adhere to legal and regulatory requirements, and continue to implement its approved management plans, SOPs and BMPs related to soil resources.

3.3.6. Surface Water and Wetlands

3.3.6.1. Affected Environment

3.3.6.1.1. Surface Waters

The U.S. Geological Survey (USGS) hydrologic unit code (HUC) watershed designations within the region are Tularosa Valley (HUC 13050003); Rio Grande-Fort Quitman (HUC 13040100), which includes the cantonment area; Salt Basin (HUC 13050004); and El Paso-Las Cruces (HUC 13030102) watersheds (Bliss, 2010). These watersheds and associated surface water resources are part of the Rio Grande Hydrologic Unit (Region 13).

The main perennial surface water feature within the region is the Rio Grande River, located west of Fort Bliss. Other surface waters within the region are scarce and some are only intermittent or seasonal in nature. No natural, perennial lakes exist in the area; however, shallow depressions, known as playa lakes, are common features and are important habitat sites for migrating waterfowl and resident wildlife species (Fort Bliss, 2010).

Precipitation is historically low throughout most of the region. Flash flooding and high alluvial erosion and deposition caused by high-intensity thunderstorms are characteristic with the terrain. The cantonment has drainage and flooding problems during heavy precipitation events. Future rainfall volumes exceeding the 10-year through the 100-year events would cause flooding and result in additional flood damage to the cantonment. Outside the cantonment, natural drainage features have been less disturbed; consequently, outlying training areas do not experience major drainage problems and related flooding (Fort Bliss, 2010).

3.3.6.1.2. Water Quality

The waterbodies on Fort Bliss are few and intermittent or seasonal which ultimately drain into the Rio Grande. The Rio Grande is impaired for bacteria, however, no TMDL has been established (USEPA, 2010).

3.3.6.1.3. Wetlands

Very few of the arroyo-riparian drainages and none of the playa lakes on Fort Bliss are regulated as jurisdictional wetlands as defined by the USACE. The only known Waters of the U.S. are on the west side of the Organ Mountains (part of the Rio Grande drainage), and some arroyos on

McGregor Range that originate in New Mexico and cross into Texas and the Rio Grande drainage (Fort Bliss, 2010). One stormwater retention pond in the cantonment has been identified as a jurisdictional wetland by USACE. Whether federally regulated or not, Fort Bliss recognizes all arroyo-riparian drainages and playa lakes as Locally Important Natural Resource (LINR) (Fort Bliss, 2010).

Fort Bliss studies have identified 291 km^2 (2911 ha) of arroyo-riparian drainage areas on the facility (Figure 2.3-2). These drainages are characterized by shrub, tree, and forb cover that is more diverse and dense than in the surrounding area (Fort Bliss, 2010).

Playa lakes are natural depressions that are ephemeral (seasonally flooded) and are typically wet in the summer and fall. These wetlands are usually ringed with vegetation and may be completely vegetated in the bottoms, or not vegetated at all. As with other wetland types, playa wetlands provide unique flora and fauna assemblages, important to the overall diversity and uniqueness of wildlife on the installation. The majority of the wetlands within Fort Bliss are playas. They occur mostly in the Basin Aeolian and Basin Alluvial areas of the Tularosa Basin of McGregor Range. A few widely distributed playas exist in the Foothill-Bajada and Otero Mesa Ecological Management Units (EMUs). Playas are designated as LUAs, where concentrations of vehicles or personnel, fixed sites, and digging are not permitted (Fort Bliss, 2010).

Wetlands on Fort Bliss generally occur during the summer monsoons and then completely disappear sometime during the following fall or winter. There are a few permanent springs with small, associated wetlands in the Organ Mountains. These are important areas for native plants and animals, but they are isolated and few on Fort Bliss (Fort Bliss, 2016).

3.3.6.1.4. Surface Water and Wetlands Management

Fort Bliss manages its surface water and wetland resources according to the Fort Bliss INRMP (Fort Bliss, 2016). Natural resource management at Fort Bliss focuses on maintaining the quality of water resources and wetlands, while recognizing the military mission. An adaptive management strategy is integral to monitor the temporal and spatial dynamics of ecosystems and to adjust the management measures and strategies based on improved knowledge and data. The monitoring programs generate the water quality and aquatic habitat data needed to determine whether the management measures and strategies are effective in achieving their intended goals

and objectives. These goals and objectives include maintaining sustainable training lands and preventing surface water and wetland degradation. This management approach preserves the natural resources while providing the optimum environmental conditions for sustaining Fort Bliss's military training mission.

Units are briefed prior to each training event regarding sensitive areas on post such as sensitive water resources, and what is and is not allowed within certain areas, such as within the protective buffer surrounding sensitive resources.

Management of water resources also involves the ITAM program, which establishes a uniform land management program. The program includes inventorying and monitoring land condition, integrating training requirements with land carrying capacity while training to standard, educating land users to minimize adverse impacts, and prioritizing and implementing rehabilitation and maintenance projects.

U.S. Army policy (USACE 2004) promotes "no net loss" of wetlands. Fort Bliss monitors the condition of these habitats with the primary goal of maintaining vegetative cover and high water quality. If monitoring identifies a loss, management strategies seek to eliminate or offset the loss (adaptive management) in order to comply with the policy. Fort Bliss DPW-E coordinates with the USACE to ensure compliance with Section 404 of the CWA (Fort Bliss, 2016).

3.3.6.2. Environmental Consequences

3.3.6.2.1. No Action Alternative

Negligible adverse effects would occur at Fort Bliss under the No Action Alternative. Fort Bliss would not receive an additional ABCT and would continue to operate with its existing force. Fort Bliss would continue to adhere to its existing military land use and resource management plans to minimize and monitor any potential effects from training of existing units.

3.3.6.2.2. Alternatives 1, 3, 4 and 5

Similar to the No Action Alternative, negligible adverse effects would occur, as Fort Bliss would not receive an additional ABCT.

3.3.6.2.3. Alternative 2

3.3.6.2.3.1. Training

As stated in Section 3.1.2, maneuver and live-fire exercise training can negatively affect surface water and wetland resources. This includes physical degradation of surface water features, water quality, and wetlands from maneuver training, field equipment training, and live-fire exercises. The addition of an ABCT at Fort Bliss would increase the frequency of both current maneuver and live-fire exercises and the potential for adverse effects from ABCT training to water resources. As discussed in Section 2.3.3, the addition of an ABCT at Fort Bliss would increase MIMs by 130,000, totaling 487,000 MIMs (an approximate 36 percent increase) and would increase range use. Long-term increases in training intensity requiring large maneuver footprints associated with heavy tracked and wheeled vehicles could potentially result in effects to surface water and wetland resources. As stated in Section 3.2.5.2, ABCT training activities could cause widespread disturbance to soils resulting in excess sediment loads in surface waters and wetlands, changes to drainage patterns, and increased stormwater runoff. This could adversely affect surface water quality within the installation and within the Rio Grande watershed as well as impact wetland quality and hydrology.

Impacts to surface waters, resulting from the operation of armored vehicles and heavy equipment for ABCT training, would be greater during wet conditions, particularly when crossing intermittent drainages. These activities could modify drainage structures, through erosion and compaction, and result in increased erosion potential and indirect impacts to water quality.

Overall adverse impacts to surface water and wetland resources from training at Fort Bliss would be minor. Fort Bliss would mitigate the potential for significant adverse effects to these resources through management of ABCT training and management of surface waters and wetlands in accordance with the INRMP. This includes coordinating training events that comply with the following surface water and wetland policies (Fort Bliss, 2016):

- Keep soil erosion from water within tolerance limits as defined by soil surveys prepared by the U.S. Department of Agriculture (USDA), NRCS, or as required by host authorities.
- Keep soil sediment, as a pollutant, in wetlands and waterways within compliance limits.

The ITAM program would continue to be used during maneuvers to reduce soil erosion and sedimentation into adjacent surface waters and wetlands. Potential surface water contamination could occur due to accidental spills of hazardous materials associated with vehicles and equipment (e.g., oil, fuels, and solvents). Fort Bliss would continue to implement AR 200-1 and BMPs to manage and reduce potential impacts.

Vehicles would be operated and maintained to minimize leaking fluids that could contaminate soils and waterbodies. Vehicle and equipment fueling and maintenance would be restricted to approved locations unless emergency field maintenance is required. If emergency maintenance were required, applicable control and containment measures would be implemented to prevent accidental contamination of surface waters. Such controls include locating activities away from surface waters and stormwater inlets or conveyances, providing secondary containment (e.g., spill berms, decks, and spill containment pallets) and cover where applicable, and/or having spill kits readily available.

3.3.6.2.3.2. Construction

As stated in Section 2.3.3, no new ranges, range upgrades, or garrison construction would be required during the implementation phase of IBCT reassignment and conversion into an ABCT under Alternative 2. Fort Bliss would use its current excess facility capacity to absorb personnel and equipment of the additional ABCT. Fort Bliss, however, would require future cantonment infrastructure improvements within Central Fort Bliss to bring facilities up to current Army standards for an ABCT, including construction of administrative, supply, and maintenance facilities for two battalion-sized elements. Construction could cause a temporary increase in soil erosion, sedimentation, and run-off, and permanent increases in impervious surface, which could increase stormwater runoff and adversely affect surface water quality.

As shown on Figure 2.3-2, these construction activities would occur within previously disturbed and developed areas within Central Fort Bliss containing no surface water and wetland resources. No direct impact to these resources would occur from construction. The potential for indirect impacts from construction site stormwater runoff and sedimentation is further described below.

Fort Bliss would identify specific locations and provide designs of these future cantonment infrastructure improvements. Long-term less than significant effects would result from new impervious surfaces associated with new buildings resulting in increased stormwater runoff and

adversely affect surface water quality due to sedimentation and run-off. Fort Bliss will comply with Section 438 of the Energy Independence and Security Act of 2007 (EISA). This requires use of a variety of stormwater management practices, often referred to as "green infrastructure" or "low impact development" practices, including reducing impervious surfaces, using vegetative practices, porous pavements, cisterns and green roofs. Fort Bliss would continue to follow the BMPs and impact-reduction measures described in the Fort Bliss INRMP such as reduce sources of direct pollutant discharge to nearby waterways, prevent spills of oils and other hazardous substances, dust control, silt fencing, and site stabilization (Fort Bliss, 2016). These BMPs would minimize the potential for construction-related erosion and sedimentation or contamination. Site selection and design would incorporate Real Property Master Plan and other master planning processes and policies including the use of strategic siting, and implementation of sustainable design and construction. These future cantonment infrastructure improvements would be subject to other NEPA analyses, as required. Overall, moderate/ less than significant adverse impacts would result from the construction component.

Fort Bliss would maintain permitting requirements under the NMPDES General Permit for Discharges from Construction Activities and TPDES General Permit No. TXR040000.

3.3.6.3. Summary of Mitigation

No new mitigation measures are needed nor have any been identified. The Army will continue to adhere to legal and regulatory requirements, and continue to implement its approved management plans, SOPs and BMPs related to surface water and wetland resources.

3.3.7. Socioeconomics

3.3.7.1. Affected Environment

3.3.7.1.1. Population and Housing

Fort Bliss has a total working population of 44,417, consisting of active component Soldiers and Army Civilians, students and trainees, other military services, Civilians and contractors. Of the total working population, 27,085 are permanent party Soldiers and 3,452 are Army Civilians. The population that lives on Fort Bliss consists of 20,362 Soldiers with an estimated 37,785 Family members. Additionally, there are 965 students and trainees associated with the installation.

In 2015, the population of the ROI was over 1 million. Between 2010 and 2015, the population increased in Doña Ana, Otero, and El Paso counties between 2 and 4 percent (see Table 3.3-5).

Table 3.3-5 Population in the Fort Bliss ROI

Region of Influence	Population (2015)	Population Change 2010–2015
Doña Ana County, NM	213,963	2.2
Otero County, NM	65,318	2.3
El Paso County, TX	831,095	3.7

Sources: U.S. Census Bureau, 2016a; U.S. Census, 2010

There are currently 4,467 permanent military Family housing units under the control of Fort Bliss across 18 neighborhoods. Family housing on Fort Bliss has been privatized under the RCI. Fort Bliss has 10,975 permanent party barracks spaces with an additional 10,089 transient training/advanced individual training spaces located within the cantonment and across the training camps. A summary of housing characteristics in the ROI is shown in Table 3.3-6.

Table 3.3-6 Housing Characteristics in the Fort Bliss ROI

Housing Characteristic	Doña Ana County, NM	Otero County, NM	El Paso County, TX
Total Housing Units	83,586	30,967	282,616
Occupied Housing Units	74,762	23,668	259,612
Owner-Occupied	48,445	15,218	159,647
Renter-Occupied	26,317	8,450	99,965
Average Household Size (owner occupied)	2.82	2.58	3.29
Average Household Size (renter occupied)	2.76	2.72	2.92
Vacant Housing Units	8,824	7,299	23,004
Homeowner Vacancy Rate (percent)	2.4	3.5	1.9

Housing Characteristic	Doña Ana County, NM	Otero County, NM	El Paso County, TX
Rental Vacancy Rate (percent)	8.1	3.9	8.1

Source: U.S. Census Bureau, 2016b.

3.3.7.1.2. Public Services and Schools

Schools. Nine school districts surround Fort Bliss, but the majority of students from Fort Bliss attend El Paso Independent School District (ISD) public schools, with the remainder attending Socorro and Ysleta ISD public schools. Current total enrollment for Pre-K through 12 is 59,416 for the El Paso ISD, 45,920 for the Socorro ISD, and 41,483 for Ysleta ISD for a total of approximately 146,819 students (Texas Education Agency, 2017). New Mexico schools serving Fort Bliss include the Las Cruces and Gadsden ISDs. Alamogordo ISD serves Otero County, but the residents of Otero County living in the Chaparral region attend Gadsden ISD public schools under a cost agreement between the school districts. The child development services program in Fort Bliss lists the following El Paso area schools as most affected by Fort Bliss stationing actions: Nixon Elementary, Travis Elementary, Milam Elementary, Logan Elementary, Bliss Elementary, Burnet Elementary, Hughey Elementary, MacArthur Elementary/Intermediate, Ross Middle, Bassett Middle, Richardson Middle, Chapin High, Andress High, and Austin High. El Paso area schools previously planned for a nine-year build-up to accommodate increased enrollment resulting from Base Realignment and Closure (BRAC) and other initiatives beginning in 2007. The Texas Education Agency indicates there are five elementary schools, one middle school, and two high schools planned or under construction in El Paso County (Texas Education Agency, 2017).

Police, Fire, and Emergency Services. Fort Bliss has exclusive jurisdiction over the cantonment and much of the Doña Ana Range. Fort Bliss has proprietary jurisdiction in Logan Heights and lands withdrawn from other government entities such as McGregor Range. Primary jurisdiction in the Fort Bliss area for law enforcement is with the City of El Paso Police Department. The Fort Bliss Fire Department responds to fires within the installation. They work cooperatively with the Bureau of Land Management (BLM) to fight fires on McGregor Range. The City of El Paso Fire Department, Doña Ana County Fire and Emergency Services Department, and Otero County respond to fires and provide emergency services off-post.

Medical Facilities. New William Beaumont Army Medical Center is an Army regional hospital and serves the needs of over 400,000 beneficiaries. In addition, it is one of two trauma centers in the ROI. Adjacent to the Medical center is the Veterans Affairs Health Care Center. Additional clinics are located at the troop medical center in the cantonment, Biggs Army Airfield, and small facilities associated with each unit. There is also a dental clinic and a veterinary clinic located in the cantonment.

Family Support Services. The Fort Bliss Army Community Service, which is a division of the Directorate of Family Morale, Welfare, and Recreation (FMWR), assists Soldiers and their families with programs that include Army Emergency Relief, Army Family Action Plan, Army Volunteer Corps, Employment Readiness, Exceptional Family Member, Family Advocacy, Financial Readiness, Information & Referral, & Relocation Readiness. The Fort Bliss Child, Youth & School Services, also under FMWR, provides recreational and learning programs for children and teens at Fort Bliss.

3.3.7.1.3. Environmental Justice and Protection of Children

In general, the ROI contains a largely Hispanic, minority, and low-income level population. Table 3.3-7 summarizes minority and low income populations for the counties within the Fort Bliss ROI, as well as the states of Texas and New Mexico. See Section 3.1.5 on EO 13045, Protection of Children from Environmental Health Risks and Safety Risks.

Table 3.3-7 Minority and Low Income Populations within the Fort Bliss ROI

Demographic	Doña Ana County, NM (%)	Otero County, NM (%)	El Paso County, TX (%)	New Mexico (%)	Texas (%)
Hispanic or Latino	66.5	36.1	81.3	47.4	38.4
Black or African American	1.6	3.5	3.1	1.8	11.6
American Indian/Alaska Native	0.7	6.2	0.3	8.5	0.3
Asian	1.1	1.1	1.1	1.3	4.2
Native Hawaiian/ Pacific Islander	0.0	0.0	0.1	0.0	0.1
Some Other Race	0.1	0.1	0.1	0.2	0.1

Demographic	Doña Ana County, NM (%)	Otero County, NM (%)	El Paso County, TX (%)	New Mexico (%)	Texas (%)
Two or More Races	1.0	1.8	0.8	1.6	1.5
Total Minority Population	70.9	48.9	86.7	60.8	56.2
Population below Poverty Level	28.2	23.1	22.8	21.0	17.3

U.S. Census Bureau, 2016c; U.S. Census Bureau, 2016d

In addition, there is one Indian tribe on the Tigua Reservation located near Fort Bliss. The Isleta del Sur Pueblo and the Mescalero Apache Tribes have reservations near Fort Bliss close to Socorro, Texas and Ruidoso, New Mexico, respectively.

3.3.7.1.4. Economic Development and Employment

The economy in the three county ROI is dominated by the City of El Paso, and Fort Bliss's economic impact is concentrated in this area. Military installations affect the local economy directly through payroll expenditures, procurement of goods and services, and contract awards to local businesses. White Sands Missile Range and Holloman Air Force Base also have similar effects. The three-county ROI and the City of El Paso, in particular, are heavily influenced by government expenditures and employment, along with multinational commerce, due to their location along the border between the United States and Mexico.

Income and employment patterns provide insight into local economic conditions, including the strength of the local economy and well-being of the residents. Summary statistics covering these economic parameters are shown in Table 3.3-8. Table 3.3-9 shows ROI employment by sector.

Table 3.3-8 Income and Employment Conditions in the Fort Bliss ROI

Income and Employment Conditions	Doña Ana County, NM	Otero County, NM	El Paso County, TX	New Mexico	Texas
2015 Per Capita Personal Income ($)	20,129	19,457	18,880	24,012	26,999
2015 Median Household	38,853	39,775	41,637	44,963	53,207

Income and Employment Conditions	Doña Ana County, NM	Otero County, NM	El Paso County, TX	New Mexico	Texas
Income ($)					
Labor Force	94,280	24,575	359,055	928,397	13,498,742
Change in Employment, 2010-2017 (%)	2.1	0.4	9.1	1.6	12.5
2017 Unemployment (%)	6.5	6.1	4.2	6.1	4

Source: U.S. Census, 2016e; Bureau of Labor Statistics (BLS) 2017.

Table 3.3-9 Fort Bliss ROI Employment Distribution by Sector

Employment Sector	Doña Ana County, NM (%)	Otero County, NM (%)	El Paso County, TX (%)	New Mexico (%)	Texas (%)
Agriculture, forestry, fishing and hunting, and mining	3.5	2.9	1.1	4.5	3.4
Construction	6.9	9.0	6.1	6.8	7.8
Manufacturing	4.6	2.2	7.3	4.7	9.1
Wholesale trade	1.9	1.1	2.9	2.2	3.0
Retail trade	10.9	12.4	11.9	11.3	11.6
Transportation and warehousing, and utilities	4.0	3.8	6.6	4.5	5.5
Information	1.7	1.1	1.7	1.6	1.8
Finance and insurance, and real estate and rental and leasing	3.9	3.3	5.2	4.5	6.6
Professional, scientific, and management, and administrative	9.7	7.8	9.9	11.2	11.1

Employment Sector	Doña Ana County, NM (%)	Otero County, NM (%)	El Paso County, TX (%)	New Mexico (%)	Texas (%)
and waste management services					
Educational services, and health care and social assistance	29.3	23.0	25.2	25.1	21.6
Arts, entertainment, and recreation, and accommodation and food services	10.6	12.7	9.9	11.1	8.9
Other services, except public administration	4.1	4.1	4.6	4.8	5.3
Public administration	9.0	16.4	7.6	7.7	4.3

Source: U.S. Census, 2016e.

3.3.7.2. Environmental Consequences

3.3.7.2.1. No Action Alternative

Negligible adverse effects would occur at Fort Bliss under the No Action Alternative. Fort Bliss would not receive an additional ABCT and would continue to operate with its existing force. The continuing operations at Fort Bliss represent a beneficial source of regional economic activity. No additional impacts to housing, public services, schools, or public safety are anticipated.

3.3.7.2.2. Alternatives 1, 3, 4, and 5

Similar to the No Action Alternative, negligible adverse effects would occur, as Fort Bliss would not receive an additional ABCT.

3.3.7.2.3. Alternative 2

Alternative 2 would result in an increase of up to 4,132 Soldiers at Fort Bliss. In addition, this alternative would result in an increase of an estimated 2,273 spouses and 3,967 dependent children, for a total increase of 6,240 dependents. The total increase in population of military employees and their dependents under Alternative 2 would therefore be 10,372. In addition, Alternative 2 would result in increased spending of up to $195 million for critical facilities required for ABCT stationing. Increases in Soldier and dependent population, as well as increases in MILCON construction spending, would be similar to those described in Section 3.1.5. These impacts would lead to short-term and long-term net beneficial impacts and growth of economic activity within the ROI.

3.3.7.2.4. Socioeconomic Impacts

An increase of up to 10,372 Soldiers and dependents would result in long-term beneficial economic impacts at Fort Bliss. This increase would be of a similar magnitude analyzed in the 2013 Army 2020 PEA, which considered an increase of up to 7,554 Soldiers and dependents. Although Alternative 2 would represent a greater increase in Soldiers and dependents than considered in the Army 2020 PEA, Soldier population has decreased from the baseline analyzed in 2013 by 1,359 Soldiers, as described in Section 1.3. The gain scenario in Alternatives 2 is within the magnitude of the gain analyzed in the 2013 PEA. Additionally, Fort Bliss and the surrounding communities have planned for larger increases in population to support BRAC and Grow the Force populations over the past ten years than considered under this analysis; however, this growth has yet to materialize. Therefore, Fort Bliss and the surrounding region have the capacity to absorb the increase in Soldiers and their dependents proposed under Alternative 2. Specific impacts are described in detail below.

Population and Housing. Alternative 2 would result in an increase in population of 10,372 in the ROI. This would represent a one percent increase in population in the region, and would be considered a minor increase when considered with impacts from population gains analyzed in the 2013 Army 2020 PEA.

Population increases would lead to an increase in demand for housing; however, as shown in Table 3.3-6, both rental and owner-occupied housing is available throughout the ROI. As discussed in Section 3.2.7.1, plans and proposals have been developed in the past ten years to

increase Residential Communities Initiative housing on Fort Bliss such as various Public Private Capital Venture programs proposed by the Army Chief of Staff for Installation Management. In addition, the MILCON construction part of Alternative 2 would include funding for additional barracks space for single enlisted Soldiers and Family housing. Therefore, impacts to housing would be negligible.

Public Services and Schools. Increased population would result in an increase in school-aged children in local school districts. Local school districts have been planning for additional population growth over the past decade due to potential stationing decisions; however, that growth has not occurred. Increases in school-aged children would be easily absorbed by the school system when considering previous planning efforts and the fact that the increase would represent a small percentage of the existing overall school population. School districts would receive an increase in federal funding for each student having parents that live or work on federal property. Overall impacts to schools would be minor.

Increased population would result in a need for additional public services (i.e., police, fire, emergency, and medical services). These increases would be absorbed by existing capacities developed as a result of BRAC and Grow the Force planning that did not fully materialize, and overall impacts would be minor.

Economic Development and Employment. Alternative 2 would result in a direct increase in 4,132 jobs in the region, which would result in an increase of $173 million in personal income, based on average annual Soldier salary. Increases in direct employment and spending would also generate indirect increases in employment in the form of additional military contract service jobs and other miscellaneous jobs as a result of an increase in the demand for goods and services. This would result in increases in regional sales volume, income, and sales tax revenue. Some counties within the ROI supplement the state sales tax by varying percentages, and these additional local tax revenues would be gained at the county and local level. Overall impacts would be less than significant and beneficial.

Environmental Justice. Alternative 2 would not result in disproportionate adverse impacts, including adverse health impacts, to minorities, low-income populations, or children throughout the ROI. Economic impacts would be felt across economic sectors at all income levels and spread geographically throughout the ROI.

3.3.7.2.4.1. Construction

Impacts from construction resulting from the ABCT stationing decision would be similar to as described for the stationing action; however, impacts related to construction would be temporary and end following construction. An increase in construction projects on Fort Bliss would result in direct and indirect increases in demand for goods and services in the local economy through an increase in construction contracts, and spending by construction workers in local communities. This would result in temporary, beneficial impacts in sales volume, income, and tax revenue. Impacts could extend beyond local communities for procurement of goods and services outside of the ROI. Construction projects could result in the need for temporary relocation of workers, which could result in temporary increases in population and the subsequent need for housing and public services. Impacts from temporary increases in population would be short-term and negligible.

3.3.7.3. Summary of Mitigation

Overall beneficial effects would occur; no mitigation would be required.

3.3.8. Traffic and Transportation

3.3.8.1. Affected Environment

Fort Bliss is located in El Paso Texas, and occupies a large portion of the Northeast quadrant of the city. As a major employer and revenue generator, the infrastructure of the city had developed with the expansions of Fort Bliss. The current situation on the installation and surrounding area is stable in regards to transportation and traffic.

3.3.8.1.1. Existing Installation Roadway Network

The Installation roadways are adequate for the current population and are considered adequate to absorb the addition of an ABCT. Previous NEPA documents and traffic studies indicated the need for additional road construction on the installation, and to date, the majority of this construction has been completed. Similar to most installations, Fort Bliss experiences traffic delays during peak travel times when large contingents of workers arrive at and depart from the installation.

3.3.8.1.2. Existing Roadway Network Surrounding the Installation

The Texas Department of Transportation (TxDOT) has several projects underway that will have a positive effect on the traffic conditions off-post. One such project is the proposed Northeast Parkway that would complete a route around the northeast side of El Paso suitable for truck and other through traffic, diverting traffic from the city center. The new 10.8 mile parkway will greatly lessen travel times and congestion near Fort Bliss. This effort is in the study phases currently and an EA is underway by the TxDOT (TxDOT, 2017).

3.3.8.2. Environmental Consequences

3.3.8.2.1. No Action Alternative

Negligible adverse effects would occur as a result of the implementation of the No Action Alternative as Fort Bliss would not receive an additional ABCT

3.3.8.2.2. Alternatives 1, 3, 4 and 5

Similar to the No Action Alternative, negligible adverse effects would occur, as Fort Bliss would not receive an additional ABCT.

3.3.8.2.3. Alternative 2

There would be moderate adverse impacts on traffic and transportation systems on the installation due to the presence of additional Soldiers. The increase in off-post traffic would have a moderate adverse impact on traffic in the community overall, and could contribute to a decrease in the LOS of the road networks and major routes leading to the installation, particularly during peak morning and afternoon travel periods.

The installation's current transportation capability and that of the surrounding near-installation roadways are stable due to recent and current road construction projects. No LOS is anticipated.

NEPA procedures were used to identify and evaluate environmental concerns in past road construction and maintenance practices. This same methodology would be used for stationing an additional ABCT at Fort Bliss if further consequences were identified. No environmental issues related to transportation and traffic issues, however, have been identified at this time. The LOS on Fort Bliss would not be affected by the addition of an ABCT.

3.3.8.3. Summary of Mitigation

No mitigation measures have been identified.

3.3.9. Cumulative Effects

3.3.9.1. Region of Influence

The ROI for this cumulative impact analysis of the potential gain of an ABCT at Fort Bliss encompasses three counties in the states of Texas and New Mexico. The largest cities within the ROI are El Paso, Texas; Las Cruces, New Mexico; and Alamogordo, New Mexico. El Paso is the center for commercial manufacturing, transportation and medical activities in the ROI are, while Las Cruces and Alamogordo are centers of education and support White Sands Missile Range and Holloman Air Force Base. Fort Bliss has long been a key component of the economy of the metropolitan area, employing several thousand Soldiers and Civilians within the ROI.

There are numerous planned or Proposed Actions within the ROI that have the potential to add cumulative impacts to the possible gain of an ABCT at Fort Bliss. These actions are either recently completed, currently occurring or are reasonably foreseeable during the next three years. A list of projects below presents those projects, which may add to the cumulative impacts for implementation of the Fort Bliss alternative.

3.3.9.2. Fort Bliss Projects

Within the next three years, the following projects are planned for construction at Fort Bliss or in the ROI:

- New William Beaumont Army Medical Center and support facilities
- Publicly Available Lodging Hotel
- Supply and Services Warehouses
- Joint Task Force North Command & Control Facility
- Blood Donor Center
- El Paso Community College Campus
- Fire Station

- Hann Road expansion
- El Paso ISD middle school
- TxDOT, Montana and Loop 375 expansion to spur I-601
- Route 80 Range 40 repairs
- Route Orange tank trail project

3.3.9.3. Other Actions

Other known planned or ongoing projects that will cumulatively affect the ROI include several TxDOT projects providing expansion of major roadways and intersections, which should reduce traffic congestion and delays and increase economic activity within the ROI. The ROI is experiencing growth in construction of new homes and businesses. The cumulative impacts for stationing the ABCT at Fort Bliss for each of the VECs carried forward for analysis are discussed below.

3.3.9.3.1. No Action Alternative

Negligible cumulative effects would occur as a result of the implementation of the No Action Alternative as Fort Bliss would not receive an additional ABCT.

3.3.9.3.2. Alternatives 1, 3, 4 and 5

Similar to the No Action Alternative, negligible cumulative effects would occur, as Fort Bliss would not receive an additional ABCT.

3.3.9.3.3. Alternative 2

Cumulative impacts in the Fort Bliss ROI range from minor to less than significant adverse impacts. The following VEC area is anticipated to experience either no impact or beneficial impact as a result of the implementation of Alternative 2: Socioeconomics. The overall adverse cumulative impacts would be minor or less than significant for the following VECs: Air Quality and GHG, Biological Resources, Cultural Resources, Soils, Surface Water and Wetlands, and Traffic and Transportation.

Cumulative impacts will be controlled through existing measures including the continued compliance with existing plans and programs that protect each of the resource areas considered.

Fort Bliss has experienced less growth in the past five years than anticipated. As a result, infrastructure in the ROI has already been upgraded to manage the possible increase in population and the associated cumulative effects. This alternative would produce adverse socioeconomic impacts at Fort Carson as discussed in section 3.2.7.

3.4. Fort Hood, TX

3.4.1. Introduction

Fort Hood is an Army installation located in Bell and Coryell counties, TX, 60 miles (96.6 km) north of Austin and 50 miles (80.5 km) south of Waco. Fort Hood was established in 1942 as Camp Hood. The land was initially acquired to test tank destroyers that were being used in World War II. The post is named after Confederate General John Bell Hood. See Figure 3.4-1.

Fort Hood is an installation of the U.S Army covering more than 218,823 acres (88,555 ha). 132,525 acres (53,631 ha) are used for maneuver, 64,272 acres (26,010 ha) as a Live Fire Impact area and 22,026 acres (8914 ha) for the installation's cantonment areas.

Units located at Fort Hood include: The III Corps, 1st Cavalry Division, Division West – First Army, 13th Sustainment Command (expeditionary), 3rd Air Support Operations Group (Air Force), 3rd Cavalry Regiment, 36th Engineer Brigade (BDE), 48th Chemical BDE, 69th Air Defense Artillery, 89th Military Police BDE, 407th Army Field Support BDE, 504th Battlefield Surveillance BDE, U.S. Army Operational Test Command, Carl R. Darnall Medical Center, Warrior Transition BDE, 47th Explosive Ordnance Detachment (EOD), Criminal Investigation Command (CID), and the Network Enterprise Center.

Fort Hood exists to train its assigned units, as a mobilization station for Army Reserve and National Guard units, and as a strategic power projection platform.

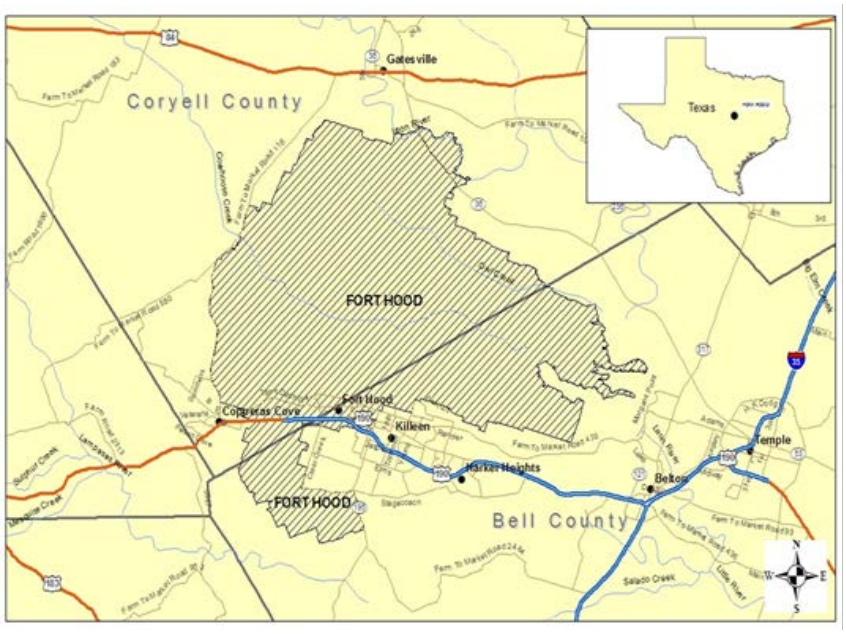

Figure 3.4-1. Location of Fort Hood, Texas

3.4.2. Air Quality and GHG Emissions

Fort Hood is located in the Austin-Waco Intrastate AQCR (40 CFR 81.134). The entire AQCR includes the counties of Bastrop, Bell, Blanco, Bosque, Brazos, Burleson, Burnet, Caldwell, Coryell, Falls, Fayette, Freestone, Grimes, Hamilton, Hays, Milam, Mills, Robertson, San Saba, Travis, Washington, and Williamson. Fort Hood is located in the portion of the AQCR that includes Bell and Coryell counties. The ROI for air quality analysis includes this portion of the AQCR, which includes the city of Killeen.

3.4.2.1. Affected Environment

The main portion of the installation lies directly north of the city of Killeen. This central part of the installation complex would be where the proposed construction activity would occur. Training involving the use of the ABCT tactical vehicles would occur predominantly on the ranges that lie in Coryell County.

The 2011 emissions inventory for Bell and Coryell counties are shown in Table 3.4-1 Volatile organic compound and nitrogen oxides emissions are used to represent ozone generation because

they are precursors of ozone. The inventory includes stationary sources, such as industrial sites and residential fuel combustion, as well as mobile sources and area sources such as fires.

Table 3.4-1 County Air Emissions Inventories (2011) in Tons per Year

Location	NO_x	VOCs	CO	SO_2	PM_{10}	$PM_{2.5}$	CO_2e
Bell County, TX	10,975	29,277	47,454	241	27,777	3,823	2,606,750
Coryell County, TX	2,306	26,182	26,350	190	9,270	2,436	663,582

Source: (USEPA, 2017c)

Key: NO_x = nitrogen oxides; VOC = volatile organic compounds; CO = carbon monoxide; SO_2 = sulfur dioxide; PM_{10} = suspended particulate matter less than or equal to 10 microns in diameter; $PM_{2.5}$ = fine particulate matter less than or equal to 2.5 microns in diameter; CO_2e = carbon dioxide equivalent.

3.4.2.2. National Ambient Air Quality Standards and Attainment Status

The TCEQ has adopted the NAAQS, which are discussed in Section 3.1.5.

Fort Hood, while located in parts of each of two counties in the AQCR, is not located in a nonattainment or maintenance area. The USEPA has designated Bell and Coryell counties as attainment or unclassified (40 CFR 81.344) for criteria pollutants.

3.4.2.3. Installation-Wide Emissions

The 2016 total emissions for stationary sources at Fort Hood are summarized in Table 3.4-2. Sources include boilers, internal combustion engines, cleaning/stripping operations, surface coating operations, fuel storage tanks and loading/unloading, rock crushing operations, woodworking operations, generators, soil bioremediation, test cells, solvent distillation, and miscellaneous operations/sources.

Table 3.4-2 2016 Estimates of Actual Annual Emissions, Fort Hood, TX

	Emission Estimates (tons per year)						
Annual Emissions	**VOCs**	**CO**	**NOx**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**	**HAPs**
Actual	10.1	79.4	29.0	16.8	13.5	13.	2.9

Source: 2016 Annual Air Emissions Inventory Questionnaire

3.4.2.4. Permitting Requirements

Fort Hood holds a Title V Federal Operating Permit that covers emissions of both criteria pollutants and HAPs. The current permit, No. 01659, was issued on July 5, 2017 with next review in 2022.

3.4.2.5. Environmental Consequences

3.4.2.5.1. No Action Alternative

Negligible adverse effects would occur at Fort Hood under the No Action Alternative. Fort Hood would not receive an additional ABCT and would continue to operate with its existing force. Fort Hood would continue to operate existing stationary sources in accordance with its Title V Permit and mobile source emissions would be generated consistent with current operations.

3.4.2.5.2. Alternatives 1, 2, 4, and 5

Under these alternatives, the ABCT would be located at another installation. Similar to the No Action Alternative, negligible adverse effects would occur, as Fort Hood would not receive an additional ABCT. Sections 3.2.2, 3.3.2, 3.5.2, and 3.6.2 discuss GHG emissions and effects of climate variation for stationing at the respective installations.

3.4.2.5.3. Alternative 3

Under Alternative 3, the Army would reassign Fort Carson's IBCT and convert it into an ABCT stationed at Fort Hood. This would involve the relocation of 4,182 military personnel. Tracked vehicles located on Fort Hood would increase by 132 Bradley Infantry Fighting Vehicles, 87 Abrams Tanks, 18 Howitzers, and 18 mortars.

3.4.2.5.3.1. Training

The installation would be subject to an overall increase in emissions due to the additional training activity. Stationary sources that are already located at Fort Hood, such as spray paint booths, could see an increase in activity. These types of stationary sources would need to be evaluated for compliance with the Fort Hood Title V requirements and may result in permit modifications. Other sources of emissions associated with the ABCT that would not be covered under a stationary source permit include carbon monoxide, carbon dioxide, lead, and small

amounts of HAPs from the detonation of munitions, particulate matter from on- and off-road vehicle operations, increased vehicular traffic on- and off-post as a result of the increase in population of 4,182 military personnel. In addition, while some of these individuals may live on-post, many would live off-post and a resultant increase in traffic and resultant emissions in the Killeen area would be anticipated from the additional Soldiers and their Families. This increase would be permanent. Fort Hood could also institute proactive emission mitigation in the form of carpooling or transit services for commuting staff. While an overall increase in emissions for the Fort Hood and Killeen areas would occur, these increases are not anticipated to result in violations of the NAAQS for the criteria pollutants. During the training component, stationing the ABCT at Fort Hood is expected to have a long-term minor to moderate/ less than significant adverse impact on area air quality

As with criteria pollutants, GHG emissions would increase; first due to construction activity and then due to the increase in personnel activities and training operations. As discussed in Section 3.2.2.5.2.1, an ABCT is authorized to use 24,815 barrels of fuel per year, which would produce 20,844,600 pounds (10,422 tons) of CO_2. Table 3.4-3 provides a scaled comparison GHG emissions increase from ABCT conversion at Fort Hood. As shown in the table, increases would be negligible regardless of scale considered. The ABCT's Soldiers and Families will obviously have private vehicles that they will drive in and around Fort Hood. The mileage for this activity and resulting GHG emissions are hard to estimate, and are expected to be negligible compared to the fuel use by the ABCT. At an Army-wide, United States, or Global level, there would be no difference since Army is essentially moving nearly the same number of people from one place to another within the region of influence.

Table 3.4-3 GHG Emissions by Scale

Scale	CO_2e Emissions (MMT)	Percent Increase from Proposed Conversion
Global	43,125	0.000024
United States	6,870	0.00015
Texas	625.8	0.0017
Army-wide	8.8	0.12

Sources: USEPA 2015, 2017; CDPHE 2014; Army 2016; USAF 2016.
Note: MMT = million metric tons.

Texas is in the southern portion of the great plains climate region of the United States, where trending climate variation is expected to contribute to increased demand for water and energy. This increase in demand could constrain development, stress natural resources, and increase competition for water among users such as communities, agriculture, energy production, and ecological systems. In addition, the quadrupling of high temperature extremes (maximum temperatures more than 100°F) occurrence by mid-century will have negative consequences including increases in surface water losses, heat stress, demand for air conditioning, and increase insect outbreaks. These negative consequences would offset any benefits to warmer winters. Large parts of Texas are projected to see longer dry spells (up to 5 more days on average by mid-century) (Melillo et al. 2014).

Table 3.4-4 outlines potential climate stressors and their effects from the Proposed Action. The operational activities associated with the Proposed Action in and of themselves are only indirectly dependent on any of the elements associated with future climate scenarios (e.g., meteorological changes). At this time, no future climate scenario or potential climate stressor will have greater than minor effects from the Proposed Action.

Table 3.4-4 Effects of Potential Climate Stressors from the Proposed Action

Potential Climate Stressor	Effects from the Proposed Action
More frequent and intense heat waves	Minor
Longer fire seasons and more severe wildfires	Negligible
Changes in precipitation patterns	Negligible
Increased drought	Minor
Harm to water resources, agriculture, wildlife, ecosystems	Minor

Source: Melillo et al. 2014.

3.4.2.5.3.2. Construction

New construction to accommodate the ABCT includes vehicle maintenance shops; company, battalion, and brigade HQs buildings; barracks; storage facilities; and classrooms.

Air emissions generated during construction would result from construction worker vehicles and trucks hauling materials to and from the site. While these emissions would generate an increase

in localized emissions of criteria pollutants, the increase would be relatively small and temporary. The overall adverse impacts for the construction component would be expected to be short-term and minor. The Army would incorporate design and mitigation measures for construction projects to reduce incremental effects of GHGs as discussed in Section 3.2.2.5.2.1.

3.4.2.6. Summary of Mitigation

No mitigation measures have been identified.

3.4.3. Biological Resources

3.4.3.1. Affected Environment

3.4.3.1.1. Vegetation

Fort Hood is situated in the following three physiographic regions which contain distinct vegetation communities; northeastern reaches of the Edwards Plateau dominated by woody and shrub-dominant plant communities, the southernmost extension of the Cross Timbers and Prairies dominated by grassland communities, and the Blackland Prairie ecological regions known as the Lampasas Cut-Plains dominated by tall-grass associations. Fort Hood is 15 percent forest, 34 percent woodland, eight percent shrubland, and 33 percent grassland, leaving 10 percent not vegetated.

Fort Hood's most common vegetation community is mixed forest and shrub. This community is found on the slopes, canyons, uplands, and hillsides of mesas, rolling lowlands, and along streams and rivers. Tree species representative of this community include plateau live oak (*Quercus fusiformis*), post oak (*Quercus stellata*), pecan (*Carya illinoiensis*), and sycamore (*Platanus occidentalis*). Understory species include Alabama supplejack (*Berchemia scandens*), Texas persimmon (*Diospyrus texana*), saw greenbriar (*Smilax bona-nox*), hairy grama (*Bouteloua hirsuta*), Texas grama (*B. rigidiseta*), prairie-tea (*Croton monanthogynus*), broomweed (*Amphiachyris dracunculoides*), silver bluestem (*Bothriochloa saccharoides*), prairie three-awn (*Aristida oligantha*), and mist-flower (*Eupatorium coelestinum*) (Fort Hood, 2017b).

Grasslands are found throughout Fort Hood and are common on rolling lowlands between the Cowhouse Creek and mesas in the Live Fire Impact Area and Western Maneuver Area. Grasslands within Fort Hood are composed primarily of perennial herbaceous species, and may include little bluestem (*Schizachyrium scoparium*), hairy grama (*Bouteloua hirsuta),* sideoats grama (*Bouteloua curtipendula*), blue grama (*B. gracilis*), Texas wintergrass (*Nassella leucotricha*), seep muhly (*Muhlenbergia reverchonii*), silver bluestem, prairie-tea, broomweeds, ragweed (*Ambrosia artemisiifolia*), three-awns (*Aristida* spp.), and snow-on-the-prairie (*Euphorbia bicolor*). Small, isolated areas have a species composition that is more representative of the tall-grass prairies, which are dominated by little bluestem, yellow Indiangrass (*Sorghastrum nutans*), and big bluestem (*Andropogon gerardii*) (Fort Hood, 2017b).

Species of invasive plants documented on Fort Hood include giant reed (*Arundo donax*), salt cedar (*Tamarix ramosissima*), Chinese tallow tree (*Sapium sebiferum*), kudzu (*Pueraria montana var. lobata*), mimosa (*Albizia julibrissin*), white mulberry (*Morus alba*), Chinese privet (*Ligustrum sinense*), glossy privet (*Ligustrum lucidum*), Japanese honeysuckle (*Lonicera japonica*), king ranch bluestem (*Bothriochloa ischaemum*), tree of heaven (*Ailanthus altissima*), China-berry (*Melia azedarach*), sacred-bamboo (*Nandina domestica*), Johnson grass (*Sorghum halepense*), Chinese pistache (*Pistacia chinensis*), red-tipped photinia (*Photinia serratifolia*), Jerusalem-thorn (*Parkinsonia aculeate*), fire-thorn (*Pyracantha koidzumii*), Japanese rose (*Rosa multiflora*), periwinkle (*Vinca major and V. minor*), common chaste-tree (*Vitex agnus-castus*), jujube (*Ziziphus zizyphus*), field brome (*Bromus arvensis*), pampas grass (*Cortaderia selloana*), West India lantana (*Lantana camara*), dallisgrass (*Paspalum dilatatum*), Asian jasmine (*Trachelospermum asiaticum*), elephant ear (*Alocasia spp*.), English ivy (*Hedera helix*), and wisteria (*Wisteria sinensis*). The installation's management of these species involves the three primary goals of prevention, control, and restoration. In the event that any noxious weeds are found on the installation, a Fort Hood establishes a high priority for control and maximizes control efforts (Fort Hood, 2017b).

3.4.3.1.2. Wildlife and Aquatic Life

The various habitat types in the project area support wildlife communities characteristic of the Edwards Plateau, Blackland Prairie, and the Cross Timbers ecoregions. Common mammal species in the area are the coyote (*Canis latrans),* gray fox (*Urocyon cinereoargenteus),* striped

skunk (*Mephitis mephitis)*, armadillo (*Dasypus novemcinctus)*, opossum (*Didelphis virginiana)*, raccoon (*Procyon lotor*), white-tailed deer (*Odocoileus virginianus*), and black-tailed jackrabbit (*Lepus californicus*). Common small mammals include the deer mouse (*Peromyscus maniculatus*), hispid cotton rat (*Sigmodon hispidus*), eastern wood rat (*Neotoma floridana*), eastern cottontail (*Sylvilagus floridanus*), fox squirrel (*Sciurus niger)*, and seven bat species. (Fort Hood, 2017b)

Common bird species located on Fort Hood include the cardinal (*Cardinalis cardinalis*), mourning dove (*Zenaida macroura*), Carolina chickadee (*Parus carolinensis*), mockingbird (*Mimus polyglottos*), and turkey vulture (*Cathartes aura*) (Fort Hood, 2017b). Fort Hood also contains over 30 species of reptiles and 32 species of fish (Fort Hood, 2017b).

3.4.3.1.3. Protected Species under the ESA

The Fort Hood INRMP contains the list of sensitive flora and fauna species with protected status known to occur, or having the potential to occur, on Fort Hood. Fort Hood's ESMP 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. In addition, the USFWS issued a Biological Opinion in 2015 for Fort Hood that outlines requirements and guidance for endangered species management (Fort Hood, 2017b). Protected species occurring on Fort Hood property are managed by guidance contained within the ESMP component of the INRMP and in compliance with the 2015 biological opinion.

Two federally-listed species have populations established on Fort Hood: the federally-endangered black-capped vireo (*Vireo atricapilla*) and the federally-endangered golden-cheeked warbler (*Setophaga chrysoparia*). These species are also migratory birds protected under the MBTA. In addition, one federally-endangered species, the whooping crane (*Grus americana*), and two candidate species, Sprague's pipit (*Anthus spragueii*) and the smooth pimpleback mussel (*Quadrula houstonesis*) have been recorded near Fort Hood, but there is no evidence of established populations on the installation (Fort Hood, 2017b).

3.4.3.1.4. Management of Natural Resources

Fort Hood's INRMP outlines the management of the natural and biological resources on the installation (Fort Hood, 2017b). The INRMP contains goals for Fort Hood to ensure the sustainability of desired future conditions while maintaining ecosystem viability and integrates natural resource conservation measures and Army activities. This includes an adaptive management approach with consideration for the interrelationships between the components of the ecosystem, the requirements of the military mission, and other land use activities. An adaptive management strategy is integral to monitor the temporal and spatial dynamics of ecosystems and to adjust the management measures and strategies based on improved knowledge and data. This management approach preserves the natural resources while providing the optimum environmental conditions for sustaining Fort Hood's military training mission.

Training lands are managed with the installation training calendar and the Integrated Training Land Management Working Group to reduce conflicts of training needs. The working group includes installation Directorate staff from master planning, engineering, NEPA, natural and cultural resources, maintenance, fire department, and range planning. In addition, Training Area "no dig" overlays are provided to units for guidance on field excavation locations to protect resources from military training.

3.4.3.2. Environmental Consequences

3.4.3.2.1. No Action Alternative

Negligible adverse effects would occur at Fort Hood under the No Action Alternative. Fort Hood would not receive an additional ABCT and would continue to operate with its existing force. Fort Hood would continue to adhere to its existing military land use and resource management plans to minimize and monitor any potential effects from training of existing units.

3.4.3.2.2. Alternatives 1, 2, 4, and 5

Similar to the No Action Alternative, negligible adverse effects would occur, as Fort Hood would not receive an additional ABCT.

3.4.3.2.3. Alternative 3

3.4.3.2.3.1. Training

As stated in Section 3.1.2, maneuver and live-fire exercise training can negatively affect biological resources. This includes loss or degradation of vegetation and habitat from maneuver training and disruption to wildlife from field equipment training and live-fire exercises. The addition of an ABCT at Fort Hood would increase the frequency of both current maneuver and live-fire exercises and the potential for adverse effects from ABCT training to biological resources. As discussed in Section 2.3.4, the addition of an ABCT at Fort Hood would increase BCT MIMs by 130,000, totaling 617,000 MIMs (an approximate 27 percent increase). Long-term increases in training intensity requiring large maneuver footprints due to heavy tracked and wheeled vehicles could potentially result in a conversion or net loss of habitat. This could occur at landscape scale through vegetation loss and conversion over widespread areas if areas are not adequately rotated, or given necessary recovery times for re-vegetation activities supporting soil stabilization.

In addition, the Soldiers and equipment associated with an additional ABCT training could also result in adverse impacts to wildlife species within Fort Hood from increased training throughput. Species in these areas would flush and temporarily avoid areas in which units would be training, returning to the area once training activities have ceased; however, as this type of training currently exists on the installation, overall impacts to these species would be minor.

The increase of ABCT training could also adversely affect aquatic species and aquatic habitat. As discussed in Sections 3.4.5.2 and 3.4.6.2, increased ABCT training would increase the potential for impacts to surface water quality and wetland habitats from increased potential for sedimentation. Impacts to aquatic resources and habitat would be reduced by implementation of avoidance and minimization measures discussed in Sections 3.4.5.2 and 3.4.6.2. Minor adverse impacts would be expected.

In summary, overall adverse impacts to biological resources from training at Fort Hood would be moderate/ less than significant. Fort Hood would mitigate the potential for significant adverse effects to biological resources through management of ABCT training and management of biological resources in accordance with the INRMP and ESMP component that includes compliance with the ESA, MBTA, and BGEPA. This also includes principles contained within

Fort Hood Regulation (FH Reg) 200-1, *Environment and Natural Resources*, which prescribes policies, assigns responsibilities, and establishes procedures for protecting the environment and preserving natural and cultural resources. Commanders are responsible for integrating environmental management principles and environmental protection activities and programs, to the fullest extent possible, into the planning and execution of the command basic mission to prevent environmental degradation during training activities, including:

- Restoration of maneuver areas by units at the completion of training as outlined in FH Reg 200-1. In addition, any person, military or civilian, conducting any type of excavation (digging) on Fort Hood is required to obtain an approved Excavation and Water Use permit prior to the start of excavation. This existing management practice would reduce the potential for landscape-level disturbance or loss of local, species-dependent habitat by avoiding sensitive or unique habitats.

- Continued management of training lands through Integrated Training Land Management Working Group to reduce conflicts of training needs and use of "no dig" overlays to protect sensitive sites from military training excavation.

In addition, monitoring provisions with the 2015 USFWS Biological Opinion for Fort Hood and adaptive management principles reduce the potential for adverse effects to protected species from increased training. This includes:

- Continuing to implement monitoring and research programs for the golden-cheeked warbler and black-capped vireo;

- Managing vegetation-clearing projects to minimize fire hazard from slash, and to avoid impacts on residual stands;

- Emphasizing the use of prescribed burning to support protection and maintenance of endangered species habitat and to support ecosystem management principles;

- Implementation of management options to reduce nest losses and habitat degradation; monitoring the quality and quantity of available endangered species habitat;

- Continue to incorporate preventive measures to avoid future uncontrolled burns; and

- Development of management options through the adaptive management process for actions located within endangered species habitat.

Through implementation of these various actions and monitoring provisions, no significant adverse effects to protected species would be anticipated.

3.4.3.2.3.2. Construction

As stated in Section 2.3.4, no new ranges, range upgrades, or garrison construction would be required during the implementation component of IBCT reassignment and conversion into an ABCT under Alternative 3. Fort Hood would use its current excess facility capacity to absorb personnel and equipment of the additional ABCT. Fort Hood would require future cantonment and range infrastructure improvements to bring facilities up to current Army standards for an ABCT, including vehicle maintenance shops; barracks; company, battalion and brigade HQs; unit storage; classrooms; and a tactical UAV hangar. Vegetation and habitat occurring within new building footprints would be permanently lost to accommodate the new facility.

As shown on Figure 2.3-3, these construction activities would occur within previously disturbed areas of legacy facilities used by the 85 CA BDE (to be inactivated in 2018), as well as the previous inactivation of 4/1 CD containing marginal quality habitat (areas of maintained grass and landscaping). The overall adverse impacts to biological resources would be minor during the construction component. In addition, Fort Hood would adhere to MBTA requirements to avoid construction-related disturbance impacts to migratory bird nesting areas, if present.

Fort Hood would identify specific locations and provide designs of these future infrastructure improvements. Site selection and design would incorporate Real Property Master Plan and other master planning processes, including the use of strategic siting (e.g., avoidance of sensitive habitats), and implementation of sustainable design and construction. These future infrastructure improvements would be subject to project and site-specific NEPA documents to ensure impacts to biological resources are less than significant.

3.4.3.3. Summary of Mitigation

No new mitigation measures are needed nor have any been identified. The Army will continue to adhere to legal and regulatory requirements, and continue to implement its approved management plans, SOPs and BMPs related to biological resources.

3.4.4. Cultural Resources

3.4.4.1. Affected Environment

An inventory/survey of cultural resources started on Fort Hood in 1977 and today 93% of the installation has been inventoried. Throughout the 1990s and 2000s, Fort Hood implemented an assessment program to determine if any of the identified cultural resources are eligible for listing on the NRHP. The Historic Properties Component (HPC) identifies 2,236 cultural resources. Of these, 209 are identified as Historic Properties (eligible for listing on the NRHP), 163 require additional assessment or research to determine the eligibility for listing, and 1,864 are recommended as not being eligible for listing. Fort Hood actively manages cultural resources identified as Historic Properties or ones that require additional assessments (372) and are subject to the programmatic requirements outlined in the HPC and this NEPA document. Cultural resources recommended as not being eligible (1,864) are not managed by Fort Hood. Areas not inventoried for cultural resources will require a survey before an undertaking may proceed (Fort Hood, 2017b).

Fort Hood has not conducted an inventory of traditional cultural properties or sacred sites, but one sacred site of religious importance to Native Americans has been identified. This site is actively used for ceremonial purposes on a regular basis (Fort Hood, 2009).

3.4.4.1.1. Management of Cultural Resources

The Fort Hood Integrated Cultural Resources Management Plan (Fort Hood ICRMP) and HPC (ICRMP/HPC 2010) is a five-year planning document used to implement NHPA requirements. The HPC is a programmatic compliance document that contains SOPs for actions relating to identification, evaluation, maintenance, inadvertent discovery undertakings, and emergency actions that could affect cultural resources, and standard treatment measures. Fort Hood's HPC was recertified in March 2015, and allows Fort Hood to implement a programmatic project review process rather than a project-by-project review. An annual review and monitoring process is conducted by Fort Hood and its consulting parties to review the previous year undertakings and the overall HPC process. As the undertakings develop over the years, additional coordination will be conducted through the HPC annual review (Fort Hood, 2017b).

3.4.4.2. Environmental Consequences

3.4.4.2.1. No Action Alternative

Negligible adverse effects would occur at Fort Hood under the No Action Alternative. Fort Hood would not receive an additional ABCT and would continue to operate with its existing force. Fort Hood would continue to manage cultural resources according to the ICRMP and HPC to minimize and monitor any potential effects from training of existing units.

3.4.4.2.2. Alternatives 1, 2, 4, and 5

Similar to the No Action Alternative, negligible adverse effects would occur, as Fort Hood would not receive an additional ABCT.

3.4.4.2.3. Alternative 3

3.4.4.2.3.1. Training

As stated in Section 3.1.2, maneuver and live-fire exercise training can adversely affect cultural resources. This includes disturbance to archaeological sites from ground disturbance or historic structures from training and live-fire exercises. The addition of an ABCT at Fort Hood would increase the frequency of both current maneuver and live-fire exercises and the potential for adverse effects from ABCT training on cultural resources.

Overall adverse impacts to cultural resources in the training component would be minor. Fort Hood would continue management of training lands through Integrated Training Land Management Working Group to reduce conflicts of training needs and cultural restrictions and use of "no dig" overlays to protect sensitive sites from military training excavation. Fort Hood would mitigate the potential for significant adverse effects to cultural resources through continued management of ABCT training and management of cultural resources in accordance with the ICRMP and HPC. All undertakings and actions associated with the implementation and stationing of an additional ABCT would be covered under the existing HPC. Fort Hood would continue to report all undertakings/actions in an annual report to SHPO and Tribes.

3.4.4.2.3.2. Construction

As stated in Section 2.3.4, no new ranges, range upgrades, or garrison construction would be required during the implementation phase of IBCT reassignment and conversion into an ABCT

under Alternative 3. Fort Hood would use its current excess facility capacity to absorb personnel and equipment of the additional ABCT. Fort Hood, however, would require future cantonment and range infrastructure improvements to bring facilities up to current Army standards for an ABCT. Construction could cause a direct or indirect alteration of the characteristics that qualify a property for inclusion in the NRHP through activities such as ground disturbance to an archaeological site or alternation to a historic structure or viewshed.

As shown on Figure 2.3-3, these construction activities would occur within previously disturbed areas of legacy facilities and do not include any historic structures or eligible structures. Overall adverse impacts to cultural resources in the construction component would be negligible. Fort Hood would continue to incorporate Real Property Master Plan and other master planning processes and policies including the use of strategic siting and would continue to adhere to cultural resource management according to the ICRMP and HPC.

3.4.4.3. Summary of Mitigation

No new mitigation measures are needed nor have any been identified. The Army will continue to adhere to legal and regulatory requirements, and continue to implement its approved management plans, PA, SOPs, and BMPs related to cultural resources.

3.4.5. Soils

3.4.5.1. Affected Environment

3.4.5.1.1. Soils and Erosion

Fort Hood lies within the Lampasas Cut-Plains region, which includes the Edwards Plateau and Cross Timbers and Prairies regions. The installation's topography is characterized by remnant mesas separated by wide valleys and rolling lowlands with steep canyon breaks, and includes karst topographic features such as caves, sinkholes, rock shelters, and springs. The karst features provide endemic habitat for troglomorphic (adaptation of an animal to living in the constant darkness of caves) invertebrate species and bat populations. These features also play an important role in groundwater recharge (Fort Hood, 2017b).

In general, soils on Fort Hood are well drained and moderately permeable, but they can vary widely in other characteristics such as depth, parent material, and slope. Many of the soils on Fort Hood are naturally susceptible to water erosion with 31 percent of Fort Hood's categorized

as having very high water erosion potential and an additional 38 characterized as high to moderate water erosion potential. The remainder of the installation has a low to very low water erosion potential.

Severe erosion areas are defined as areas with erosion rates exceeding tolerance limits established by the NRCS for each soil type according to its capability to maintain vegetative cover. Soil tolerance levels on Fort Hood range from one to five tons per acre. Soils with higher tolerance values are able to hold soil or withstand erosion better than those with lower values. Soil loss exceeding the tolerance results in sheet, rill, and gully erosion, will eventually render lands unusable for military training maneuvers. Several areas of the installation, particularly training areas, have extremely high soil erosion rates due to high use by tracked vehicles and cattle grazing, resulting in high sheet, rill, and gully erosion. Loss of perennial and annual vegetative cover (herbaceous and woody vegetation) as a result of heavy training maneuvers has resulted in high erosion rates in some areas.

3.4.5.1.2. Soil and Erosion Management

Fort Hood manages its soil resources according to the Fort Hood INRMP and through coordination of the Fort Hood DPW-E and ITAM-DPTMS. Fort Hood's soil erosion monitoring programs include ongoing studies to determine the contribution of activities (e.g., military activities) to soil erosion on Fort Hood. Fort Hood conducts inventories for forage levels and soil erosion rates to identify priority areas for restoration.

Fort Hood developed a soil erosion management plan for the western training areas. The western training areas are a top priority because of heavy training use, high erosion rates, and gully formation. Other areas of the installation are addressed on an as-needed basis or when erosion rates in the western areas are reduced to acceptable levels. The plan includes an improved training area access road system; construction of hardened stream crossings, staging areas, bivouac sites, floodwater retention catchment basins; sediment retention; establishment of buffers along riparian zones, perennial vegetation on priority eroding areas, permanent excavation sites; and rotation schedules for training.

Natural resource management at Fort Hood focuses on maintaining the structure, diversity, and integrity of the soil resources, while recognizing the military mission. An adaptive management strategy is integral to monitor the temporal and spatial dynamics of ecosystems and to adjust the

management measures and strategies based on improved knowledge and data. The monitoring programs generate the soils and land recovery data needed to determine whether the management measures and strategies are effective in achieving their intended goals and objectives, which includes maintaining sustainable training lands and minimization of soil movement, loss, and wind erosion. This management approach preserves soil resources while providing the optimum environmental conditions for sustaining Fort Hood's military training mission.

3.4.5.2. Environmental Consequences

3.4.5.2.1. No Action Alternative

Negligible adverse impacts would occur at Fort Hood under the No Action Alternative. Fort Hood would not receive an additional ABCT and would continue to operate with its existing force. Fort Hood would continue to adhere to its existing military land use and resource management plans to minimize and monitor any potential effects from training of existing units.

3.4.5.2.2. Alternatives 1, 2, 4, and 5

Similar to the No Action Alternative, negligible adverse impacts would occur, as Fort Hood would not receive an additional ABCT.

3.4.5.2.3. Alternative 3

3.4.5.2.3.1. Training

As stated in Section 3.1.2, maneuver and live-fire exercise training can negatively affect soil resources. This includes degradation of soils and potential for increased soil erosion (water and wind) from maneuver training, field equipment training, and live-fire exercises. The addition of an ABCT at Fort Hood would increase the frequency of both current maneuver and live-fire exercises and the potential for adverse effects from ABCT training to soil resources. As discussed in Section 2.3.4, the addition of an ABCT at Fort Hood would increase MIMs by 130,000, totaling 617,000 MIMs (an approximate 14 percent increase); this potentially correlates to a 14 percent increase in soil maneuver impacts and required repair costs over a given training year. Long-term increases in training intensity requiring large maneuver footprints due to heavy tracked and wheeled vehicles could potentially result in disturbance to soil resources. This could occur at the landscape scale through degradation of soils and the potential for increased soil

erosion over widespread areas if areas are not adequately rotated, or given necessary recovery times for re-vegetation activities supporting soil stabilization.

In addition, the Soldiers and equipment associated with an additional ABCT training could also result in adverse impacts to soil resources within Fort Hood from increased training throughput. The most critical effect to soils would be the potential for increased soil compaction, soil rutting, and soil erosion (wind and water) as the result of an additional ABCT training. Potential effects could occur to sedimentation and run-off, and soil stability and fertility.

Overall adverse impacts to soil resources in the training component at Fort Hood would be moderate/ less than significant. Fort Hood would mitigate the potential for significant adverse effects to soil resources through management of ABCT training and management of soil resources in accordance with its INRMP and ITAM programs. This includes coordinating training events that comply with the following soil and erosions policies:

- Continue use of erosion modelling to estimate soil erosion and soil tolerance levels for determining acceptable training uses and limits.
- Continue implementation of the ITAM program to identify, stabilize, and repair highly erodible soils disturbed from training, such as seeding of areas where adequate vegetative cover is lacking.
- Follow the Training Out Area Program that involves closing of a training area for at least one or two growing seasons to allow the training area to recover naturally or with additional mitigation.
- Restoration of maneuver areas by units at the completion of training as outlined in FH Reg 200-1.

3.4.5.2.3.2. Construction

As stated in Section 2.3.4, no new ranges, range upgrades, or garrison construction would be required during the implementation phase of IBCT reassignment and conversion into an ABCT under Alternative 3. Fort Hood would use its current excess facility capacity to absorb personnel and equipment of the additional ABCT. Fort Hood, however, would require future cantonment and range infrastructure improvements to bring facilities up to current Army standards for an

ABCT, including vehicle maintenance shops; barracks; company, battalion and brigade HQs; unit storage and classrooms; and a tactical UAV hangar. Construction could cause a temporary increase in soil erosion, sedimentation and run-off, and permanent loss of soils in areas of new impervious surface, which could increase stormwater runoff and adversely affect surface water quality. Soil resources occurring within new building footprints would be permanently disturbed to accommodate the new facility.

As shown on Figure 2.3-3, these construction activities would occur within previously disturbed areas of legacy facilities used by the 85 CA BDE (to be deactivated in 2018), as well as the previous inactivation of 4/1 CD. Overall impacts would be minor to soil resources in the construction component. Fort Hood would identify specific locations and provide designs of these future cantonment infrastructure improvements. Long-term minor effects would result from new impervious surfaces associated with new buildings. Site selection and design would incorporate Real Property Master Plan and other master planning processes and policies including the use of strategic siting, and implementation of sustainable design and construction. These future cantonment infrastructure improvements would be subject to project and site-specific NEPA documents to ensure impacts to soil resources are less than significant.

During construction, Fort Hood would continue to follow the erosion and sediment control BMPs and impact-reduction measures described in the Fort Hood INRMP. Fort Hood will comply with Section 438 of the EISA. This requires use of a variety of stormwater management practices often referred to as "green infrastructure" or "low impact development" practices. These include, for example, reducing impervious surfaces, using vegetative practices, porous pavements, cisterns, and green roofs." Fort Hood will follow BMPs such as maintenance of vegetative cover, dust control, silt fencing, wetting of exposed soils, and site stabilization, which would minimize the potential for construction-related erosion and sedimentation.

Fort Hood would maintain permitting requirements under the TPDES General Permit No. TXR050000, and TCEQ Construction General Permit (TXR150000). In addition to permitting requirements, content from these permits would be used to include climatic/seasonal changes in soil erosion as a factor in scheduling intensive training activities and real property management activities.

3.4.5.3. Summary of Mitigation

No new mitigation measures are needed nor have any been identified. The Army will continue to adhere to legal and regulatory requirements, and continue to implement its approved management plans, SOPs and BMPs related to soil resources.

3.4.6. Surface Water and Wetlands

3.4.6.1. Affected Environment

3.4.6.1.1. Surface Waters

Fort Hood can be divided into portions of six large watersheds and several smaller subwatersheds. The six main watersheds are the Belton Lake, Cowhouse Creek, Lampasas River, Leon River, Nolan Creek, and Owl Creek watersheds. These watersheds can be further divided into minor sub watersheds, which include portions of the main stems and tributaries of the major waterbodies listed.

Fort Hood's surface water resources consist of numerous small to moderate sized streams, which generally flow in a southeasterly direction. This includes 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 constituting approximately 692 surface-acres (280 surface-ha) that are primarily used for flood control, sediment retention, wildlife and livestock water, and fish habitat (Fort Hood, 2017b). Fort Hood is located within six main watersheds including the Belton Lake watershed, Cowhouse Creek watershed, Lampasas River watershed, Leon River watershed, Nolan Creek watershed, and Owl Creek watershed. The installation is located directly upstream of two man-made reservoirs: Belton Lake (a sole source water supply for approximately 200,000 people in Fort Hood and surrounding communities) and Stillhouse Hollow Lake (a water supply for several surrounding communities). Both reservoirs function as fish and wildlife habitat and provide flood control and recreation opportunities for the public (Fort Hood, 2017b).

3.4.6.1.2. Water Quality

The Leon, Cowhouse, and Lampasas watershed areas are part of the larger Brazos River Basin, which drains much of northern and central Texas. Water quality concerns in the Brazos River Basin have focused on fecal coliform (e.g., *Escherichia coli*) contamination believed to be

contributed to by municipal runoff, point source discharge, on-site treatment systems (e.g., septic systems), and non-point source agriculture.

Leon River (below Proctor Lake) is included on the 2014 Texas CWA 303(d) list as impaired for bacteria (TCEQ, 2014). This area is described as "from a point 100 meters (110 yards) upstream of FM 236 in Coryell County to Proctor Dam in Comanche County". A TMDL was approved for this location, but is currently on hold while stakeholders (including Fort Hood) work on a Watershed Protection Plan.

Large portions of the training areas are subject to sheet and gully erosion. 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. 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.

One of the most substantial impacts to surface water resources is from siltation caused by soil erosion and runoff in areas disturbed by vehicle traffic including training maneuvers (Army, 2013). Soil erosion management actions performed in accordance with the Fort Hood INRMP help to control the sedimentation loads associated training activities (Army, 2013).

3.4.6.1.3. Wetlands

Wetlands exist across the installation and range from small emergent wetlands associated with ephemeral streams to large, forested wetland complexes adjacent to perennial channels. Wetlands at Fort Hood are most common on floodplains along rivers and streams (riparian wetlands), along the margins of lakes and ponds, and in other low-lying areas where the groundwater intercepts the soil (springs). There are also numerous natural springs within Fort Hood, however, most of their locations have not been mapped. Fort Hood avoids or minimizes impacts to wetland areas from construction in accordance with EO 11990 (Fort Hood 2017b).

It has been the practice of Fort Hood to minimize impacts to potential jurisdictional wetlands. These areas might be indirectly affected by ongoing installation activities such as military training activities, livestock grazing, hydrologic alterations, and urban and training area storm water runoff.

3.4.6.1.4. Surface Water and Wetlands Management

Fort Hood manages its surface water and wetland resources according to the Fort Hood INRMP. Natural resource management at Fort Hood focuses on maintaining the quality of water resources and wetlands, while recognizing the military mission. An adaptive management strategy is integral to monitor the temporal and spatial dynamics of ecosystems and to adjust the management measures and strategies based on improved knowledge and data. The dig permit process sets out the protective buffers for steams and surrounding sensitive resources.

Management of surface water and wetland resources also involves the ITAM program. The ITAM program establishes a uniform land management program and includes inventorying and monitoring land condition, integrating training requirements with land carrying capacity while training to standard, educating land users to minimize adverse impacts, and prioritizing and implementing rehabilitation and maintenance projects.

It has been the practice of Fort Hood, in accordance with EO 11990, to avoid or minimize impacts to wetland areas from construction. These same areas might be indirectly affected by ongoing installation activities such as military training activities, livestock grazing, hydrologic alterations, and urban and training area storm water runoff.

3.4.6.2. Environmental Consequences

3.4.6.2.1. No Action Alternative

Negligible adverse effects would occur at Fort Hood under the No Action Alternative. Fort Hood would not receive an additional ABCT and would continue to operate with its existing force. Fort Hood would continue to adhere to its existing military land use and resource management plans to minimize and monitor any potential effects from training of existing units.

3.4.6.2.2. Alternatives 1, 2, 4, and 5

Similar to the No Action Alternative, negligible adverse effects would occur, as Fort Hood would not receive an additional ABCT.

3.4.6.2.3. Alternative 3

3.4.6.2.3.1. Training

As stated in Section 3.1.2, maneuver and live-fire exercise training can negatively affect surface water and wetland resources. This includes physical degradation of surface water features, water quality, and wetlands from maneuver training, field equipment training, and live-fire exercises. The addition of an ABCT at Fort Hood would increase the frequency of both current maneuver and live-fire exercises and the potential for adverse effects from ABCT training on water resources. As discussed in Section 2.3.4, the addition of an ABCT at Fort Hood would increase MIMs by 130,000, totaling 617,000 MIMs (an approximate 14 percent increase) and would increase range throughput. Long-term increases in training intensity requiring large maneuver footprints due to heavy tracked and wheeled vehicles could potentially result in effects to surface water and wetland resources. As stated in Section 3.2.5.2, ABCT training activities could cause widespread disturbance to soils resulting in excess sediment loads in surface waters and wetlands, changes to drainage patterns, and increase stormwater runoff. This could adversely affect surface water quality within the installation and the larger Brazos River Basin as well as impact wetland quality and hydrology.

Impacts associated with operation of armored vehicles and heavy equipment for ABCT training to surface waters would be greater during wet conditions, particularly when crossing intermittent drainages. These activities could modify drainage structures through erosion and compaction resulting in increased erosion potential and indirect impacts to water quality.

Overall adverse impacts to surface water and wetland resources from training at Fort Hood would be moderate/ less than significant. Fort Hood would mitigate the potential for significant adverse effects to these resources through management of ABCT training and management of surface waters and wetlands in accordance with its INRMP. This includes coordinating training events that comply with the following surface water and wetland policies:

- Continued use of erosion practices such as use of maneuver access structures (gully plugs), seeding of areas with lacking vegetation, and construction of sediment control basins to reduce sediment loads to waterbodies.

- Continued use of buffers for excavation activities as part of the dig permit process to protect surface water resources.
- Continue to use BMPs and land management methods to protect surface water, wetlands, and aquatic habitats.
- Restoration of maneuver areas by units at the completion of training as outlined in FH Reg 200-1 and continued requirement for an approved Excavation and Water Use permit prior to the start of excavation.
- Continue revegetation of disturbed lands through the ITAM program to reduce potential for erosion and sedimentation into surface waters and wetlands.

Potential surface water contamination could occur due to accidental spills of hazardous materials associated with vehicles and equipment (e.g., oil, fuels, and solvents). Fort Hood would continue to implement AR 200-1 and BMPs to manage and reduce potential impacts. Vehicles would be operated and maintained to minimize leaking fluids that could contaminate soils and waterbodies. Vehicle and equipment fueling and maintenance would be restricted to approved locations unless emergency field maintenance is required. If emergency maintenance were required, applicable control and containment measures would be implemented to prevent accidental contamination of surface water. Such controls include locating activities away from surface waters and stormwater inlets or conveyances, providing secondary containment (e.g., spill berms, decks, and spill containment pallets) and cover where applicable, and/or having spill kits readily available.

3.4.6.2.3.2. Construction

As stated in Section 2.3.4, no new ranges, range upgrades, or garrison construction would be required during the implementation phase of IBCT reassignment and conversion into an ABCT under Alternative 3. Fort Hood would use its current excess facility capacity to absorb personnel and equipment of the additional ABCT. Fort Hood, however, would require future cantonment and range infrastructure improvements to bring facilities up to current Army standards for an ABCT, including vehicle maintenance shops; barracks; company, battalion and brigade HQ; unit storage and classrooms; and a tactical UAV hangar. Construction could cause a temporary

increase in soil erosion, sedimentation, and run-off, and permanent increases in impervious surface, which could increase stormwater runoff and adversely affect surface water quality.

As shown on Figure 2.3-3, these construction activities would occur within previously disturbed areas of legacy facilities used by the 85 CA BDE (to be inactivated in 2018), as well as the previous inactivation of 4/1 CD containing no natural surface water and wetland resources. Figure 2.3-3 does indicate the presence of manmade drainages (ditching) east of 27th Street and along 25th and 20th Street. No direct impact to these resources would occur from construction, as these features would be avoided during site design. The potential for indirect impacts from construction site stormwater runoff and sedimentation are further described below.

Long-term minor effects of increased stormwater runoff potential and impacts to water quality would result from establishment of new impervious surfaces associated with new buildings. Use of construction equipment would also cause the potential for incidental spills of oils and other hazardous substances. Fort Hood would continue to follow the impact-reduction measures described in the Fort Hood INRMP, SWPPP, and SWMP such as reduce sources of direct pollutant discharge to nearby waterways, prevent spills of oils and other hazardous substances, dust control, site stabilization, and silt fencing. These measures would minimize the potential for construction-related erosion and sedimentation or contamination. Site selection and design would incorporate Real Property Master Plan and other master planning processes and policies including the use of strategic siting, and implementation of sustainable design and construction. These future cantonment infrastructure improvements would be subject to other NEPA analyses, as required. Fort Hood would maintain permitting requirements TPDES General Permit No. TXR050000, and TCEQ Construction General Permit (TXR150000).

Overall adverse impacts to water resources in the construction component at Fort Hood would be minor.

3.4.6.3. Summary of Mitigation

No new mitigation measures are needed nor have any been identified. The Army will continue to adhere to legal and regulatory requirements, and continue to implement its approved management plans, SOPs, and BMPs related to surface water and wetland resources.

3.4.7. Socioeconomics

3.4.7.1. Affected Environment

3.4.7.1.1. Population and Housing

The Fort Hood population is measured in three different ways. The daily working population is 47,601, and consists of full-time Soldiers and Army Civilian employees working on-post. The population that lives on Fort Hood consists of 35,433 Soldiers and 12,860 dependents, for a total on-post resident population of 35,433. Finally, the portion of the ROI population related to Fort Hood is 37,760 and consists of Family members, civilian employees, and their dependents living off-post.

In 2015, the population of the ROI was approximately 422,000. Between 2010 and 2015, the population increased in Bell, Coryell, and Lampasas counties (Table 3.4-5).

Table 3.4-5 Population in the Fort Hood ROI

Region of Influence Counties	Population (2015)	Population Change 2010–2015 (percent)
Bell County	326,041	4.85
Coryell County	76,128	0.97
Lampasas County	20,219	0.03

Sources: U.S. Census Bureau, 2016a; U.S. Census, 2010

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 been renovated as part of privatization. In addition to these homes, Fort Hood provides barracks space for single Soldiers. Existing homes on-post include single-family and multi-family homes, having from two to five bedrooms. A large percentage of Fort Hood Soldiers opt to live in private rental housing or own homes in the communities surrounding Fort Hood. A summary of housing units in the ROI is shown in Table 3.4-6.

Table 3.4-6 Housing Characteristics in the Fort Hood ROI

Housing Characteristic	Bell County	Coryell County	Lampasas
Total Housing Units	131,684	25,847	9,005
Occupied Housing Units	109,844	21,829	7,583
Owner-Occupied	60,615	12,483	5,490
Renter-Occupied	49,229	9,346	2,093
Average Household Size (owner occupied)	2.98	2.62	2.65
Average Household Size (renter occupied)	2.77	3.19	2.65
Vacant Housing Units	21,840	4,018	1,422
Homeowner Vacancy Rate (percent)	3.8	3.7	1.4
Rental Vacancy Rate (percent)	17.2	12.8	4.1

Source: U.S. Census Bureau, 2016b

3.4.7.1.2. Public Services and Schools

Schools. Killeen ISD serves the communities of Killeen, Fort Hood, Harker Heights, and Nolanville. The student enrollment for the 2017-2018 school year was 44,319. There were 24,414 students in elementary schools, 8,893 middle school, and 11,012 high school students. The district employs about 6,350 staff members in the ROI (Killeen ISD, 2017).

The Copperas Cove ISD serves the community of Copperas Cove. The student population for the 2017-2018 school year was approximately 8,200 students. Exact population by school is unknown; however, it is estimated that approximately 35 percent of the student population are military Family members (Copperas Cove ISD, 2017).

Gatesville ISD is within Coryell County and located at North Fort Hood. The student population for the 2016-2017 school year was approximately 2,815 students (Texas Education Agency, 2018).

Police, 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. 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. Partnerships with the surrounding cities and counties are in place to provide assistance should either party need it to respond to an emergency. 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 Facilities. Fort Hood's on-post medical services are administered by the newly-completed 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. Fort Hood also has a Warrior in Transition Brigade and brand new supporting facilities to accommodate the brigade. Further, the community supported medical centers include Metroplex Hospital, Scott and White Hospital and clinics, Baylor Scott & White McLane Children's Hospital and supporting clinics.

Family Support Services. Fort Hood's Child, Youth, and School Services is a division of FMWR. It provides facilities and care for children ages six weeks to five years, School Age Care for first through fifth graders, and a middle school and teen program. The FMWR also facilitates sports programs, 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).

3.4.7.1.3. Environmental Justice and Protection of Children

Table 3.4-7 summarizes the percent of minority and low-income populations for the counties within the Fort Hood ROI and the state of Texas. See Section 3.1.5 on EO 13045, Protection of Children From Environmental Health Risks and Safety Risks.

Table 3.4-7 Minority and Low Income Populations within the Fort Hood ROI

Demographic	Bell County (%)	Coryell County (%)	Lampasas County (%)	Texas (%)
Hispanic or Latino	23.2	17.5	18.7	38.4
Black or African American	20.4	14.4	3.8	11.6
American Indian/Alaska Native	0.5	0.4	0.3	0.3
Asian	2.7	1.9	0.9	4.2
Native Hawaiian/ Pacific Islander	0.7	0.8	0.1	0.1
Some Other Race	0.1	0.1	0.3	0.1
Two or More Races	3.7	5.0	2.6	1.5
Total Minority Population	51.2	39.9	26.6	56.2
Population below Poverty Level	15.3	13.8	14.6	17.3

U.S. Census Bureau, 2016c; U.S. Census Bureau, 2016d

3.4.7.1.4. Economic Development and Employment

Income and employment patterns provide insight into local economic conditions, including the strength of the local economy and well-being of the residents. Summary statistics covering these economic parameters are shown in Table 3.4-8. Table 3.4-9 shows ROI employment by sector.

Table 3.4-8 Income and Employment Conditions in the Fort Hood ROI

Employment Sector	Bell County	Coryell County	Lampasas County	Texas
2015 Per Capita Personal Income ($)	23,535	19,760	23,772	26,999
2015 Median Household Income ($)	50,550	49,340	49,630	53,207
Labor Force	144,400	25,901	9,470	13,498,742
Change in Employment, 2010-2017 (%)	11.7	5.1	7.6	12.5

Employment Sector	Bell County	Coryell County	Lampasas County	Texas
2017 Unemployment (%)	3.8	3.8	3.4	4

Source: U.S. Census, 2016e; BLS 2017.

Table 3.4-9 Fort Hood ROI Employment Distribution by Sector

Income and Employment Conditions	Bell County (%)	Coryell County (%)	Lampasas County (%)	Texas (%)
Agriculture, forestry, fishing and hunting, and mining	0.9	1.1	3.1	3.4
Construction	5.9	6.6	12.8	7.8
Manufacturing	6.3	4.4	5.6	9.1
Wholesale trade	2.4	2.0	3.6	3.0
Retail trade	12.4	11.3	12.5	11.6
Transportation and warehousing, and utilities	4.6	4.1	2.4	5.5
Information	1.5	1.8	1.8	1.8
Finance and insurance, and real estate and rental and leasing	4.6	5.0	3.0	6.6
Professional, scientific, and management, and administrative and waste management services	9.4	8.0	7.4	11.1

Income and Employment Conditions	Bell County (%)	Coryell County (%)	Lampasas County (%)	Texas (%)
Educational services, and health care and social assistance	25.3	24.7	24.8	21.6
Arts, entertainment, and recreation, and accommodation and food services	9.3	8.6	6.3	8.9
Other services, except public administration	5.0	5.1	6.6	5.3
Public administration	12.3	17.1	10.0	4.3

Source: U.S. Census, 2016e.

3.4.7.2. Environmental Consequences

3.4.7.2.1. No Action Alternative

Negligible adverse effects would occur at Fort Hood under the No Action Alternative. Fort Hood would not receive an additional ABCT and would continue to operate with its existing force. Fort Hood's continuing operations represent a beneficial source of regional economic activity. No additional impacts to housing, public services, schools, or public safety are anticipated.

3.4.7.2.2. Alternatives 1, 2, 4, and 5

Similar to the No Action Alternative, negligible adverse effects would occur, as Fort Hood would not receive an additional ABCT.

3.4.7.2.3. Alternative 3

Similar to Alternative 2 at Fort Bliss, Alternative 3 would result in an increase of up to 4,132 Soldiers, an estimated 2,273 spouses and 3,967 dependent children, for a total population increase of 10,372. In addition, Alternative 3 would result in increased spending of up to $456 million for critical facilities required for ABCT stationing. Increases in Soldier and dependent population, as well in increases in MILCON construction spending, would be similar to as

described in Section 3.1.5. These changes would lead to short-term and long-term net beneficial impacts and growth of economic activity within the ROI.

3.4.7.2.4. Socioeconomic Impacts

An increase of up to 10,372 Soldiers and dependents would result in long-term beneficial economic impacts at Fort Hood. This increase would be of a similar magnitude analyzed in the 2013 Army 2020 PEA, which considered an increase of up to 7,554 Soldiers and dependents. Although Alternative 3 would represent a greater increase in Soldiers and dependents than considered in the Army 2020 PEA, Soldier population has decreased from the baseline analyzed in 2013 by 3,565 Soldiers, as described in Section 1.3. As a result, the gain scenario in Alternatives 3 is within the magnitude of the gain analyzed in the 2013 PEA. Specific impacts are described in detail below.

Population and Housing. Alternative 3 would result in an increase in population of 10,372 in the ROI. This would represent a two percent increase in population in the region, and would be considered a minor increase when considered with impacts from population gains analyzed in the 2013 Army 2020 PEA.

Population increases would lead to an increase in demand for housing; however, as shown in Table 3.4-6, both rental and owner-occupied housing are available throughout the ROI. In addition, the MILCON construction part of the Alternative 3 would include funding for additional barracks space for single, enlisted Soldiers and Family housing. Therefore, overall impacts to housing would be negligible.

Public Services and Schools. Increased population would result in an increase in school-aged children in local school districts. In 2004, Fort Hood previously considered an increase in over 10,000 troops and dependents when the Army converted to the modular brigade system. 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. School districts would also benefit from an increase in federal funding due to an increase in students of parents that live or work on federal property. Overall impacts to schools would be minor.

Increased population would result in a need for additional public services (i.e., police, fire, emergency, and medical services). These increases would be absorbed by existing capacities

developed in anticipation for previous Army stationing efforts. In addition, the Carl R. Darnall Army Medical Center opened in 2016, which has added medical services capacity in the region. Overall impacts to public services under Alternative 3 would be minor.

Economic Development and Employment. Alternative 3 overall impacts would result in less than significant, beneficial impacts on economic development and employment through increases in direct and indirect employment, sales volume, regional income, and tax revenue. See Section 3.1.5 and 3.2.7 for more information.

Environmental Justice. Alternative 3 would not result in disproportionately high adverse impacts, including adverse health impacts, to minorities, low-income populations, or children throughout the ROI. Economic impacts would be felt across economic sectors at all income levels and spread geographically throughout the ROI.

3.4.7.2.4.1. Construction

Impacts from construction resulting from the ABCT stationing decision would be similar to as described for Fort Bliss, and would be short-term and beneficial. See Section 3.2.7 for additional information.

3.4.7.3. Summary of Mitigation

Overall beneficial effects would occur; no mitigation would be required.

3.4.8. Traffic and Transportation

3.4.8.1. Affected Environment

3.4.8.1.1. Existing Installation Roadway Network

Fort Hood uses the Pavement Maintenance Management System (PAVER), a data base product, to track road maintenance, funds, allocation, and project status. No substantial issues exist with the current traffic and the on-post transportation system.

3.4.8.1.2. Existing Roadway Network Surrounding the Installation

The TxDOT has several projects (in various stages of completion) that will improve traffic flow on public roadways around the Installation. The increase in off-post traffic due to the stationing of the new ABCT would have an overall moderate/ less than significant adverse impact on traffic

in the community, and could contribute to a decrease in the LOS of the road networks and major routes leading to the installation, particularly during peak morning and afternoon travel periods (TxDOT, 2017)

3.4.8.2. Environmental Consequences

3.4.8.2.1. No Action Alternative

Negligible adverse effects would occur as a result of the implementation of the No Action Alternative as Fort Hood would not receive an additional ABCT.

3.4.8.2.2. Alternatives 1, 2, 4, and 5

Similar to the No Action Alternative, negligible adverse effects would occur, as Fort Hood would not receive an additional ABCT.

3.4.8.2.3. Alternative 3

The increase in Soldier population would have a minor adverse impact on traffic in the community. The Proposed Action could contribute to a decrease in the LOS of the road networks and major routes on and leading to the installation, particularly during peak morning and afternoon travel periods. The overall impact on the transportation operations at Fort Hood would be minor.

3.4.8.3. Summary of Mitigation

No mitigation efforts are anticipated to be required.

3.4.9. Cumulative Effects

3.4.9.1. Region of Influence

The ROI for this cumulative impact analysis of the potential gain of an ABCT at Fort Hood encompasses an area located in Bell, Coryell, and Lampasas counties, Texas. Killeen is the largest city located near Fort Hood and provides the center for commercial, manufacturing, transportation, and medical activities in the ROI. Fort Hood has long been a key component of the economy of the metropolitan area, employing several thousand Soldiers and Civilians within the ROI.

Numerous planned or Proposed Actions within the ROI have the potential to add cumulative impacts to the possible gain of an ABCT at Fort Hood. These actions are either recently completed, currently occurring, or are reasonably foreseeable during the next three years.

A list of projects below presents those projects that may add to the cumulative impacts for implementation of the Fort Hood alternative.

3.4.9.2. Fort Hood Projects

The following projects are recently completed, currently under design or construction at Fort Hood:

- Mission Training Center
- Lab and Test Building
- Infantry Platoon Battle Course (Wolf Creek)
- Supple Support Activity and BN HQ
- Robert Gray Army Airfield Fuel Facility
- Supply Support Activity
- Replacement Unaccompanied Enlisted Personnel Housing (UEPH) Barrack
- Multipurpose Machine Gun (MPMG) Range
- Renovate Hangar 90033
- Renovate 1st CAV Wash rack
- Robert Gray Army Airfield Runway Repairs
- Replace Georgetown Rd. Bridge at Cowhouse Creek
- H-Frame Barracks 9200 Block
- Aircraft Maintenance Hangar
- Motor Pool Paving Repairs
- Repair UEPH Barracks

- Renovate Volar Barracks

The following projects are reasonably foreseeable during the next 3 years:

- Renovate 10 Rolling Pin Barracks
- Repair Traffic Control Tower, Taxiways, Striping and Lighting at Hood Army Airfield
- Repair Two Vehicle Maintenance Facilities (Buildings 9112/9122)
- Repair Robert Gray Army Airfield Drainage, Pavements, Aprons, and Taxiways
- Repair Hangar Building 6940

3.4.9.3. Other Actions

Other known planned or ongoing projects that will cumulatively affect the ROI include several TxDOT projects providing expansion of major roadways and intersections. These projects should reduce traffic congestion and increase economic activity within the ROI. Examples include the Rosewood (284LF Bridge Crossing of Trimmier Creek) and Trimmier Road widening projects. Within the City of Killeen, there are three drainage and stormwater /flood protection projects, and four water/sewer improvement projects that meet the threshold size requirement (e.g., $500,000 or more) for inclusion in this cumulative impact analysis. In addition, the City of Killeen indicates that there are several new construction projects in the works including, a large assisted living facility, a medical facility, several retail stores, a church, and an MGC Pure Chemicals America plant (a subsidiary of Mitsubishi Gas Chemical Company, Inc.**).** This plant will produce super-pure hydrogen peroxide, a chemical used in the cleaning process of the semiconductor industry. These projects are all within the ROI, which is also experiencing growth in construction of new homes and other businesses.

3.4.9.3.1. No Action Alternative

Overall impacts would be negligible adverse impacts at Fort Hood under the No Action Alternative. Fort Hood would not receive an additional ABCT and would continue to operate with its existing force. Fort Hood's continuing operations represent a beneficial source of regional economic activity. No additional impacts to housing, public services, schools, or public safety are anticipated.

3.4.9.3.2. Alternatives 1, 2, 4, and 5

Overall adverse impacts would be negligible, as Fort Hood would not receive an additional ABCT. The ABCT would be stationed at another installation.

3.4.9.3.3. Alternative 3

Cumulative impacts as a result of the implementation of Alternative 3 range from minor to less than significant adverse impacts. In the VEC area of Socioeconomics, it is anticipated that under both the training and construction components of Alternative 3, the cumulative impact would be negligible to beneficial.

As a result of the implementation of Alternative 3, the Army anticipates minor adverse cumulative impacts in the following VECS: Air Quality/GHG, Biological Resources (construction component), Cultural Resources (training component), Soils (construction component), Surface Waters and Wetlands (construction component), and Traffic and Transportation.

The Army anticipates less than significant cumulative impacts for the following VECs: Biological Resources (training component), Soils (training component), Surface Water and Wetlands (training component).

Cumulative impacts will be controlled through existing measures including the continued compliance with existing plans and programs that protect the resource areas considered. Fort Hood has experienced less growth in the past five years than anticipated and discussed in several previous NEPA documents. As a result, some civilian and military infrastructure in the ROI has already been upgraded to manage the possible increase in population and the associated cumulative effects. The implementation of Alternative 3 is anticipated to cause less than significant adverse cumulative impacts. This alternative would produce adverse socioeconomic impacts at Fort Carson as discussed in section 3.2.7.

3.5. Fort Riley, KS

3.5.1. Introduction

Fort Riley is a U.S. Army installation located in North Central Kansas (KS), on the Kansas River, between Junction City and Manhattan. Fort Riley is named in honor of Major General Bennett C. Riley. The installation was established in 1853 as a military post to protect the movement of people and trade over the Oregon, California, and Santa Fe trails. See Figure 3.5-1.

The installation covers 101,733 acres (41,170 ha) in Geary and Riley counties. Fort Riley's population includes 15,009 Soldiers (Army), 164 Soldiers (Air Force), and 18,028 family member's (9,347 on post, 8681 off post). Fort Riley completed $1.8B in MILCON Construction (FY06-16), and the surrounding communities' enhanced housing and education infrastructure. These actions were made to accommodate a population increase to 19,468 Soldiers as a result of 2005 force structure actions, to include standing up a third BCT (4/1 IBCT) in Jan2006. The 4/1 IBCT was inactivated in Jun2015 as part of force reductions.

Fort Riley is home to the 1st ID, which includes:

- 1st ABCT
- 2nd ABCT
- 1st CAB
- 1st Sustainment Brigade
- Division Headquarters and Headquarters Battalion
- Division Artillery

Other tenants on Fort Riley include: 407th Army Field Support Battalion, 10th Air Support Operations Squadron, 97th Military Police BN, MEDDAC, Dental Activity, Warrior Transition BN, Civilian Human Resources Agency, Civilian Personnel Advisory Center, 902nd Military Intelligence Group, Logistics Readiness Center, Mission and Installation Contracting Command, Special Operations Recruiting BN, 3rd Weather Squadron 2nd Detachment, Army and Air Force Exchange Service, Defense Commissary Agency, Army Benefits Center, and the Network Enterprise Center.

The mission of the 1st ID and Fort Riley is to build and maintain combat ready forces; and on order, deploy these forces in an expeditionary manner to conduct Decisive Action to fight and win in complex environments as members of a Joint, Inter-organizational, and Multinational team. (http://www.riley.army.mil/Units/1st-Infantry-Division/).

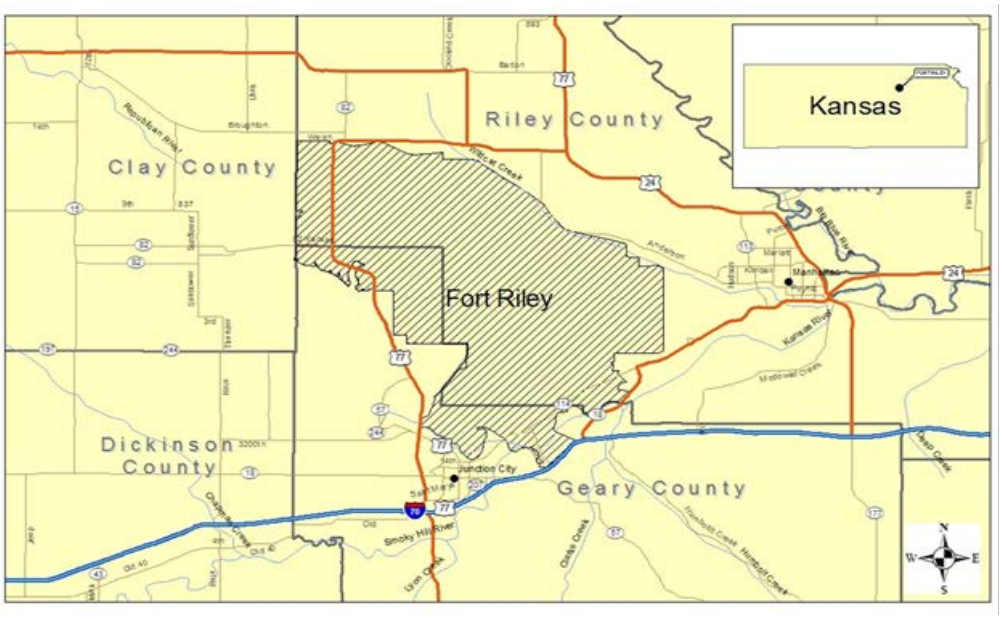

Figure 3.5-1. Location of Fort Riley, Kansas

3.5.2. Air Quality and GHG

Fort Riley is located in the North Central Kansas Intrastate AQCR (40 CFR 81.250). The entire AQCR includes the counties of Clay, Cloud, Dickinson, Ellsworth, Geary, Jewell, Lincoln, McPherson, Mitchell, Morris, Ottawa, Republic, Rice, Riley, Saline, and Washington. Fort Riley is located in the portion of the AQCR that includes Geary and Riley counties. The ROI for air quality analysis includes this portion of the AQCR.

3.5.2.1. Affected Environment

The installation lies directly north of Junction City. The majority of training involving the use of the ABCT tactical vehicles would occur on the ranges that lie to the north and east and which are predominantly located in Riley County.

The 2011 emissions inventory for Geary and Riley counties are shown in Table 3.5-1. Volatile organic compound and nitrogen oxides emissions are used to represent ozone generation because

they are precursors of ozone. The inventory includes stationary sources, such as industrial sites and residential fuel combustion, as well as mobile sources and area sources such as fires.

Table 3.5-1 County Air Emissions Inventories (2011) in Tons per Year

Location	NO_x	VOCs	CO	SO_2	PM_{10}	$PM_{2.5}$	CO_2e
Geary County, KS	2,325	10,705	28,292	253	5,810	2,604	687,249
Riley County, KS	2,548	13,711	35,945	316	9,440	3,427	814,866

Source: (USEPA, 2017c)

Key: NO_x = nitrogen oxides; VOC = volatile organic compounds; CO = carbon monoxide; SO_2 = sulfur dioxide; PM_{10} = suspended particulate matter less than or equal to 10 microns in diameter; $PM_{2.5}$ = fine particulate matter less than or equal to 2.5 microns in diameter; CO_2e = carbon dioxide equivalent.

3.5.2.2. National Ambient Air Quality Standards and Attainment Status

The Kansas Department of Health and the Environment (KDHE) has adopted the NAAQS, which are discussed in Section 3.1.5.

Fort Riley, while located in parts of each of two counties in the AQCR, is not located in a nonattainment or maintenance area. The USEPA has classified Geary and Riley counties as attainment/unclassifiable (40 CFR 81.317) for criteria pollutants.

3.5.2.3. Installation-Wide Emissions

The 2016 total emissions for stationary sources at Fort Riley are summarized in Table 3.5-2. Sources include boilers, generators, small degreasers, surface coating, woodworking, groundwater remediation equipment, and paint booths.

Table 3.5-2 2016 Estimates of Actual Annual Emissions, Fort Riley, KS

	Emission Estimates (tons per year)						
Annual Emissions	VOCs	CO	NOx	SO_2	PM_{10}	$PM_{2.5}$	HAPs
Actual	53.52	12.08	19.76	0.32	1.30	1.09	4.13

Source: 2016 Annual Air Emissions Inventory Questionnaire

3.5.2.4. Permitting Requirements

Fort Riley holds a Class I Operating Permit (the equivalent of a Title V Federal Operating Permit) that covers emissions of both criteria pollutants (including nitrogen oxides) and HAPs installation-wide. The current permit is effective through March 29, 2021.

3.5.2.5. Environmental Consequences

3.5.2.5.1. No Action Alternative

Negligible adverse effects would occur at Fort Riley under the No Action Alternative. Fort Riley would not receive an additional ABCT and would continue to operate with its existing force. Fort Riley would continue to operate existing stationary sources in accordance with its Class I Operating Permit and mobile source emissions would be generated consistent with current operations.

3.5.2.5.2. Alternatives 1, 2, 3, and 5

Similar to the No Action Alternative, negligible adverse effects would occur, as Fort Riley would not receive an additional ABCT. The ABCT would be stationed at another installation. Sections 3.2.2, 3.3.2, 3.4.2, and 3.6.2 discuss GHG emissions and effects of climate variation for stationing at the respective installations.

3.5.2.5.3. Alternative 4

Under Alternative 4, the Army would reassign Fort Carson's IBCT and convert it into an ABCT stationed at Fort Riley. This would involve the relocation of 4,182 military personnel. Tracked vehicles located on Fort Riley would increase by 132 Bradley Infantry Fighting Vehicles, 87 Abrams Tanks, 18 Howitzers, and 18 mortars.

3.5.2.5.3.1. Training

Once the ABCT was located to Fort Riley, the installation would be subject to an overall increase in emissions due to the additional training activity. Stationary sources that are already located at Fort Riley, such as spray paint booths, could see an increase in activity. It is also possible that the installation would install additional stationary sources used for operations, such as new spray booths, as well as new infrastructure stationary sources such as boilers and emergency generators for the new construction. All of these types of stationary sources would

need to be evaluated for compliance with the Fort Riley Class I Operating Permit requirements and may result in permit modifications. Other sources of emissions associated with the ABCT that would not be covered under a stationary source permit include carbon monoxide, carbon dioxide, lead, and small amounts of HAPs from the detonation of munitions, particulate matter from on- and off-road vehicle operations, increased vehicular traffic on- and off-post as a result of the increase in population of 4,182 military personnel. In addition, while some of these individuals may live on-post, many would live off-post and resultant increases in traffic and emissions in the area communities would be anticipated from the additional Soldiers and their Families. Fort Riley could institute proactive emission mitigation in the form of carpooling or transit services for commuting staff in keeping with net zero initiatives. While an overall increase in emissions for Fort Riley would occur, these increases are not anticipated to result in violations of the NAAQS for any criteria pollutants. As a result, the transition of the ABCT is expected to have negligible to minor adverse impacts on area air quality for the training component.

As with criteria pollutants, GHG emissions would increase; first due to construction activity and then due to the increase in personnel activities and training operations. As discussed in Section 3.2.2.5.2.1, an ABCT is authorized to use 24,815 barrels of fuel per year, which would produce 20,844,600 pounds (10,422 tons) of CO_2. Table 3.5-3 provides a scaled comparison GHG emissions increase from ABCT conversion at Fort Riley. As shown in the table, increases would be negligible regardless of scale considered. The ABCT's Soldiers and Families will obviously have private vehicles that they will drive in and around Fort Riley. The mileage for this activity and resulting GHG emissions are hard to estimate, and are expected to be negligible compared to the fuel use by the ABCT. At an Army-wide, United States, or Global level, there would be no difference since Army is essentially moving nearly the same number of people from one place to another within the region of influence.

Table 3.5-3 GHG Emissions by Scale

Scale	CO_2e Emissions (MMT)	Percent Increase from Proposed Conversion
Global	43,125	0.000024
United States	6,870	0.00015
Kansas	63.1	0.0017
Army-wide	8.8	0.12

Sources: USEPA 2015, 2017; CDPHE 2014; Army 2016; USAF 2016.
Note: MMT = million metric tons.

Kansas is located in the central portion of the great plains climate region of the United States, where trending climate variation is expected to contribute to increased demand for water and energy. This increase in demand could constrain development, stress natural resources, and increase competition for water among users such as communities, agriculture, energy production, and ecological systems. In addition, the doubling to quadrupling of high temperature extremes (maximum temperatures more than 100°F) occurrence by mid-century will have negative consequences including increases in surface water losses, heat stress, demand for air conditioning, and increase insect outbreaks. These negative consequences would offset any benefits to warmer winters. Changes to precipitation are projected to be small relative to natural variations but the region could experience summer drying (Melillo et al. 2014).

Table 3.5-4 outlines potential climate stressors and their effects from the Proposed Action. The operational activities associated with the Proposed Action in and of themselves are only indirectly dependent on any of the elements associated with future climate scenarios (e.g., meteorological changes). At this time, no future climate scenario or potential climate stressor will have greater than minor effects from the Proposed Action.

Table 3.5-4 Effects of Potential Climate Stressors from the Proposed Action

Potential Climate Stressor	Effects from the Proposed Action
More frequent and intense heat waves	Minor
Longer fire seasons and more severe wildfires	Negligible
Changes in precipitation patterns	Negligible
Increased drought	Negligible
Harm to water resources, agriculture, wildlife, ecosystems	Minor

Source: Melillo et al. 2014

3.5.2.5.3.2. Construction

New construction would be required and include vehicle maintenance shops; company, battalion and brigade HQ buildings; barracks; storage facilities; classrooms; a tactical UAV hangar; and POL storage.

Air emissions generated during construction would result from construction worker vehicles and trucks hauling materials to and from the site. While these emissions would generate an increase in localized emissions of criteria pollutants, the increase would be relatively small and temporary. The overall adverse impacts for the construction component would be expected to be short-term and minor. The Army would incorporate design and mitigation measures for construction projects to reduce incremental effects of GHGs as discussed in Section 3.2.2.5.2.1.

3.5.2.6. Summary of Mitigation

No mitigation measures have been identified.

3.5.3. Biological Resources

3.5.3.1. Affected Environment

3.5.3.1.1. Vegetation

Most of Fort Riley contains tall- and mixed-grass prairie dominated by big bluestem (*Andropogon gerardii*), Indiangrass (*Sorghastrum nutans*), and switchgrass (*Panicum virgatum*). Grasslands on Fort Riley comprise approximately 67 percent of the installation. The remaining

third of the installation's vegetation communities are comprised of ravine woodland, brushy woodland, and planted cultivated vegetation.

Fort Riley contains five species of noxious weeds that require control by State of Kansas laws including musk thistle (*Carduus nutans*), kudzu (*Pueraria lobata*), field bindweed (*Convolvulus arvensis*), Johnson grass (*Sorghum halepense*), and sericea lespedeza (*Lespedeza cuneata*).

3.5.3.1.2. Wildlife and Aquatic Life

Fort Riley's habitat supports at least 40 species of mammals, 269 species of birds, 47 species of turtles, reptiles and amphibians, and 60 species of fish (Fort Riley, 2016a). This includes a variety of upland game birds such as the northern bobwhite (*Colinus virginianus*), ring-necked pheasant (*Phasianus colchicus*), greater prairie-chicken (*Tympanuchus cupido*), various duck and goose species, mourning dove (*Zenaida macroura*), Wilson's snipe (*Gallinago delicata*), American woodcock (*Scolopax minor*) and wild turkey (*Meleagris gallopavo*). Big game species include white-tailed deer (*Odocoileus virginianus*) and elk (*Cervis canadensis*). Furbearer species include badger (*Taxidea taxus*), bobcat (*Lynx rufus*), mink (*Neovison vison*), muskrat (*Odonatra zibethicus*), opossum (*Didelphis virginiana*), raccoon (*Procyon lotor*), red fox (*Vulpes vulpes),* gray fox (*Urocyon cinereoargenteus*), striped skunk (*Mephitis mephitis*), coyote (*Canis latrans*), and beaver (*Castor canadensis*). Fish species include largemouth bass (*Micropterus salmoides*), green sunfish (*Lepomis cyanellus*), bluegill (*Lepomis macrochirus*), and minnow (Phoxinus *sp.*) (Fort Riley, 2016a).

3.5.3.1.3. Protected Species under the ESA

The Fort Riley INRMP contains the list of sensitive species of flora and fauna with protected status known to occur, or having the potential to occur, on Fort Riley (Fort Riley, 2016a). The INRMP does not contain an ESMP. Appendix C of the Fort Riley INRMP includes Rare Species Management Plans, which covers the ESA federally-protected species in the PEA discussion.

Inventories have documented the presence of three federally-listed and seven Kansas-listed threatened and endangered species, and ninety-one rare species. The three federally-listed species documented on Fort Riley are the federally-endangered least tern (*Sternula antillarum*), the federally-endangered Topeka shiner (*Notropis topeka*), and the federally-threatened piping plover (*Charadrius melodus*). The Topeka shiner has been documented in Wildcat, Sevenmile,

Wind, Honey, Silver, and Little Arkansas Creeks, and potentially may immigrate into Fourmile, Threemile, and Forsyth Creeks. The least tern and piping plover are uncommon, primarily transient migrants. These species are potential breeders along the Republican and Kansas Rivers' sandbars. The least tern has been observed along the Kansas River and Milford Lake shorelines. The piping plover has been observed along the Republican and Kansas Rivers' sandbars. The federally-threatened northern long-eared bat (*Myotis septentrionalis*) has not been documented on Fort Riley, although the installation is within its historic range (Fort Riley, 2016a).

3.5.3.1.4. Management of Natural Resources

Fort Riley's INRMP outlines the management of the natural and biological resources on the installation. A primary strategy in Fort Riley's natural resource management is to protect, propagate and conserve native tallgrass ecosystems as this ecosystem is the most altered in North America with only four percent remaining of the estimated 170 million (68.8 million ha) historical acres (Fort Riley, 2016a). Fort Riley conducts prescribed burning to maintain open space for military training, reduce wildfire potential, reduce and suppress woody plant encroachment onto the prairie, maintain wildlife resting and breeding cover, and for sericea lespedeza control.

The Fort Riley INRMP also contains management plans for federally-protected species found within the installation. In addition, in 2002, the USFWS and the Kansas Department of Wildlife, Parks and Tourism issued a Biological Opinion concerning a determination that road maintenance actions occurring in or nearby streams that contain, or potentially contain, Topeka shiners at Fort Riley "may adversely affect" the species. The Biological Opinion contains reasonable and prudent measures that are necessary and appropriate to minimize the take of Topeka shiners during road maintenance activities. The Proposed Action would comply with the existing Biological Opinion for the Topeka shiner.

As stated within the INRMP, Fort Riley continually monitors species and habitats to collect data about the effects of management actions and military training on the land. The inventory is conducted to attain indicators of overall ecosystem integrity, capability of lands to sustain military missions, renewable product surpluses, and status of sensitive species and habitats. The strategy is to monitor the important resources regularly to determine trends, distribution, and impact of land uses upon those resources, and apply resultant data to implement adaptive

ecosystem management strategies (Fort Riley, 2016a). Regarding protected species, Fort Riley has implemented the following procedures (Fort Riley, 2016a):

- Establish a "no disturbance" buffer zone to protect nesting least terns and/or piping plovers. In addition, construction, operations and maintenance (O&M) activities, demolition, operation of vehicles, detonation of explosives, and recreational pursuits are controlled to protect sandbars from adverse impacts.

- Protect streams designated within the INRMP from activities that result in channel destruction or alteration, increase water turbidity, or remove vegetation filter strips. In addition, control construction, O&M, demolition, operation of vehicles, timber harvest, detonation of explosives, and recreational pursuit activities within 50 feet (15 meters) on either side of the streams.

3.5.3.2. Environmental Consequences

3.5.3.2.1. No Action Alternative

Negligible adverse effects would occur at Fort Riley under the No Action Alternative. Fort Riley would not receive an additional ABCT and would continue to operate with its existing force. Fort Riley would continue to adhere to its existing military land use and resource management plans to minimize and monitor any potential effects from training of existing units.

3.5.3.2.2. Alternatives 1, 2, 3, and 5

Similar to the No Action Alternative, negligible adverse effects would occur, as Fort Riley would not receive an additional ABCT. The ABCT would be stationed at another installation.

3.5.3.2.3. Alternative 4

3.5.3.2.3.1. Training

As stated in Section 3.1.2, maneuver and live-fire exercise training can negatively affect biological resources. This includes loss or degradation of vegetation and habitat from maneuver training and disruption to wildlife from field equipment training and live-fire exercises. The addition of an ABCT at Fort Riley would increase the frequency of both current maneuver and live-fire exercises and the potential for adverse effects from ABCT training to biological resources. As discussed in Section 2.3.5, the addition of an ABCT at Fort Riley would increase

MIMs by 130,000, totaling 390,000 MIMs (50 percent increase). Long-term increases in training intensity requiring large maneuver footprints due to heavy tracked and wheeled vehicles could potentially result in a conversion or net loss of habitat. This could occur at landscape scale through vegetation loss and conversion over widespread areas if areas are not adequately rotated, or given necessary recovery times for re-vegetation activities supporting soil stabilization. Fort Riley tall grass prairie lands are very resilient, able to sustain heavy maneuver training due to the deep-rooted nature of the grasses.

In addition, the Soldiers and equipment associated with an additional ABCT training could also result in adverse impacts to wildlife species within Fort Riley from increased training throughput. Species in these areas would flush and temporarily avoid areas in which units would be training, returning to the area once training activities have ceased; however, as this type of training currently exists on the installation, overall impacts to these species would be minor.

The increase of ABCT training could also adversely affect aquatic species and aquatic habitat. As discussed in Sections 3.5.5.2 and 3.5.6.2, increased ABCT training would increase the potential for impacts to surface water quality and wetland habitats from increased potential for sedimentation. Impacts to aquatic resources and habitat would be reduced by implementation of avoidance and minimization measures discussed in Sections 3.5.5.2 and 3.5.6.2. Minor adverse impacts would be expected.

In summary, overall adverse impacts to biological resources from training of an additional ABCT unit at Fort Riley would be moderate/ less than significant. Fort Riley would mitigate the potential for significant adverse effects to biological resources through continued management of ABCT training and management of biological resources in accordance with the INRMP that includes compliance with the ESA, MBTA, and BGEPA. This also includes management measures stated in 3.5.3.1 to avoid impacts to federally-protected species.

The new ABCT unit would also comply with Fort Riley Regulation 385-12, *Safety, Post Range and Training Regulation*. This regulation outlines procedures to coordinate dig permits for unit training with Fort Riley DPW-E to ensure that no environmental or cultural impacts occur. Areas scheduled for high intensity maneuver training are inspected by ITAM and Range Operations personnel prior to the event and areas of concern are mitigated prior to the start of training. Following training, Fort Riley's ITAM program facilitates the immediate repair of

training lands. Areas identified as possible concerns are then assessed by LRAM personnel in order to determine repair/recovery needs. If necessary, these areas are added to the ITAM Plan, and scheduled for repair.

3.5.3.2.3.2. Construction

As stated in Section 2.3.5, no new ranges, range upgrades, or garrison construction would be required during the implementation phase of IBCT reassignment and conversion into an ABCT under Alternative 4. Fort Riley would use some existing facilities left vacant from the "Foreign Security Force Transition Team" moving to Fort Polk. Fort Riley, however, would require future cantonment infrastructure improvements to bring facilities up to current Army standards for an ABCT, including vehicle maintenance shops; barracks; company, battalion and brigade HQs; unit storage and classrooms; a tactical UAV hangar; and POL storage. Fort Riley would also utilize new relocatable buildings as an interim stationing solution until new permanent facilities are constructed. Vegetation and habitat occurring within new building footprints would be permanently lost to accommodate the new facilities.

As shown on Figure 2.3-4, these construction activities would occur within existing facilities left vacant from the "Foreign Security Force Transition Team" containing predominantly marginal quality, maintained landscape, and grassy habitat. The overall adverse impacts to biological resources would be minor in the construction component. In addition, Fort Riley would adhere to MBTA requirements to avoid construction-related disturbance impacts to migratory bird nesting areas, if present.

Site selection and design would incorporate Real Property Master Plan and other master planning processes and policies including the use of strategic siting (e.g., avoidance of sensitive habitat), and implementation of sustainable design and construction. These future infrastructure improvements would be subject to other NEPA analyses, as required..

3.5.3.3. Summary of Mitigation

No new mitigation measures are needed nor have any been identified. The Army will continue to adhere to legal and regulatory requirements, and continue to implement its approved management plans, SOPs and BMPs related to biological resources.

3.5.4. Cultural Resources

3.5.4.1. Affected Environment

Fort Riley has identified, and manages, 911 archeological sites including 560 historic civilian, 118 historic military, 14 multi-component and 219 prehistoric archeological sites. To date, 45 archeological resources and 273 historic facilities have been determined eligible for the NRHP (Fort Riley, 2016b). The Cultural Resource Management Program staff also manages the main post Historic District. The main post Historic District is a one-mile square area (2.6 km^2) containing 294 historic buildings, landscapes, and monuments. It has been listed on the NRHP since 1974. Many of these buildings have been retrofitted for numerous adaptive reuses to serve the modern military.

3.5.4.1.1. Management of Cultural Resources

The Fort Riley Cultural Resources Manager is charged with identifying, evaluating, and protecting all of Fort Riley's cultural resources including historic buildings, archeological sites, artifacts, and Native American sacred sites. Protecting Fort Riley's cultural resources means coordinating with installation tenants, partners, and the public, including federally recognized Tribes with ancestral ties to the land where Fort Riley is located. The program sponsors an active archeological and historic building survey and evaluation program that includes managing the main post Historic District.

Fort Riley operates under the 2016 *Programmatic Agreement Among the United States Army Garrison Fort Riley, The Kansas State Historic Preservation Officer, and the Advisory Council on Historic Preservation Regarding the Operation, Maintenance, and Development of Fort Riley Clay, Geary and Riley Counties, Kansas* (Fort Riley, 2016b). The PA ties together the more specific management practices and activities that the garrison had been accomplishing under several individual management plans and agreements. Stipulations within the PA include ground disturbance review protocols with the Cultural Resources Manager, protection measures, a monitoring strategy, and annual reporting to the SHPO. The PA also includes a list of activities exempted from further consultation as Fort Riley analyzes effects on historic properties and protected properties from military training, other activities, and natural processes.

3.5.4.2. Environmental Consequences

3.5.4.2.1. No Action Alternative

Negligible adverse effects would occur at Fort Riley under the No Action Alternative. Fort Riley would not receive an additional ABCT and would continue to operate with its existing force. Fort Riley would continue to adhere to and manage cultural resources according to its PA to minimize and monitor any potential effects from training of existing units.

3.5.4.2.2. Alternatives 1, 2, 3 and 5

Similar to the No Action Alternative, negligible adverse effects would occur, as Fort Riley would not receive an additional ABCT. The ABCT would be stationed at another installation.

3.5.4.2.3. Alternative 4

3.5.4.2.3.1. Training

As stated in Section 3.1.2, maneuver and live-fire exercise training can adversely affect cultural resources. This includes disturbance to archaeological sites from ground disturbance or historic structures from training and live-fire exercises. The addition of an ABCT at Fort Riley would increase the frequency of both current maneuver and live-fire exercises and the potential for adverse effects from ABCT training to cultural resources.

Overall adverse impacts to cultural resources would be minor. Fort Riley would mitigate the potential for significant adverse effects to cultural resources through continued management of ABCT training and management of cultural resources in accordance with its PA. All undertakings and actions associated with the implementation and stationing of an additional ABCT would be covered under the existing PA. Fort Riley would continue to report all undertakings/actions in an annual report to SHPO.

3.5.4.2.3.2. Construction

As stated in Section 2.3.5, no new ranges, range upgrades, or garrison construction would be required during the implementation phase of IBCT reassignment and conversion into an ABCT under Alternative 4. Fort Riley would use some existing facilities left vacant from the "Foreign Security Force Transition Team" moving to Fort Polk. Fort Riley, however, would require future cantonment infrastructure improvements to bring facilities up to current Army standards

for an ABCT. Fort Riley would utilize new relocatable buildings as an interim stationing solution until new permanent facilities are constructed.

Construction could cause a direct or indirect alteration of the characteristics that qualify a property for inclusion on the NRHP through activities such as ground disturbance to an archaeological site, or alternation to a historic structure or viewshed.

As shown on Figure 2.3-4, these construction activities would occur within previously disturbed areas of facilities formerly associated with the Foreign Security Force Transition Team and do not include any historic structures or eligible structures. Overall adverse impacts to cultural resources would be negligible in the construction component. Fort Riley would continue to incorporate Real Property Master Plan and other master planning processes and policies including the use of strategic siting (e.g., avoidance of cultural resources) and would continue to adhere to cultural resource management according to the PA.

3.5.4.3. Summary of Mitigation

No new mitigation measures are needed nor have any been identified. The Army will continue to adhere to legal and regulatory requirements, and continue to implement its approved management plans, PA, SOPS, and BMPs related to cultural resources.

3.5.5. Soils

3.5.5.1. Affected Environment

3.5.5.1.1. Soils and Erosion

The primary soil association encountered on Fort Riley is the Wymore-Irwin. It is a deep, nearly level group of silty, clay loams found in upland locations. The Smolan-Geary and the Clime-Sogn series are also prevalent (Fort Riley, 2016a). These soils are subject to moderate erosion if they are not protected. Existing training activities at Fort Riley can negatively impact the installation's soils including maneuver damage, gullies, and damaged drainage ditches and stream crossings (Fort Riley, 2016a).

3.5.5.1.2. Soil and Erosion Management

Soil and erosion management is integrated through the ITAM program between the DPW and DPTMS. The overall soil conservation strategy is to repair and improve training lands by

planning and applying preventative and corrective land management practices that address erosion and damage caused by military training.

Fort Riley uses an adaptive management approach with consideration for the interrelationships between the components of the ecosystem, the requirements of the military mission, and other land use activities. Natural resource management at Fort Riley focuses on maintaining the structure, diversity, and integrity of the soil resources, while recognizing the military mission. An adaptive management strategy is integral to monitor the temporal and spatial dynamics of ecosystems and to adjust the management measures and strategies based on improved knowledge and data. The monitoring programs generate the soils and land recovery data needed to determine whether the management measures and strategies are effective in achieving their intended goals and objectives. These goals include maintaining sustainable training lands through minimization of soil movement, loss, and wind erosion. This management approach preserves the natural resources while providing the optimum environmental conditions for sustaining Fort Riley's military training mission.

Specifically to training, units are briefed prior to each training event regarding sensitive areas on post, such as highly-erodible soils, and what is allowed or prohibited within certain areas. Soil management practices include filling, grading, and seeding abandoned defilades and hardened assembly areas; controlling road ditch erosion by seeding, constructing earthen gradient diversions that divert storm water to established stands of grass, or by placing riprap in ditches; and contour ripping heavily compacted areas to increase air and water infiltration (Fort Riley, 2016a).

Management of soil resources also involves the ITAM program that establishes a uniform land management program and includes inventorying and monitoring land condition, integrating training requirements with land carrying capacity while training to standard, educating land users to minimize adverse impacts, and prioritizing and implementing rehabilitation and maintenance projects.

3.5.5.2. Environmental Consequences

3.5.5.2.1. No Action Alternative

Negligible adverse effects would occur at Fort Riley under the No Action Alternative. Fort Riley would not receive an additional ABCT and would continue to operate with its existing force. Fort Riley would continue to adhere to its existing military land use and resource management plans to minimize and monitor any potential effects from training of existing units.

3.5.5.2.2. Alternatives 1, 2, 3, and 5

Similar to the No Action Alternative, negligible adverse effects would occur, as Fort Riley would not receive an additional ABCT. The ABCT would be stationed at another installation.

3.5.5.2.3. Alternative 4

3.5.5.2.3.1. Training

As stated in Section 3.1.2, maneuver and live-fire exercise training can negatively affect soil resources. This includes degradation of soils and potential for increased soil erosion (water and wind) from maneuver training, field equipment training, and live-fire exercises. The addition of an ABCT at Fort Riley would increase the frequency of both current maneuver and live-fire exercises and the potential for adverse effects from ABCT training to soil resources. As discussed in Section 2.3.5, the addition of an ABCT at Fort Riley would increase MIMs by 130,000, totaling 390,000 MIMs (50 percent increase); this potentially correlates to a 50 percent increase in soil maneuver impacts and required repair costs over a given training year. Long-term increases in training intensity requiring large maneuver footprints due to heavy tracked and wheeled vehicles could potentially result in disturbance to soil resources. This could occur at the landscape scale through degradation of soils and the potential for increased soil erosion over widespread areas if areas are not adequately rotated, or given necessary recovery times for re-vegetation activities supporting soil stabilization.

In addition, the Soldiers and equipment associated with an additional ABCT training could result in adverse impacts to soil resources within Fort Riley from increased training throughput. The most critical effect to soils would be the potential for increased soil compaction, soil rutting, and soil erosion (wind and water) as the result of an additional ABCT training. Potential effects could occur to sedimentation and run-off, and soil stability and fertility.

Overall impacts to soil resources from training of an additional ABCT unit at Fort Riley would be less than significant. Fort Riley would mitigate the potential for significant adverse effects to soil resources through management of ABCT training and management of soil resources in accordance with the INRMP. This includes coordinating training events that comply with the following soils policies (Fort Riley, 2016a):

- Repair lands damaged by maneuver training, which may include grading, filling, shaping, seeding, and mulching.
- Monitor soil erosion and soil compaction as part of the ITAM program.
- Compliance with Fort Riley Regulation 385-12, *Safety, Post Range and Training Regulation*, which outlines procedures to coordinate dig permits for unit training with Fort Riley DPW Environmental to avoid sensitive resources.

3.5.5.2.3.2. Construction

As stated in Section 2.3.5, no new ranges, range upgrades, or garrison construction would be required during the implementation phase of IBCT reassignment and conversion into an ABCT under Alternative 4. Fort Riley would use some existing facilities left vacant from the "Foreign Security Force Transition Team" moving to Fort Polk. Fort Riley, would require future cantonment infrastructure improvements to bring facilities up to current Army standards for an ABCT, to include vehicle maintenance shops; barracks; company, battalion and brigade HQs; unit storage and classrooms; a tactical UAV hangar; and POL storage. Fort Riley would utilize new relocatable buildings as an interim stationing solution until new permanent facilities are constructed. Construction could cause a temporary increase in soil erosion, sedimentation and run-off, and permanent loss of soils in areas of new impervious surface, which could increase stormwater runoff and adversely affect surface water quality. Soil resources occurring within new building footprints would be permanently disturbed to accommodate the new facility.

As shown on Figure 2.3-4, these construction activities would occur within existing facilities left vacant from the "Foreign Security Force Transition Team", as well as within areas containing previously disturbed soil resources and the overall adverse impacts would be minor.

Fort Riley would identify specific locations of and provide designs for these future cantonment infrastructure improvements. Long-term minor effects would result from new impervious surfaces associated with new buildings. Site selection and design would incorporate Real Property Master Plan and other master planning processes and policies including the use of strategic siting, and implementation of sustainable design and construction. These future cantonment infrastructure improvements would be subject to other NEPA analyses, as required.

Fort Riley would continue to follow the erosion and sediment control BMPs and impact-reduction measures described in the Fort Riley INRMP. BMPs such as maintenance of vegetative cover, dust control, hay bales, silt fencing, wetting of exposed soils, and site stabilization would minimize the potential for construction-related erosion and sedimentation. Fort Riley would maintain permitting requirements under the NPDES permit No F-KS51-PO02. As a component of its NPDES permit, Fort Riley is required to develop and annually update a Borrow Area Management Plan. The purpose of the plan is to provide instructions so that borrow-related actions occur in a manner that ensures availability of materials, maintains sustainability of resources, meets environmental compliance, and minimizes conflicts with military day-to-day training operations (Fort Riley, 2016a).

3.5.5.3. Summary of Mitigation

No new mitigation measures are needed nor have any been identified. The Army will continue to adhere to legal and regulatory requirements, and continue to implement its approved management plans, SOPs and BMPs related to soil resources.

3.5.6. Surface Water and Wetlands

3.5.6.1. Affected Environment

3.5.6.1.1. Surface Waters

Nearly 145 miles (233.3 km) of rivers and streams, consisting of 14 miles (22.5 km) of rivers and 131 miles (210.8 km) of streams, are present on Fort Riley. Streams in the southern and central portions of Fort Riley drain to the south into the Republican or Kansas Rivers. Streams in the western portion of Fort Riley drain toward the southwest into Milford Lake. Streams in the northeastern portion of Fort Riley drain to the northeast into Wildcat Creek, a tributary of the Kansas River (Fort Riley, 2016a).

3.5.6.1.2. Water Quality

The KDHE has designated surface water use categories for the Republican, Smoky Hill, and Kansas Rivers; Fourmile, Rush, Timber, Little Arkansas, Sevenmile, Threemile, and Wildcat Creeks; and Milford Lake (Fort Riley, 2016a). The KDHE has determined these surface water bodies are suitable for, and should be protected for, contact recreation, expected or special aquatic life, food procurement, domestic water supply, irrigation, livestock watering, industrial water supply, and groundwater recharge (Fort Riley, 2016a).

The KDHE listed Wildcat Creek as an impaired stream, under Section 303d of the CWA, due to high fecal coliform bacteria count and low dissolved oxygen. Anecdotal information provided by Riley County indicated the quality of water in Wildcat Creek passing through Fort Riley was good. It is suspected that high fecal coliform counts occurring in the lower end of stream, below the confluence of Little Kitten Creek, are related to poorly functioning on-site waste systems in the vicinity of Manhattan (Fort Riley, 2016a). Urban development occurring on the west side of Manhattan, downstream from Fort Riley, is altering hydrogeomorphology and thereby increasing sediment and contaminant loads in Wildcat Creek.

3.5.6.1.3. Wetlands

Wetland areas on Fort Riley include springs, seeps, streams, rivers, ponds, lakes, vernal pools, and emergent marshes. Approximately 1,536 acres (622 ha) of wetlands are present on the installation (Fort Riley, 2016a). Of this total, 972 acres (393 ha) are considered permanently inundated. The majority of all wetlands are riverine; riverine habitat comprises approximately 145 miles (233.4 km) and encompasses 748 acres (303 ha). Lacustrine and palustrine wetlands cover 431 and 270 acres (174 and 109 ha) of the installation, respectively (Fort Riley, 2016a).

3.5.6.1.4. Surface Water and Wetlands Management

Fort Riley manages its surface water and wetland resources according to the Fort Riley INRMP (Fort Riley, 2016a). Natural resource management at Fort Riley focuses on maintaining the quality of surface water resources and wetlands, while recognizing the military mission. Fort Riley complies with all state and Federal management requirements in projects that either directly or indirectly affect the water quality of its streams. The primary water quality strategy

on Fort Riley is to minimize sedimentation of installation streams from both point source and non-point sources (Fort Riley, 2016a).

Units are briefed prior to each training event regarding sensitive areas on post, such as sensitive water resources, and what is allowed or prohibited within certain areas, such as within the protective buffer surrounding sensitive resources.

Fort Riley's strategies for wetland habitat management are to comply with wetlands laws and regulations, protect existing wetlands, create new wetlands, rehabilitate degraded wetlands, and use moist soil management principles to manage wetlands. Wetland habitat management actions include plant native grasses adjacent to wetlands, seasonally conduct drawdown and re-flooding of shallow-water wetlands, and perform all activities in compliance with applicable federal and state permit requirements (Fort Riley, 2016a).

Management of water resources also involves the ITAM program that establishes a uniform land management program and includes inventorying and monitoring land condition, integrating training requirements with land carrying capacity while training to standard, educating land users to minimize adverse impacts, and prioritizing and implementing rehabilitation and maintenance projects.

3.5.6.2. Environmental Consequences

3.5.6.2.1. No Action Alternative

Negligible adverse effects would occur at Fort Riley under the No Action Alternative. Fort Riley would not receive an additional ABCT and would continue to operate with its existing force. Fort Riley would continue to adhere to its existing military land use and resource management plans to minimize and monitor any potential effects from training of existing units.

3.5.6.2.2. Alternatives 1, 2, 3, and 5

Similar to the No Action Alternative, negligible adverse effects would occur, as Fort Riley would not receive an additional ABCT. The ABCT would be stationed at another installation.

3.5.6.2.3. Alternative 4

3.5.6.2.3.1. Training

As stated in Section 3.1.2, maneuver and live-fire exercise training can negatively affect surface water and wetland resources. This includes physical degradation of surface water features, water quality, and wetlands from maneuver training, field equipment training, and live-fire exercises. The addition of an ABCT at Fort Riley would increase the frequency of both current maneuver and live-fire exercises and the potential for adverse effects from ABCT training to water resources. As discussed in Section 2.3.5, the addition of an ABCT at Fort Riley would increase MIMs by 130,000, totaling 390,000 MIMs (50 percent increase) and would increase range use. Long-term increases in training intensity requiring large maneuver footprints due to heavy tracked and wheeled vehicles could potentially result in effects to surface water and wetland resources. As stated in Section 3.5.5.2, ABCT training activities could cause widespread disturbance to soils resulting in excess sediment loads in surface waters and wetlands, changes to drainage patterns, and increased stormwater runoff. This could adversely affect surface water quality within the installation and within the nearby waterbodies (e.g., Republican and Kansas rivers) and impact wetland quality and hydrology.

Impacts associated with operation of armored vehicles and heavy equipment for ABCT training to surface waters would be greater during wet conditions, particularly when crossing intermittent drainages. These activities could modify drainage structures through erosion and compaction resulting in increased erosion potential and indirect impacts to water quality.

Overall adverse impacts to surface water and wetland resources from training of an additional ABCT unit at Fort Riley would be moderate/ less than significant. Fort Riley would mitigate the potential for significant adverse effects to these resources through management of ABCT training and management of surface waters and wetlands in accordance with the INRMP. Managing soil erosion according to the INRMP would reduce the potential for increased turbidity and sedimentation of surface waters from training activities (see Section 3.5.5.2). Fort Riley would also continue to comply with Fort Riley Regulation 385-12, which outlines procedures to coordinate dig permits for unit training with Fort Riley DPW Environmental to avoid surface water and wetland resources.

The ITAM program would also continue to be used during maneuvers to reduce soil erosion and sedimentation into adjacent surface waters and wetlands. Potential surface water contamination could occur due to accidental spills of hazardous materials associated with vehicles and equipment (e.g., oil, fuels, and solvents). Fort Riley would continue to implement AR 200-1 and BMPs to manage and reduce potential impacts.

Vehicles would be operated and maintained to minimize leaking fluids that could contaminate soils and waterbodies. Vehicle and equipment fueling and maintenance would be restricted to approved locations unless emergency field maintenance is required. If emergency maintenance were required, applicable control and containment measures would be implemented to prevent accidental contamination of surface water. Such controls include locating activities away from surface waters and stormwater inlets or conveyances, providing secondary containment (e.g., spill berms, decks, and spill containment pallets) and cover where applicable, and/or having spill kits readily available.

3.5.6.2.3.2. Construction

As stated in Section 2.3.5, no new ranges, range upgrades, or garrison construction would be required during the implementation phase of IBCT reassignment and conversion into an ABCT under Alternative 4. Fort Riley would use some existing facilities left vacant from the "Foreign Security Force Transition Team" moving to Fort Polk. Fort Riley, however, would require future cantonment infrastructure improvements to bring facilities up to current Army standards for an ABCT, including include vehicle maintenance shops; barracks; company, battalion and brigade HQs; unit storage and classrooms; a tactical UAV hangar; and POL storage. Fort Riley would utilize new relocatable buildings as an interim stationing solution until new permanent facilities are constructed. Construction could cause a temporary increase in soil erosion, sedimentation, and run-off, and permanent increases in impervious surface, which could increase stormwater runoff and adversely affect surface water quality.

As shown on Figure 2.3-4, these construction activities would occur within existing facilities left vacant from the "Foreign Security Force Transition Team" which indicates the presence of intermittent or ephemeral drainage features between existing paved areas and facilities. No direct impact to these resources would occur from construction, as these features would be avoided during site design. Overall adverse impacts from the construction component are

expected to be moderate/ less than significant. The potential for indirect impacts from construction site stormwater runoff and sedimentation are further described below.

Fort Riley would identify specific locations and provide designs of these future infrastructure improvements. Long-term less than significant effects would result from new impervious surfaces associated with new buildings resulting in increased stormwater runoff and adversely affect surface water quality due to sedimentation and run-off. Fort Riley will comply with Section 438 of the EISA. This requires use of a variety of stormwater management practices often referred to as "green infrastructure" or "low impact development" practices. These include reducing impervious surfaces, using vegetative practices, porous pavements, cisterns, and green roofs." Fort Riley would continue to follow the BMPs and impact-reduction measures described in the Fort Riley INRMP such as reduce sources of direct pollutant discharge to nearby waterways, prevent spills of oils and other hazardous substances, hay bales silt fencing, and site stabilization (Fort Riley, 2016a). These BMPs would minimize the potential for construction-related erosion and sedimentation or contamination. Site selection and design would incorporate Real Property Master Plan and other master planning processes and policies including the use of strategic siting (e.g., avoidance of sensitive habitat), and implementation of sustainable design and construction. These future infrastructure improvements would be covered by other NEPA analyses, as required.

Fort Riley would maintain permitting requirements under the NPDES permit No F-KS51-PO02. As a component of its NPDES permit, Fort Riley is required to develop and annually update a Borrow Area Management Plan. The purpose of the plan is to provide instructions so that borrow-related actions occur in a manner that ensures availability of materials, maintains sustainability of resources, meets environmental compliance, and minimizes conflicts with military day-to-day training operations (Fort Riley, 2016a).

3.5.6.3. Summary of Mitigation

No new mitigation measures are needed nor have any been identified. The Army will continue to adhere to legal and regulatory requirements, and continue to implement its approved management plans, SOPs and BMPs related to surface water and wetland resources.

3.5.7. Socioeconomics

3.5.7.1. Affected Environment

3.5.7.1.1. Population and Housing

The Fort Riley's population includes 15,009 assigned military, 18,028 Family members and 5,625 Civilian workforce personnel. In addition, there were 25,728 unassigned personnel supported by the Fort Riley Mobilizations and Reserve Support Branch in FY17. The current installation workday population is estimated at 38,400 personnel. This figure is a conservative estimate that accounts for current deployments and training rotations.

In 2015, the population of the ROI was approximately 139,000. Between 2010 and 2015, the population increased in Geary and Riley counties, and decreased in Dickinson and Clay counties (See Table 3.5-5).

Table 3.5-5 County Population in the Fort Riley ROI

Region of Influence Counties	Population (2015)	Population Change 2010–2015 (percent)
Geary County	36,787	6.59
Dickinson County	19,516	-1.22
Clay County	8,421	-1.35
Riley County	75,022	5.21

Sources: U.S. Census Bureau, 2016a; U.S. Census, 2010

Fort Riley has 3,827 on-post Family quarters: 438 for officers and 3,389 for enlisted personnel. Barracks spaces for unaccompanied personnel total to 6,600 and are managed at the company level. Of those barracks spaces, 95 percent meet the Army's highest standards. Of the approximate 18,000 Family members, 9,347 reside on-post and the remaining 8,681 live in the surrounding communities. A summary of housing units in the ROI is shown in Table 3.5-6.

Table 3.5-6 Housing Characteristics in the Fort Riley ROI

Housing Characteristic	Geary County	Dickinson County	Clay County	Riley County
Total Housing Units	15,009	9,066	4,052	29,557

Housing Characteristic	Geary County	Dickinson County	Clay County	Riley County
Occupied Housing Units	12,723	7,822	3,377	26,467
Owner-Occupied	5,442	5,712	2,749	11,050
Renter-Occupied	7,281	2,110	628	15,417
Average Household Size (owner occupied)	2.88	2.56	2.59	2.53
Average Household Size (renter occupied)	2.79	2.16	1.84	2.47
Vacant Housing Units	2,286	1,244	675	3,090
Homeowner Vacancy Rate (percent)	3.4	2.9	6.1	1.2
Rental Vacancy Rate (percent)	11.8	7.7	17.5	9.1

Source: U.S. Census Bureau, 2016b

3.5.7.1.2. Public Services and Schools

Schools. Dependents of Soldiers and federal employees account for 7,411 students or 24 percent of the total student population in the Central Flint Hills Region. On-post residential children in grades K-5 attend one of five elementary schools on-post. Grades 6-8 attend Fort Riley's new (2014) Middle School on-post. High school-aged youth, grades 9-12, are bused to Junction City High School. All on-post school falls under Unified School District (USD) 475 Geary County Schools that received more than $30M in federal impact aid in 2017. This federal assistance money is the primary funding source for the district's new $105 million-dollar new high school facility to be built in 2018-19.

Police, Fire, and Emergency Services. The Fort Riley Police Department, a part of the Directorate of Emergency Services, provides law enforcement and property protection at Fort Riley. 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.

The Fort Riley Fire Department, a part of the Directorate of Emergency Services, provides emergency firefighting and rescue services at Fort Riley. Fire prevention is another service provided by the Fort Riley Fire Department and includes providing fire safety advice and insuring that structures are equipped with adequate fire precautions.

Medical Facilities. Fort Riley supports a range of medical services. The new Irwin Army Community Hospital was completed and opened in October 2016. It provides healthcare services for military personnel, military dependents, and to military retirees and their dependents. Irwin Army Community Hospital services include audiology/speech pathology, dermatology, dietetics, emergency services, family medicine, internal medicine, obstetrics/gynecology, occupational therapy, ophthalmology, optometry, orthopedics, otolaryngology, pediatrics, physical therapy, psychiatry, surgery, podiatry, psychology, social work, and substance abuse. Fort Riley also provides dental services and supports a Warrior Transition Battalion.

Family Support Services. The Fort Riley Directorate of FMWR and Army Community Services provide programs, activities, facilities, services, and information to support Soldiers and Families. Services provided at Fort Riley include childcare, youth programs, deployment readiness for Families, employment readiness, financial readiness, relocation readiness, exceptional family member support, Warrior in Transition support, and survivor outreach.

3.5.7.1.3. Environmental Justice and Protection of Children

Table 3.5-7 summarizes the percent of minority and low income populations for the counties within the Fort Riley ROI and the state of Kansas. See Section 3.1.5 on EO 13045, Protection of Children From Environmental Health Risks and Safety Risks.

Table 3.5-7 Minority and Low Income Populations within the Fort Riley ROI

Demographic	Geary County (%)	Dickinson County (%)	Clay County (%)	Riley County (%)	Kansas (%)
Hispanic or Latino	14.4	4.4	2.5	7.8	11.2
Black or African American	16.2	0.5	0.6	6.3	5.7
American Indian/Alaska	0.7	1.0	0.2	0.4	0.7

Demographic	Geary County (%)	Dickinson County (%)	Clay County (%)	Riley County (%)	Kansas (%)
Native					
Asian	3.1	0.3	0.6	4.5	2.6
Native Hawaiian/ Pacific Islander	0.7	0.0	0.0	0.2	0.1
Some Other Race	0.4	0.0	0.0	0.1	0.1
Two or More Races	5.6	2.1	1.4	3.1	2.7
Total Minority Population	41.1	8.3	5.3	22.4	23.0
Population below Poverty Level	12.4	10.5	11.4	22.5	13.6

U.S. Census Bureau, 2016c; U.S. Census Bureau, 2016d

3.5.7.1.4. Economic Development and Employment

Fort Riley contributes substantially to the ROI's economy. Studies of the economic impact of defense spending on the regional economy (to include Fort Riley) estimate that it makes up as much as 45 percent of the Region's total economy. (Flint Hills Regional Council, 2016; Flint Hills Regional Council, 2017 Update).

Income and employment patterns provide insight into local economic conditions, including the strength of the local economy and well-being of the residents. Summary statistics covering these economic parameters are shown in Table 3.5-8. Table 3.5-9 shows ROI employment by sector.

Table 3.5-8 Income and Employment Conditions in the Fort Riley ROI

Income and Employment Conditions	Geary County	Dickinson County	Clay County	Riley County	Kansas
2015 Per Capita Personal Income ($)	21,450	24,430	26,807	23,992	27,706
2015 Median Household Income ($)	43,992	49,096	52,066	44,437	52,205
Labor Force	11,695	9,278	3,964	37,044	1,486,519
Change in Employment, 2010-2017 (%)	-11.0	-8.7	-16.2	5.0	3.0
2017 Unemployment (%)	4.9	3.6	3.6	2.7	3.4

Source: U.S. Census, 2016e; BLS 2017.

Table 3.5-9 Fort Riley ROI Employment Distribution by Sector

Employment Sector	Geary County (%)	Clay County (%)	Dickinson County (%)	Riley County (%)	Kansas
Agriculture, forestry, fishing and hunting, and mining	1.5	14.8	6.0	1.5	3.5
Construction	5.4	8.1	6.7	6.7	6.3
Manufacturing	6.6	7.4	13.3	5.4	12.6
Wholesale trade	1.3	3.0	3.0	1.4	2.8
Retail trade	11.2	14.9	15.1	12.8	11.1
Transportation and warehousing, and utilities	4.2	6.2	5.1	2.0	4.7
Information	0.8	2.6	1.5	1.6	2.2
Finance and insurance, and real estate and rental and leasing	5.9	3.3	4.8	4.9	6.1

Employment Sector	Geary County (%)	Clay County (%)	Dickinson County (%)	Riley County (%)	Kansas
Professional, scientific, and management, and administrative and waste management services	7.8	4.0	5.7	6.7	8.9
Educational services, and health care and social assistance	21.6	21.3	23.0	34.6	24.7
Arts, entertainment, and recreation, and accommodation and food services	11.4	4.1	6.2	12.1	7.9
Other services, except public administration	4.0	6.8	4.1	4.5	4.6
Public administration	18.2	3.6	5.5	5.9	4.6

Source: U.S. Census, 2016e.

3.5.7.2. Environmental Consequences

3.5.7.2.1. No Action Alternative

Negligible adverse effects would occur at Fort Riley under the No Action Alternative. Fort Riley would not receive an additional ABCT and would continue to operate with its existing force. Fort Riley's continuing operations represent a beneficial source of regional economic activity. No additional impacts to housing, public services, schools, or public safety are anticipated.

3.5.7.2.2. Alternatives 1, 2, 3, and 5

Similar to the No Action Alternative, negligible adverse effects would occur, as Fort Riley would not receive an additional ABCT. The ABCT would be stationed at another installation.

3.5.7.2.3. Alternative 4

Alternative 4 would result in an increase of up to 4,132 Soldiers, an estimated 2,273 spouses and 3,967 dependent children, for a total population increase of 10,372. In addition, Alternative 4

would result in increased spending of up to $475 million for critical facilities required for ABCT stationing. Increases in Soldier and dependent population, as well in increases in MILCON construction spending, would be similar to as described in Section 3.1.5, and would lead to short-term beneficial and long-term significant beneficial impacts and growth of economic activity within the ROI.

3.5.7.2.4. Socioeconomic Impacts

Similar to as described in Section 3.2.7 for Fort Bliss, an increase of up to 10,372 Soldiers and dependents would result in long-term beneficial economic impacts at Fort Riley. This increase would be of a similar magnitude analyzed in the 2013 Army 2020 PEA, which considered an increase of up to 7,554 Soldiers and dependents. Although Alternative 4 would represent a greater increase in Soldiers and dependents than considered in the Army 2020 PEA, the Soldier population has decreased from the baseline analyzed in 2013 by 1,635 Soldiers, as described in Section 1.3. As a result, the gain scenario in Alternative 4 is within the magnitude of the gain analyzed in the 2013 PEA. Specific impacts are described in detail below.

Population and Housing. Alternative 4 would result in an increase in population of 10,372 in the ROI. This would represent an eight percent increase in population in the region, and would be considered a moderate increase in population when considered with impacts from population gains analyzed in the 2013 Army 2020 PEA.

Moderate population increases would lead to an increase in demand for housing; however, as shown in Table 3.5-6, both rental and owner-occupied housing is available throughout the ROI. Increased demand for off-post rentals and housing purchases would have minor beneficial impacts, particularly to local communities near the installation such as Junction City and Manhattan. In addition, the MILCON construction part of the Alternative 4 would include funding for additional barracks space for single enlisted Soldiers, which would alleviate any capacity concerns related to a population increase. Overall impacts to housing would be beneficial.

Public Services and Schools. Increased population would result in an increase in school-aged children in local school districts, primarily in USD 475 and USD 383. School capacities were developed to accommodate the installation population prior to loss of an IBCT in 2015 (i.e., a garrison population of 19,468 Soldiers). An increase in students would be absorbed by existing

capacities, and overall impacts to schools would be minor. School districts would also benefit from an increase in federal funding due to an increase in students of parents that live or work on federal property.

Increased population would result in a need for additional public services (i.e., police, fire, emergency, and medical services). These increases would be mostly absorbed by existing capacities, and overall impacts to public services under Alternative 4 would be minor.

Economic Development and Employment. Alternative 4 would result in beneficial impacts to economic development and employment through increases in direct and indirect employment, sales volume, regional income, and tax revenue. These positive economic impacts would be felt by businesses, local governments, and individuals throughout the Central Flint Hills region. Impacts would be similar to as described in Section 3.1.5 and 3.2.7. Impacts to employment would be significant and beneficial given the magnitude of direct and indirect employment increase, when considered with impacts from employment gains analyzed in the 2013 Army 2020 PEA.

Environmental Justice. Alternative 4 would not result in disproportionately high adverse impacts, including adverse health impacts, to minorities, low-income populations, or children throughout the ROI. Economic impacts would be felt across economic sectors at all income levels and spread geographically throughout the ROI.

3.5.7.2.4.1. Construction

Impacts from construction resulting from the ABCT stationing decision would be similar to as described for Fort Bliss, and would be short-term and beneficial. See Section 3.2.7 for additional information.

3.5.7.3. Summary of Mitigation

Overall beneficial effects would occur; no mitigation would be required.

3.5.8. Traffic and Transportation

3.5.8.1. Affected Environment

The ROI of the affected environment for traffic and transportation aspects of the Proposed Action include Fort Riley, and several neighboring counties including Riley, Geary, and Clay, and including the cities of Manhattan, Junction City, and Ogden. Major road routes in the region include I-70, an east-west interstate highway that passes less than 0.5 miles (0.8 km) to the south of the cantonment area. Other major routes include U.S. Route 77, and Kansas State Routes 18, 57, and 82.

3.5.8.1.1. Existing Installation Roadway Network

The Surface Deployment Distribution Command-Transportation Engineering Agency (SDDC-TEA) has identified needed transportation projects in reports completed in 2011 and 2017. Some of these projects have not yet been completed.

3.5.8.1.2. Existing Roadway Network Surrounding the Installation

The increase in off-post traffic would have a minimal adverse impact on traffic in the community overall. The addition of an ABCT would add congestion particularly during peak morning and afternoon travel periods.

3.5.8.2. Environmental Consequences

3.5.8.2.1. No Action Alternative

Negligible adverse impacts would occur as a result of the implementation of the No Action Alternative, as Fort Riley would not receive an additional ABCT.

3.5.8.2.2. Alternatives 1, 2, 3, and 5

Similar to the No Action Alternative, negligible adverse impacts would occur, as Fort Riley would not receive an additional ABCT. The ABCT would be stationed at another installation.

3.5.8.2.3. Alternative 4

The current transportation infrastructure, both on and off the installation, would be affected in a negative way. The increase in Soldier population would have an adverse impact on the traffic volume on the installation, and on some of the installation's interior routes.

The addition of another ABCT would impact the installation traffic patterns during peak traffic periods during the duty week. Delays at access control points could increase in duration during morning and evening peak traffic hours. Additional analysis would be required to identify issues associated with gates, and alleviate the minor delays during peak travel periods. The overall impacts at Fort Riley are anticipated to be minor, and would not reduce the traffic by more than two LOS. The SDDC-TEA projects are planned, and some could be completed to mitigate delays.

The level of follow-on NEPA evaluation would be dependent upon which projects are initiated, and how much previous information is available, relevant, and reliable. Issues anticipated to be addressed are associated with gates, with delays during peak travel periods.

3.5.8.3. Summary of Mitigation

Complete selected SDDC-TEA identified transportation projects.

3.5.9. Cumulative Effects

3.5.9.1. Region of Influence

The ROI for this cumulative impact analysis of the potential gain of an ABCT at Fort Riley encompasses Geary, Clay Dickinson, and Riley counties and the cities of Junction City and Manhattan. Junction City and Manhattan are the two largest communities located near Fort Riley and provide the centers for commercial, manufacturing, transportation, and medical activities in the ROI. Fort Riley has long been a key component of the economy of the ROI, employing several thousand Soldiers and Civilians within the ROI.

Numerous planned or Proposed Actions within the ROI have the potential to add cumulative impacts to the possible gain of an ABCT at Fort Riley. These actions are either recently completed, currently occurring, or are reasonably foreseeable during the next three years.

The list of projects below presents those projects that may add to the cumulative impacts for implementation of the Fort Riley alternative.

3.5.9.2. Fort Riley Projects

The following projects are currently under design or construction at Fort Riley:

Project and location

- Defense Finance & Accounting Center to Company Operations Facility (COF) configuration at Building 7856
- Fall Protection at Building 4012-3076
- Locomotive building at Building 1671
- Heating Ventilation and Air Conditioning at Building 253
- Digital Multi-Purpose Training Range Complex Control Tower
- Realign headstone at Building 193
- Replace bay door at Building 7852
- Interior demolition at Building 7852
- Reconfigure COF at Building 7858
- Repair structural damage at Building 8012
- Add to chiller plant at Building 7852-7858
- Replace bay doors at Building 8410

Roads

- Campbell Hill and Vinton School - repave
- DPW drainage yard - Regrade and install catch basins

USACE Projects

- Marshall Army Airfield Paving work
- Defense Logistics Agency Storm drainage, grass establishment (DLA Yard)
- Renovation at Building 210
- Renovation Classroom conversion at Building 206
- Remodel Custer Hill Pool

- Demolition of existing hospital at Building600
- Multiple Bridge Repair
- Wastewater Treatment Plant (WWTP) Install Force Main (WWTP)

3.5.9.3. Other Actions

Other known planned or ongoing projects that will cumulatively affect the ROI include several Kansas DOT projects providing expansion of roadways and intersections. These projects should reduce traffic congestion and increase economic activity within the ROI. The Manhattan Regional Airport has several projects, such as runway upgrades, that meet the threshold limit of $500,000 expenditure. The improvements are intended to upgrade the capability of the airport to serve the population of the ROI. Within the ROI, there are several housing developments and retail business developments under construction, or planned within a three-year period.

3.5.9.3.1. No Action Alternative

Negligible cumulative effects would occur at Fort Riley under the No Action Alternative. Fort Riley would not receive an additional ABCT and would continue to operate with its existing force. Fort Riley's continuing operations represent a beneficial source of regional economic activity. No additional impacts to housing, public services, schools, or public safety are anticipated.

3.5.9.3.2. Alternatives 1, 2, 3, and 5

Similar to the No Action Alternative, negligible cumulative effects would occur, as Fort Riley would not receive an additional ABCT. The ABCT would be stationed at another installation.

3.5.9.3.3. Alternative 4

Cumulative impacts as a result of the implementation of Alternative 4 range from minor to less than significant adverse impacts. In the VEC area of Socioeconomics, it is anticipated that under the stationing alternative of a new ABCT at Fort Riley, the cumulative impacts would be long-term beneficial, with impacts to Public Services being minor in nature.

As a result of the implementation of Alternative 4, the Army anticipates negligible to minor adverse cumulative impacts in the following VECs: Air Quality/GHG, Biological Resources

(construction component), Cultural Resources, Soils (construction component), and Traffic and Transportation.

Overall adverse impacts would be moderate/ less than significant cumulative impacts for the following VECs: Biological Resources (training component), Soils (training component), and Surface Water and Wetlands.

Cumulative impacts will be controlled through existing measures including the continued compliance with existing plans and programs that protect the resource areas considered. Fort Riley has experienced less growth in the past five years than anticipated and analyzed in previous NEPA documents. As a result, some civilian and military infrastructure in the ROI has already been upgraded to manage the possible increase in population and associated cumulative effects. The implementation of Alternative 4 is anticipated to cause less than significant adverse cumulative impacts. This alternative would produce adverse socioeconomic impacts at Fort Carson as discussed in section 3.2.7.

3.6. Fort Stewart, GA

3.6.1. Introduction

Fort Stewart is a U.S. Army post in Georgia (GA), primarily in Liberty and Bryan counties, but also extending into smaller portions of Evans, Long and Tattnall counties. Fort Stewart, named after General Daniel Stewart, was first established on July 1, 1940, when 5,000 acres (2,023 ha) of land were purchased. Subsequent purchases followed and eventually, the reservation would include more than 280,000 acres (113,312 ha) stretching over five counties. The large expanse of property was required for the firing ranges and impact areas that an anti-aircraft artillery training center would need for live-fire training. In November 1940, the Anti-Aircraft Artillery Training Center was officially designated as Camp Stewart. Camp Stewart was redesignated as Fort Stewart on March 21, 1956. See Figure 3.6-1.

Fort Stewart, located approximately 41 miles (66 km) southwest of the city of Savannah, is the largest Army installation east of the Mississippi River. The Fort Stewart Military Reservation covers approximately 280,000 acres (113,312 ha) of land.

Fort Stewart and Hunter Army Airfield are the Army's training, and military armored power projection combination on the eastern seaboard of the United States. Tank, field artillery, helicopter gunnery, and small arms ranges operate simultaneously throughout the year. Fort Stewart is home to two 3rd ID ABCTs:

- 1st Armored Brigade Combat Team (1-3 ABCT), and
- 2nd Armored Brigade Combat Team (2-3 ABCT).

In addition, Fort Stewart is also home to the 3rd CAB. Implementation of Alternative 5 would increase the BCT force structure, resulting in three ABCTs stationed at Fort Stewart.

Fort Stewart-Hunter Army Airfield's mission is to provide a safe, secure, and responsive community that enhances the Fort Stewart-Hunter Army Airfield power projection platform in support of National security objectives.

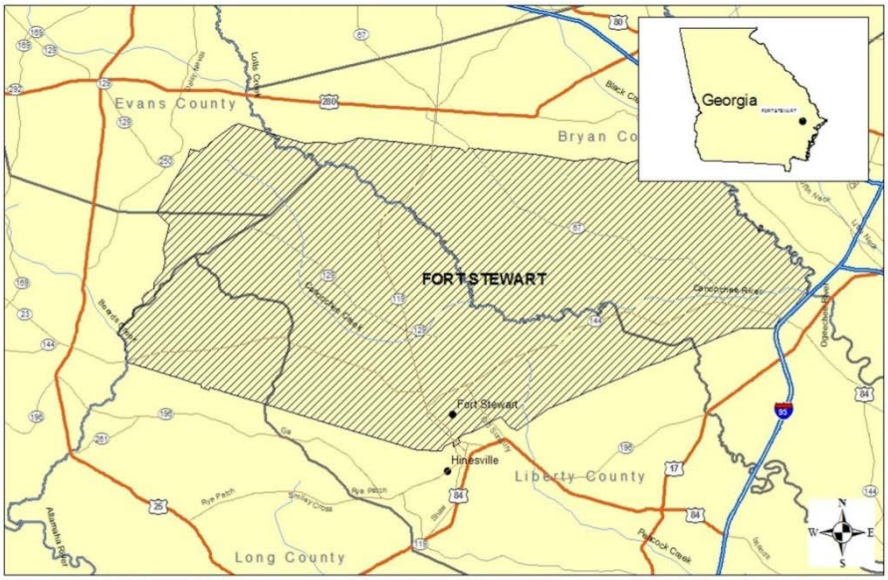

Figure 3.6-1. Location of Fort Stewart, Georgia

3.6.2. Air Quality and GHG Emissions

Fort Stewart is located in the Savannah Georgia – Beaufort South Carolina Interstate AQCR (40 CFR 81.113). The AQCR includes the Georgia counties of Bryan, Bulloch, Candler, Chatham, Effingham, Evans, Liberty, and Tattnall. Fort Stewart is located in the portion of the AQCR that includes Liberty and Bryan counties, but also extending into small portions of Evans, Long, and Tattnall counties. The ROI for air quality analysis includes Bryan and Liberty counties, as the majority of the installation is covered by these two counties.

3.6.2.1. Affected Environment

The main portion of the installation lies directly adjacent to the city of Hinesville and is approximately 40 miles (64.4 km) south and west of Savannah. The majority of training involving the use of the ABCT tactical vehicles would occur on the ranges that lie to the north and east.

The 2011 emissions inventory for Bryan and Liberty counties are shown in Table 3.6-1. VOCs and NO_x emissions are used to represent ozone generation because they are precursors of ozone.

The inventory includes stationary sources, such as industrial sites and residential fuel combustion, as well as mobile sources and area sources such as fires.

Table 3.6-1 County Air Emissions Inventories (2011) in Tons per Year

Location	NO_x	VOCs	CO	SO_2	PM_{10}	$PM_{2.5}$	CO_2e
Bryan County, GA	2,473	19,327	21,759	97	4,683	1,689	ND
Liberty County, GA	3,378	21,041	23,875	133	4,854	1,958	ND

Source: (USEPA, 2017c)

Key: NO_x = nitrogen oxides; VOC = volatile organic compounds; CO = carbon monoxide; SO_2 = sulfur dioxide; PM_{10} = suspended particulate matter less than or equal to 10 microns in diameter; $PM_{2.5}$ = fine particulate matter less than or equal to 2.5 microns in diameter; CO_2e = carbon dioxide equivalent.

3.6.2.2. National Ambient Air Quality Standards and Attainment Status

The Georgia Department of Natural Resources, Environmental Protection Division, has adopted the NAAQS, which are discussed in Section 3.1.5. Both Bryan and Liberty counties are designated attainment/unclassifiable (40 CFR 81.311), so Fort Stewart is classified the same.

3.6.2.3. Installation-Wide Emissions

The 2016 total emissions for stationary sources at Fort Stewart are summarized in Table 3.6-2. Sources include boilers, generators, surface coating operations, parts cleaning, remediation equipment, and fuel storage.

Table 3.6-2 2016 Estimates of Actual Annual Emissions, Fort Stewart, GA

Annual Emissions	Emission Estimates (tons per year)						
	VOCs	**CO**	**NOx**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**	**HAPs**
Actual (all source categories)	455.3	22,604.9	406.1	0.9	2616.5	2616.4	0.9

Annual Emissions	Emission Estimates (tons per year)						
	VOCs	**CO**	**NOx**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**	**HAPs**
Every source category except prescribed burning and ordnance detonation	105.7	24.1	26.4	0.8	2.3	2.2	0.8

Source: 2016 Fort Stewart Annual Emissions CY2016 Report

3.6.2.4. Permitting Requirements

Fort Stewart holds a Title V Federal Operating Permit that covers emissions of both criteria pollutants and HAPs. The current permit, No. 9711-179-0018-V-03-0, was issued in July 2015 with amendments to the permit issued in August 2016.

3.6.2.5. Environmental Consequences

3.6.2.5.1. No Action Alternative

Negligible adverse effects would occur at Fort Stewart under the No Action Alternative. Fort Stewart would not receive an additional ABCT and would continue to operate with its existing force. Fort Stewart would continue to operate existing stationary sources in accordance with its Title V Permit and mobile source emissions would be generated consistent with current operations.

3.6.2.5.2. Alternatives 1, 2, 3, and 4

Under Alternatives 1, 2, 3, and 4, another installation would receive the ABCT. Similar to the No Action Alternative, negligible adverse effects would occur, as Fort Stewart would not receive an additional ABCT. Sections 3.2.2, 3.3.2, 3.4.2, and 3.5.2 discuss GHG emissions and effects of climate variation for stationing at the respective installations.

3.6.2.5.3. Alternative 5

Under Alternative 5, the Army would reassign Fort Carson's IBCT and convert it into an ABCT stationed at Fort Stewart. This would involve the relocation of 4,182 military personnel. Tracked vehicles located on Fort Stewart would increase by 132 Bradley Infantry Fighting Vehicles, 87 Abrams Tanks, 18 Howitzers, and 18 mortars.

3.6.2.5.3.1. Training

Once the ABCT was located to Fort Stewart, the installation would be subject to an overall increase in emissions due to the additional training activity with tracked vehicles. Stationary sources that are already located at Fort Stewart, such as spray paint booths, could see an increase in activity. It is also possible that the installation would install additional stationary sources used for operations, such as new spray booths, as well as new infrastructure stationary sources such as boilers and emergency generators for the new construction. All of these types of stationary sources would need to be evaluated for compliance with the Fort Stewart Title V Permit requirements and may result in permit modifications. Upon consideration of the number and type of stationary sources being created (for the support of a new ABCT) (e.g., maintenance and paint shops), as well as the level of operations and maintenance activities, there would likely be only a minor increase in criteria hazardous air pollutants. These stationary sources would not require permitting and the Fort Stewart's Title V Operating Permit would not need amending. Fort Stewart will inform the State of Georgia of the addition of minor sources via an off-permit change notification; however, no regulatory thresholds are expected to be exceeded under air quality. While an overall increase in emissions for Fort Stewart would occur, these increases are not anticipated to result in violations of the NAAQS for any criteria pollutants. During the training component, stationing the ABCT at Fort Stewart is expected to have a long-term minor adverse impact on area air quality.

As with criteria pollutants, GHG emissions would increase; first due to construction activity and then due to the increase in personnel activities and training operations. As discussed in Section 3.2.2.5.2.1, an ABCT is authorized to use 24,815 barrels of fuel per year, which would produce 20,844,600 pounds (10,422 tons) of CO_2. Table 3.6-3 provides a scaled comparison GHG emissions increase from ABCT conversion at Fort Stewart. As shown in the table, increases

would be negligible regardless of scale considered. The ABCT's Soldiers and Families will obviously have private vehicles that they will drive in and around Fort Stewart. The mileage for this activity and resulting GHG emissions are hard to estimate, and are expected to be negligible compared to the fuel use by the ABCT. At an Army-wide, United States, or Global level, there would be no difference since Army is essentially moving nearly the same number of people from one place to another within the region of influence.

Table 3.6-3 GHG Emissions by Scale

Scale	CO_2e Emissions (MMT)	Percent Increase from Proposed Conversion
Global	43,125	0.000024
United States	6,870	0.00015
Georgia	137.1	0.0076
Army-wide	8.8	0.12

Sources: USEPA 2015, 2017; CDPHE 2014; Army 2016; USAF 2016.
Note: MMT = million metric tons.

Georgia is located in the southeast climate region of the United States, where trending climate variation is expected to contribute to contribute to sea level rise, and threats to the natural and built environments. The number of hot days (95°F or above) in Georgia are anticipated to substantially increase (by greater than 45 days), and a decrease in freezing events will occur. Increasing temperatures and associated increase in frequency, intensity, and duration of extreme heat events will affect public health, natural and built environments, energy, agriculture, and forestry. Decreased water availability, exacerbated by population growth and land-use change, will continue to increase competition for water, affecting regional economy and unique ecosystems. Changes to precipitation within the region are projected to be small relative to natural variations (Melillo et al. 2014).

Table 3.6-4 outlines potential climate stressors and their effects from the Proposed Action. The operational activities associated with the Proposed Action in and of themselves are only indirectly dependent on any of the elements associated with future climate scenarios (e.g.,

meteorological changes). At this time, no future climate scenario or potential climate stressor will have greater than minor effects from the Proposed Action.

Table 3.6-4 Effects of Potential Climate Stressors from the Proposed Action

Potential Climate Stressor	Effects from the Proposed Action
More frequent and intense heat waves	Minor
Longer fire seasons and more severe wildfires	Negligible
Changes in precipitation patterns	Negligible
Increased drought	Negligible
Harm to water resources, agriculture, wildlife, ecosystems	Minor

Source: Melillo et al. 2014

3.6.2.5.3.2. Construction

New construction would be required and include vehicle maintenance shops; along with company, battalion and brigade HQs buildings; barracks; storage facilities; classrooms; a tactical UAV hangar; and a physical fitness center. In addition, two buildings at the garrison would require renovation and relocation.

Air emissions generated during construction would result from construction worker vehicles and trucks hauling materials to and from the site. While these emissions would generate an increase in localized emissions of criteria pollutants, the increase would be relatively small and temporary. The overall adverse impacts for the construction component would be expected to be short-term and minor. The Army would incorporate design and mitigation measures for construction projects to reduce incremental effects of GHGs as discussed in Section 3.2.2.5.2.1.

3.6.2.6. Summary of Mitigation

Mitigation measures that Fort Stewart incorporates include engineering controls that are currently in place to limit impacts through the existing DPW engineering review and signoff process, (i.e., mitigation by design). During the actual construction process, wetting soils is employed to minimize dust emissions and promote dust control.

3.6.3. Biological Resources

3.6.3.1. Affected Environment

3.6.3.1.1. Vegetation

Fort Stewart is located in the Atlantic Coastal Plain physiographic province of Georgia that is characterized by flat to undulating topography, high water tables, and generally coarse sandy soils (Fort Stewart, 2010). Generally, four types of ecosystems occur on Fort Stewart: sandhills, pine flatwoods, upland forests, and wetlands. The installation contains about 158,578 acres (64,174 ha) of upland forest, 82,148 acres (33,244 ha) of forested wetlands, and 38,253 acres (15,480 ha) of clearings (Fort Stewart, 2010). Common tree species include longleaf pine (*Pinus palustris*), slash pine (*Pinus elliotii*), and loblolly pine (*Pinus taeda*). Understory species include wiregrass (*Aristada stricta*), saw palmetto (*Serenoa repens*) and gallberry (*Ilex glabra*) (Fort Stewart, 2013).

3.6.3.1.2. Wildlife and Aquatic Life

The Fort Stewart area has a rich and diverse fauna. Fort Stewart's INRMP (Fort Stewart, 2013) contains a detailed listing of mammals, birds, fish, reptiles, and amphibians documented on the installation. Game species include Eastern gray squirrel (*Sciurus carolinensis*), Eastern fox squirrel (*Sciurus niger*), Eastern cottontail rabbit (*Sylvilagus floridanus*), feral hog (*Sus scrofa*), white-tailed deer (*Odocoileus virginianus*), wood duck (*Aix sponsa*), Eastern wild turkey (*Meleagris gallopavo*), bobwhite quail (*Colinus virginianus*), mourning dove (*Zenaida macroura*), largemouth Bass (*Micropterus salmoides*), bluegill (*Lepomis macrochirus*), redear sunfish (*Lepomis microlophus*), channel catfish (*Ictalurus punctatus*), black crappie (*Pomoxis nigromaculatus*) and hybrid striped bass (*Morone sp*.).

In addition, the bald eagle (*Haliaeetus leucocephalus*) is known to occur on Fort Stewart. The bald eagle is protected under the BGEPA.

3.6.3.1.3. Protected Species under the ESA

The Fort Stewart INRMP contains the list of sensitive species of protected flora and fauna known to occur, or having the potential to occur, on Fort Stewart. The installation is home to 10 special status plant species and 21 special status fauna species. Six species are listed as

federally-endangered: the West Indian manatee (*Trichechus manatus*), wood stork (*Mycteria Americana*), red-cockaded woodpecker (*Picoides borealis*), shortnose sturgeon (Acipenser brevirostrum), Atlantic sturgeon (*Acipenser oxyrhynchus oxyrhynchus*), and the smooth coneflower (*Echinacea laevigate*). An additional two species, the frosted flatwoods salamander (*Ambystoma cingulatum*) and Eastern indigo snake (*Drymarchon couperi*) are listed as federally-threatened. Two species, the gopher tortoise (*Gopherus polyphemus*) and striped newt (*Notophthalmus perstriatus*), are candidates for federal listing (Fort Stewart, 2013).

3.6.3.2. Management of Natural Resources

Fort Stewart's INRMP outlines the management of the natural and biological resources on the installation. The INRMP contains goals for Fort Stewart to ensure the sustainability of desired future conditions while maintaining ecosystem viability and integrates natural resource conservation measures and Army activities. Fort Stewart also has the 2001 Multi-Species Endangered Species Management Plan, which establishes management objectives and conservation goals and outlines actions needed for the conservation of the red-cockaded woodpecker, eastern indigo snake, wood stork, and flatwoods salamander

Specifically to training, unit Commanders coordinate with DPW Natural Resources Management Branch for consultation or a site visit during planning for military training exercises that infringe upon known endangered species nesting areas. Training exercise scheduling includes constant communication between DPTMS and DPW to evaluate unit training proposals as appropriate through its established environmental risk planning process. This process involves coordination and sharing of information between the Fort Stewart's Environmental Division and DPTMS for unit training exercises.

3.6.3.3. Environmental Consequences

3.6.3.3.1. No Action Alternative

Negligible adverse effects would occur at Fort Stewart under the No Action Alternative. Fort Stewart would not receive an additional ABCT and would continue to operate with its existing force. Fort Stewart would continue to adhere to its existing military land use and resource management plans to minimize and monitor any potential effects from training of existing units.

3.6.3.3.2. Alternatives 1, 2, 3, and 4

Similar to the No Action Alternative, negligible adverse effects would occur, as Fort Stewart would not receive an additional ABCT. The ABCT would be stationed at another installation.

3.6.3.3.3. Alternative 5

3.6.3.3.3.1. Training

As stated in Section 3.1.2, maneuver and live-fire exercise training can negatively affect biological resources. This includes loss or degradation of vegetation and habitat from maneuver training and disruption to wildlife from field equipment training and live-fire exercises. The addition of an ABCT at Fort Stewart would increase the frequency of both current maneuver and live-fire exercises and which might also increase the potential for adverse effects from ABCT training to biological resources. As discussed in Section 2.3.6, the addition of an ABCT at Fort Stewart would increase MIMs by 130,000, totaling 390,000 MIMs (50 percent increase). Long-term increases in training intensity requiring large maneuver footprints due to heavy tracked and wheeled vehicles could potentially result in a conversion or net loss of habitat. This could occur at landscape scale through vegetation loss and conversion over widespread areas if areas are not adequately rotated, or given necessary recovery times for re-vegetation activities supporting soil stabilization.

In addition, the Soldiers and equipment associated with an additional ABCT training could also result in adverse impacts to wildlife species within Fort Stewart from increased training throughput. Species in these areas would flush and temporarily avoid areas in which units would be training, returning to the area once training activities have ceased; however, as this type of training currently exists on the installation, overall impacts to these species would be minor.

The increase of ABCT training could also adversely affect aquatic species and aquatic habitat. As discussed in Sections 3.6.5.2 and 3.6.6.2, increased ABCT training would increase the potential for impacts to surface water quality and wetland habitats from increased potential for sedimentation. Impacts to aquatic resources and habitat would be reduced by implementation of avoidance and minimization measures discussed in Sections 3.6.5.2 and 3.6.6.2. Overall minor adverse impacts would be expected.

In summary, overall adverse impacts to biological resources in the training component at Fort Stewart would be moderate/ less than significant. Fort Stewart would mitigate the potential for significant adverse effects to biological resources through continued management of ABCT training and management of biological resources in accordance with the INRMP including compliance with the ESA, MBTA, and BGEPA.

Fort Stewart would implement existing protocol for scheduling training exercises through its established environmental risk planning process. This process would identify potential concerns of training exercises and would help avoid adverse impacts to sensitive resources from ABCT training. This includes continued implementation of the 2001 Multi-Species Endangered Species Management Plan. Because the proposed ABCT would conduct training exercises similar to those that already occur and at levels that has occurred in the past (three ABCTs), there would likely be no activities that would adversely impact threatened and endangered species management practices.

3.6.3.3.3.2. Construction

As stated in Section 2.3.6, no new ranges would be required and some garrison construction would be required during the implementation phase of IBCT reassignment and conversion into an ABCT under Alternative 5. For the implementation phase, Fort Stewart would predominantly reutilize existing facilities for personnel and equipment. Two buildings would require renovation and relocation. Additional future cantonment infrastructure improvements would be required to bring Fort Stewart's facilities up to the current Army standard for an ABCT. Improvements would include construction of vehicle maintenance shops; barracks; company, battalion and brigade HQs; unit storage and classrooms; a tactical UAV hangar; and a physical fitness center. Construction of these facilities would occur within the notional growth area identified in the 2016 West Mission District Capacity Plan.

As shown on Figure 2.3-5, these construction activities would occur within existing facilities and on a combination of previously disturbed and undisturbed land within the West Mission District Regulating Plan area containing predominantly marginal quality habitat of landscaped areas and maintained grass.

To provide training support for three ABCTs, Fort Stewart would require a TRACR upgrade to instrumentation and targetry, replacement of legacy MPRC – Heavy; and an additional conduct of fire and call for fire trainer simulation facility.

The overall adverse impacts to biological resources in the construction component would be minor. In addition, Fort Stewart would adhere to MBTA requirements to avoid construction-related disturbance impacts to migratory bird nesting areas, if present.

Fort Stewart would identify specific locations and provide designs of these future infrastructure improvements. Site selection and design would incorporate Real Property Master Plan and other master planning processes and policies including the use of strategic siting (e.g., avoidance of sensitive habitats), and implementation of sustainable design and construction. These future infrastructure improvements would be subject to appropriate NEPA analyses, as required to ensure impacts to biological resources are less than significant.

3.6.3.4. Summary of Mitigation

No new mitigation measures are needed nor have any been identified. The Army will continue to adhere to legal and regulatory requirements, and continue to implement its approved management plans, SOPs and BMPs related to biological resources.

3.6.4. Cultural Resources

3.6.4.1. Affected Environment

Fort Stewart's ICRMP lists the following archaeological resources documented on the installation: one site listed on the NRHP (Fort Argyle), 54 sites eligible for NRHP inclusion, 274 sites indeterminate/potentially eligible for NRHP inclusion, 1957 sites not eligible for NRHP inclusion, and 1680 isolated finds. In addition, Fort Stewart contains a total of 70 NRHP-eligible buildings and 237 NRHP-eligible buildings at Hunter Army Airfield (Fort Stewart ICRMP, 2014).

3.6.4.1.1. Management of Cultural Resources

Fort Stewart operates under the 2011 *Programmatic Agreement Among Commander, US Army Garrison, Fort Stewart/Hunter Army Airfield Fort Stewart, Georgia and The Georgia State Historic Preservation Officer Atlanta, Georgia* (Fort Stewart PA, 2011). Stipulations within the

PA include ground disturbance review protocols with the Cultural Resources Manager, protection measures, a monitoring strategy, and annual reporting to the SHPO. The PA states that Fort Stewart will conduct archaeological surveys (if not previously conducted) to identify any historic properties that could be affected by a project, activity, or undertaking. It also provides a listing of undertakings excluded from evaluation under Section 106 (e.g., undertakings in severely disturbed special use and bivouac areas, most areas within the cantonment, and impact areas that are highly likely to be contaminated with unexploded ordnance). For all undertakings that are determined by cultural resource staff to have no adverse impacts upon historic properties, individual consultations with the SHPO is not required. If the undertaking has the potential to adversely affect historic properties, consultation per 36 CFR 800 is required.

3.6.4.2. Environmental Consequences

3.6.4.2.1. No Action Alternative

Negligible adverse effects would occur at Fort Stewart under the No Action Alternative. Fort Stewart would not receive an additional ABCT and would continue to operate with its existing force. Fort Stewart would continue to adhere to the PA and manage cultural resources according to the ICRMP to minimize and monitor any potential effects from training of existing units.

3.6.4.2.2. Alternatives 1, 2, 3, and 4

Similar to the No Action Alternative, negligible adverse effects would occur, as Fort Stewart would not receive an additional ABCT. The ABCT would be stationed at another installation.

3.6.4.2.3. Alternative 5

3.6.4.2.3.1. Training

As stated in Section 3.1.2, maneuver and live-fire exercise training can adversely affect cultural resources. This includes disturbance to archaeological sites from ground disturbance or historic structures from training and live-fire exercises. The addition of an ABCT at Fort Stewart would increase the frequency of both current maneuver and live-fire exercises and the potential for adverse effects from ABCT training to cultural resources.

Overall adverse impacts to cultural resources in the training component would be minor. Fort Stewart would mitigate the potential for significant adverse effects to cultural resources through continued management of ABCT training and management of cultural resources in accordance with the ICRMP and PA. All undertakings and actions associated with the implementation and stationing of an additional ABCT would be covered under the existing PA. Per the PA, Fort Stewart's Cultural Resources Manager is charged with identifying, evaluating, and protecting all of Fort Stewarts's cultural resources including historic buildings, archeological sites, artifacts, and Native American sacred sites.

All training is coordinated by DPTMS. To minimize the potential impacts to historic properties, the Cultural Resources Manager (CRM) provides DPTMS with current data on status of cultural resource surveys and absence/presence of known historic properties through a "CRM Concerns Status" map. DPTMS then assigns the unit the training area(s) and notifies the unit as to any restrictions associated with cultural resource concerns. DPTMS also notifies the Environmental Division of any major training exercises involving ground disturbance outside of habitual use areas (e.g. bivouacs, existing range facilities, etc.) which are typically categorically excluded from Section 106 Review in accordance with the PA.

3.6.4.2.3.2. Construction

Construction activities would occur within predominantly previously disturbed areas (Figure 2.3-5), and do not include any sites of archaeological potential. The installation has remnants of a historic railroad/tramline are within the area of potential development for future facilities; specifically, the railroad to marshalling area is a potentially NRHP-eligible resource. Other structures, as they approach the 50-year mark, may also be NRHP-eligible during timeframe of demolition/alteration. Fort Stewart would minimize adverse effects to historic structures by continuing to incorporate the Real Property Master Plan and other master planning processes and policies including the use of strategic siting. Fort Stewart would also continue to adhere to cultural resource management according to the ICRMP and PA. Prior to alteration or disturbance of an unevaluated or potentially NRHP-eligible resource, the Fort Stewart Cultural Resource Manager would evaluate the eligibility of the resource. If the undertaking has the potential to adversely affect historic properties, consultation per 36 CFR 800 would be required.

Overall adverse impacts to cultural resources in the construction component would be negligible. Fort Stewart would continue to incorporate Real Property Master Plan and other master planning processes and policies including the use of strategic siting and would continue to adhere to cultural resource management according to the ICRMP and PA.

3.6.4.3. Summary of Mitigation

No new mitigation measures are needed nor have any been identified. The Army will continue to adhere to legal and regulatory requirements, and continue to implement its approved management plans, PA, SOPS, and BMPs related to cultural resources. Historic properties identified by the Cultural Resource Manager (e.g., the railroad to marshalling area or unevaluated structures over 50 years of age), Fort Stewart Cultural Resource Manager would be evaluated for NRHP eligibility. If the undertaking has the potential to adversely affect historic properties, consultation per 36 CFR 800 would occur.

3.6.5. Soils

3.6.5.1. Affected Environment

3.6.5.1.1. Soils and Erosion

Fort Stewart is a relatively flat, coastal landscape predominantly made up of poorly drained loamy sand and sandy soil, riparian, and other wetland areas. Most of the soil at Fort Stewart is classified as sandy and infertile. Soils in low-lying, poorly drained areas are high in organic matter and can remain saturated with water for eight months or more every year (Fort Stewart, 2010).

The principal cause of soil erosion is from maneuver of tracked and wheeled vehicles on already disturbed range areas. Over the past decade, Fort Stewart has constructed many low water crossings to reduce impacts on ranges where vehicles have historically traversed streams and wetland areas on traditional dirt tank trails (Fort Stewart, 2010).

3.6.5.1.2. Soil and Erosion Management

Fort Stewart manages its soil resources according to the Fort Stewart INRMP (Fort Stewart INRMP, 2013) and through coordination of the Fort Stewart DPW-E and ITAM - DPTMS.

Specifically to training, units are briefed prior to each training event regarding sensitive areas on post, such as highly-erodible soils, and what is and is not allowed within certain areas.

Management of soil resources also involves the ITAM program that establishes a uniform land management program and includes inventorying and monitoring land condition, integrating training requirements with land carrying capacity while training to standard, educating land users to minimize adverse impacts, and prioritizing and implementing rehabilitation and maintenance projects. In addition, Fort Stewart's incorporation of low impact development principles in facility design includes erosion control measures and new stormwater management strategies (Fort Stewart, 2010). Fort Stewart has also implemented road infrastructure improvements that have addressed erosion and flooding issues in the training area, which has improved maneuverability and access to ranges (Fort Stewart, 2010).

Natural resource management at Fort Stewart focuses on maintaining the structure, diversity, and integrity of the soil resources, while recognizing the military mission. An adaptive management strategy is integral to monitor the temporal and spatial dynamics of ecosystems and to adjust the management measures and strategies based on improved knowledge and data. The monitoring programs generate the soils and land recovery data needed to determine whether the management measures and strategies are effective. The goals of the program include maintaining sustainable training lands and minimizing soil movement and loss. This management approach preserves the natural resources while providing the optimum environmental conditions for sustaining Fort Stewart's military training mission.

3.6.5.2. Environmental Consequences

3.6.5.2.1. No Action Alternative

Negligible adverse effects would occur at Fort Stewart under the No Action Alternative. Fort Stewart would not receive an additional ABCT and would continue to operate with its existing force. Fort Stewart would continue to adhere to its existing military land use and resource management plans to minimize and monitor any potential effects from training of existing units.

3.6.5.2.2. Alternatives 1, 2, 3, and 4

Similar to the No Action Alternative, negligible adverse effects would occur, as Fort Stewart would not receive an additional ABCT. The ABCT would be stationed at another installation.

3.6.5.2.3. Alternative 5

3.6.5.2.3.1. Training

As stated in Section 3.1.2, maneuver and live-fire exercise training can negatively affect soil resources. This includes degradation of soils and potential for increased soil erosion (water and wind) from maneuver training, field equipment training, and live-fire exercises. The addition of an ABCT at Fort Stewart would increase the frequency of both current maneuver and live-fire exercises and the potential for adverse effects from ABCT training to soil resources. As discussed in Section 2.3.6, the addition of an ABCT at Fort Stewart would increase MIMs by 130,000, totaling 390,000 MIMs (50 percent increase). This potentially correlates to a 50 percent increase in soil maneuver impacts and required repair costs over a given training year. Long-term increases in training intensity requiring large maneuver footprints due to heavy tracked and wheeled vehicles could potentially result in disturbance to soil resources. This could occur at the landscape scale through degradation of soils and the potential for increased soil erosion over widespread areas if areas are not adequately rotated, or given necessary recovery times for re-vegetation activities supporting soil stabilization.

In addition, the Soldiers and equipment associated with an additional ABCT training could also result in adverse impacts to soil resources within Fort Stewart from increased training throughput. The most critical effect to soils would be the potential for increased soil compaction, soil rutting, and soil erosion (wind and water) as the result of an additional ABCT training. Potential effects could occur to sedimentation and run-off, and soil stability and fertility.

Overall adverse impacts to soil resources in the training component at Fort Stewart would be moderate/ less than significant. Fort Stewart would mitigate the potential for significant adverse effects to soil resources through management of ABCT training and management of soil resources in accordance with the INRMP.

3.6.5.2.3.2. Construction

To provide training support for three ABCTs, Fort Stewart would require a TRACR upgrade to instrumentation and targetry, replacement of legacy MPRC – Heavy; and an additional conduct of fire and call for fire trainer simulation facility. Construction requirements include vehicle maintenance shops; barracks; company, battalion and brigade HQs; unit storage and classrooms; a tactical UAV hangar; and a physical fitness center. Construction could cause a temporary increase in soil erosion, sedimentation and run-off, and permanent loss of soils in areas of new impervious surface, which could increase stormwater runoff and adversely affect surface water quality. Soil resources occurring within new building footprints would be permanently disturbed to accommodate the new facility.

As shown on Figure 2.3-5, these construction activities would occur within existing facilities primarily on land containing previously disturbed soil resources. The overall adverse impacts in the construction component would be minor.

Fort Stewart would identify specific locations and provide designs of these future infrastructure improvements. Long-term negligible effects would result from new impervious surfaces associated with new buildings. Site selection and design would incorporate Real Property Master Plan and other master planning processes and policies including the use of strategic siting (e.g., avoidance of sensitive habitats), and implementation of sustainable design and construction. These future infrastructure improvements would be subject to other NEPA analyses, as required..

Fort Stewart would continue to follow the erosion and sediment control BMPs and impact-reduction measures described in the Fort Stewart INRMP. BMPs such as maintenance of vegetative cover and revegetation, silt fencing, watering, and site stabilization, would minimize the potential for construction-related erosion and sedimentation. Fort Stewart would maintain permitting requirements under the NPDES General Permit for construction activities, No. GAR100001-03. In addition to permitting requirements, content from these permits would be used to include climatic/seasonal changes in soil erosion as a factor in scheduling intensive training activities and real property management activities.

3.6.5.3. Summary of Mitigation

No new mitigation measures are needed nor have any been identified. The Army will continue to adhere to legal and regulatory requirements, and continue to implement its approved management plans, SOPs and BMPs related to soil resources.

3.6.6. Surface Water and Wetlands

3.6.6.1. Affected Environment

3.6.6.1.1. Surface Waters

Four watersheds occur within Fort Stewart's boundaries: the Altamaha, Canoochee, Lower Ogeechee and Ogeechee Coastal watersheds. The Canoochee watershed is further divided into sub-watersheds, which ultimately drain into the Ogeechee River watershed. Most of Fort Stewart is in the Canoochee River watershed. The Canoochee River traverses from the northwest corner to the eastern side of the installation with about 30 miles (48.3 km) of the river located inside Fort Stewart's boundary. The installation has about 265 miles (426.5 km) of freshwater rivers and streams and an additional 12 miles (19.3 km) of brackish water systems.

3.6.6.1.2. Water Quality

Existing impairments to surface water quality include both point sources and nonpoint sources. The most common point sources are municipal or industrial activities and wastewater treatment plants (WWTPs). Nonpoint sources in the region include stormwater runoff from urban areas, agricultural, construction, range training activities, golf course irrigation, and forest timber harvesting. The Georgia NPDES Municipal Separate Storm Sewer Systems (MS4) Permit regulates the nonpoint source discharges (Fort Stewart, 2010).

Off-post agricultural activity in the Ogeechee River watershed affects water quality by increasing the input of nutrients and pesticides, soil erosion, and channelization of off-post tributaries to drain wetlands.

The Georgia Department of Natural Resources (DNR)-Environmental Protection Division (EPD) has listed oxygen depletion as a problem in water bodies of the Ogeechee River watershed. Water quality in the main stem of the Canoochee River is affected by urban runoff and nonpoint source pollution (Fort Stewart, 2010).

The Georgia EPD lists segments of Taylors Creek and Canoochee Creek as impaired for low dissolved oxygen, attributed to the discharge from the Hinesville/Fort Stewart WWTP, a municipal facility. Nonpoint sources of erosion and sediment from Fort Stewart activities include training areas, roadside ditches, construction activities, borrow pits, steam pit sump pumps, and nutrient loads from the golf course and residential landscapes. Any of these may contribute to the low dissolved oxygen impairment of Canoochee Creek and Canoochee River. Peacock Creek and its tributaries are identified as impaired because they exceed fecal coliform standards and have low dissolved oxygen concentrations (Fort Stewart, 2010).

3.6.6.1.3. Wetlands

Fort Stewart contains approximately 91,000 acres (36,826 ha) of wetlands spread across 280,000 acres (113,312 ha). Wetlands on Fort Stewart are found throughout the installation and are generally high functioning with healthy communities of hydrophytic vegetation. Wetlands on Fort Stewart support populations of aquatic, semi-aquatic, and terrestrial animals including some threatened and endangered species. Fort Stewart has implemented an aggressive mitigation program in order to offset wetland impacts. These projects include wetland enhancement and wetland restoration projects on large-scale areas that provide higher quality mitigation than smaller patchwork single permit mitigation products. Fort Stewart also maintains a proactive program to identify and remedy problematic points of impaired hydrology, severe siltation, and other threats to water quality in wetlands and natural waterways.

3.6.6.1.4. Surface Water and Wetlands Management

Fort Stewart manages its surface water and wetland resources according to the Fort Stewart INRMP (Fort Stewart, 2013) and through coordination of the Fort Stewart DPW-E and ITAM - DPTMS. This includes an adaptive management approach with consideration for the interrelationships between the components of the ecosystem, the requirements of the military mission, and other land use activities. Natural resource management at Fort Stewart focuses on maintaining the quality of surface water and wetland resources, while recognizing the military mission. An adaptive management strategy is integral to monitor the temporal and spatial dynamics of ecosystems and to adjust the management measures and strategies based on improved knowledge and data.

Specifically to training, units are briefed prior to each training event regarding sensitive areas on post, such as sensitive water resources, and what is and is not allowed within certain areas, such as within the protective buffer surrounding sensitive resources.

Management of water resources also involves the ITAM program that establishes a uniform land management program and includes inventorying and monitoring land condition, integrating training requirements with land carrying capacity while training to standard, educating land users to minimize adverse impacts, and prioritizing and implementing rehabilitation and maintenance projects.

3.6.6.2. Environmental Consequences

3.6.6.2.1. No Action Alternative

Negligible adverse effects would occur at Fort Stewart under the No Action Alternative. Fort Stewart would not receive an additional ABCT and would continue to operate with its existing force. Fort Stewart would continue to adhere to its existing military land use and resource management plans to minimize and monitor any potential effects from training of existing units.

3.6.6.2.2. Alternatives 1, 2, 3, and 4

Similar to the No Action Alternative, negligible adverse effects would occur, as Fort Stewart would not receive an additional ABCT. The ABCT would be stationed at another installation.

3.6.6.2.3. Alternative 5

3.6.6.2.3.1. Training

As stated in Section 3.1.2, maneuver and live-fire exercise training can negatively affect surface water and wetland resources. This includes physical degradation of surface water features, water quality, and wetlands from maneuver training, field equipment training, and live-fire exercises. The addition of an ABCT at Fort Stewart would increase the frequency of both current maneuver and live-fire exercises and the potential for adverse effects from ABCT training to water resources. As discussed in Section 2.3.6, the addition of an ABCT at Fort Stewart would increase MIMs by 130,000, totaling 390,000 MIMs (50 percent increase) and would increase range use. Long-term increases in training intensity requiring large maneuver footprints due to heavy tracked and wheeled vehicles could potentially result in effects to surface water and

wetland resources. As stated in Section 3.6.5.2, ABCT training activities could cause widespread disturbance to soils resulting in excess sediment loads in surface waters and wetlands, changes to drainage patterns, and increased stormwater runoff. This could adversely affect surface water quality within the installation and within the nearby watersheds, such as the Canoochee River watershed, as well as impact wetland quality and hydrology.

Impacts associated with operation of armored vehicles and heavy equipment for ABCT training to surface waters would be greater during wet conditions, particularly when crossing intermittent drainages. These activities could modify drainage structures through erosion and compaction resulting in increased erosion potential and indirect impacts to water quality.

Overall adverse impacts to surface water and wetland resources in the training component at Fort Stewart would be moderate/ less than significant. Fort Stewart would mitigate the potential for significant adverse effects to these resources through management of ABCT training and management of surface waters and wetlands in accordance with the INRMP. The ITAM program would also continue to be used during maneuvers to reduce soil erosion and sedimentation into adjacent surface waters and wetlands.

Potential surface water contamination could occur due to accidental spills of hazardous materials associated with vehicles and equipment (e.g., oil, fuels, and solvents). Fort Stewart would continue to implement AR 200-1 and BMPs to manage and reduce potential impacts. Vehicles would be operated and maintained to minimize leaking fluids that could contaminate soils and waterbodies. Vehicle and equipment fueling and maintenance would be restricted to approved locations unless emergency field maintenance is required. If emergency maintenance were required, applicable control and containment measures would be implemented to prevent accidental contamination of surface water. Such controls include locating activities away from surface waters and stormwater inlets or conveyances, providing secondary containment (e.g., spill berms, decks, and spill containment pallets) and cover where applicable, and/or having spill kits readily available.

3.6.6.2.3.2. Construction

Additional future cantonment infrastructure improvements would be required to bring Fort Stewart's facilities up to the current Army standard for an ABCT. To provide training support

for three ABCTs, Fort Stewart would require a TRACR upgrade to instrumentation and targetry, replacement of legacy MPRC – Heavy; and an additional conduct of fire and call for fire trainer simulation facility. Two buildings would require renovation and relocation. These improvements include vehicle maintenance shops; barracks; company, battalion and brigade HQs; unit storage and classrooms; a tactical UAV hangar; and a physical fitness center. Construction could cause a temporary increase in soil erosion, sedimentation, and run-off, and permanent increases in impervious surface, which could increase stormwater runoff and adversely affect surface water quality.

As shown on Figure 2.3-5, these construction activities would occur within existing facilities and on a combination of previously disturbed and undisturbed land, which contain small areas of NWI mapped wetlands and is crossed by Mill Creek. In accordance with EO 11990 and the CWA, impacts to wetland resource would be avoided during site design. The potential for indirect impacts from construction site stormwater runoff and sedimentation are further described below.

Fort Stewart would identify specific locations and provide designs of these future cantonment infrastructure improvements. These future cantonment infrastructure improvements would be subject to follow-on NEPA tiered off this document to ensure compliance with EO 11990 for no net loss of wetlands and the CWA regarding protection of surface water and wetland resources.

Long-term less than significant impacts would result from new impervious surfaces associated with new buildings resulting in increased stormwater runoff and adversely affect surface water quality due to sedimentation and run-off. Fort Stewart will comply with Section 438 of the EISA. This requires use of a variety of stormwater management practices often referred to as "green infrastructure" or "low impact development" practices. These include reducing impervious surfaces, using vegetative practices, porous pavements, cisterns, and green roofs. Fort Stewart would continue to follow the BMPs and impact-reduction measures described in the Fort Stewart INRMP such as reduce sources of direct pollutant discharge to nearby waterways, establish filter strips adjacent to bodies of water, prevent spills of oils and other hazardous substances, and ensure site stabilization (Fort Stewart, 2013). These BMPs would minimize the potential for construction-related erosion and sedimentation or contamination. Site selection and

design would incorporate Real Property Master Plan and other master planning processes and policies including the use of strategic siting, and implementation of sustainable design and construction. These future cantonment infrastructure improvements would be subject to other NEPA analyses, as required..

Fort Stewart would maintain permitting requirements under the NPDES General Permit for construction activities, No. GAR100001-03.

Overall adverse impacts to surface water and wetland resources from construction at Fort Stewart would be moderate/ less than significant.

3.6.6.3. Summary of Mitigation

No new mitigation measures are needed nor have any been identified. The Army will continue to adhere to legal and regulatory requirements, and continue to implement its approved management plans, SOPs and BMPs related to surface water and wetland resources.

3.6.7. Socioeconomics

3.6.7.1. Affected Environment

3.6.7.1.1. Population and Housing

The Fort Stewart population is measured in three different ways. The daily working population is 22,017, and consists of full-time Soldiers and Army Civilians working on-post. The population that lives on Fort Stewart consists of 2,683 Soldiers and an estimated 5,637 dependents, for a total resident population of 8,620 (Fort Stewart RCI) Finally, the portion of the ROI population related to Fort Stewart is 24,240 and consists of Soldiers, Civilian employees, and their dependents living off-post.

In 2015, the population of the ROI was approximately 150,000. Between 2010 and 2015, the population increased in Liberty, Bryan, and, Long counties, and decreased in Evans and Tattnall counties (see Table 3.6-5).

Table 3.6-5 Population in the Fort Stewart ROI

Region of Influence Counties	Population (2015)	Population Change 2010–2015 (percent)
Liberty County	64,427	1.51
Bryan County	33,151	8.80
Evans County	10,814	-1.72
Long County	16,588	12.80
Tattnall County	25,302	-0.86

Sources: U.S. Census Bureau, 2016a; U.S. Census, 2010

There are 3,630 permanent military Family units on Fort Stewart and 6,435 spaces in barracks on the installation. Additionally, there are 334 single Non-commissioned Officer (NCO) and Officer quarters on the installation (U.S. Army, 2014). A summary of housing units in the five counties ROI is shown in Table 3.6-6.

There are currently about 1,300 developed subdivision lots available for building homes in Liberty County, with another 1,000 under development. Bryan County continues to expand its housing footprint with both family and single housing in the Richmond Hill area, as the annual growth rate from 2010 to 2014 doubled and is on a continual upward slope with developers actively engaging the market (Executive Director, Liberty Consolidated Planning Authority, 22 September 2017).

Table 3.6-6 Housing Characteristic in the Fort Stewart ROI

Housing Characteristic	Liberty County	Bryan County	Evans County	Long County	Tattnall County
Total Housing Units	27,088	12,676	4,637	6,155	9,888
Occupied Housing Units	22,943	11,441	3,982	5,017	7,880
Owner-Occupied	10,887	7,819	2,532	3,211	5,451
Renter-Occupied	12,056	3,622	1,450	1,806	2,429
Average Household Size (owner occupied)	2.61	2.84	2.54	3.42	2.41
Average Household Size (renter occupied)	2.82	2.99	2.71	3.00	2.56
Vacant Housing Units	4,145	1,235	655	1,138	2,008
Homeowner Vacancy Rate (percent)	3.7	3.9	0.8	3.8	2.5
Rental Vacancy Rate (percent)	12.5	4.0	7.6	19.8	14.0

Source: U.S. Census Bureau, 2015b

3.6.7.1.2. Public Services and Schools

Schools. Fort Stewart educates approximately 1,563 students in grades kindergarten through 6th grade in on-post DoD schools, while approximately 6.977 students in those grades attend off-post schools within Liberty, Bryan, Long, Effingham, and Chatham counties. DoD schools on-post include Brittin Elementary, Diamond Elementary, and Kessler Elementary Schools. Fort Stewart sends students in grades 7-8 off-post to Midway Middle School, located about 10 miles (16.1 km) away from Fort Stewart and Hinesville. All students in grades 9-12 attend local high schools off-post.

Police, Fire, and Emergency Services. On post, the Directorate of Emergency Services commands the Military Police Units, the Fort Stewart Fire Department, and the Post Safety Office. This directorate ensures unity of effort among Fort Stewart emergency services to provide a safe and secure environment within which to work, train, live, and play. The Fort Stewart Military Police oversee police operations, patrol installation property, provide gate security, protect life and property, conduct investigations, regulate traffic, provide crowd control, and perform other public safety duties.

The Fort Stewart Fire Department responds to emergencies involving structures, facilities, transportation equipment, hazardous materials; responds to natural and man-made disasters, directs fire prevention activities; and conducts public education programs. Fire prevention activities include providing fire safety advice and insuring that structures are equipped with adequate fire precautions.

City, county, and state police departments provide law enforcement, fire, and emergency responses services throughout the ROI.

Medical Facilities. Winn Army Community Hospital and Lloyd C. Hawks Troop Medical Hospital services include audiology/speech pathology, dermatology, dietetics, emergency services, family medicine, internal medicine, obstetrics, occupational therapy, ophthalmology, optometry, orthopedics, otolaryngology, pediatrics, physical therapy, psychiatry, surgery, podiatry, psychology, social work, and substance abuse. Clinics provide health services for Active Duty and retired Soldiers and their Families on Fort Stewart. Dental services are also available at three dental clinics on-post. These facilities service all Active Duty personnel and their dependents, as well as retirees and their dependents. The closest off-post, health care facility is Liberty Regional Medical Center in Hinesville.

Family Support Services. The FMWR provides a wide range of facilities for promoting social and emotional well-being of military/civilian service personnel and their Families. The Fort Stewart ACS office within FMWR assists in maintaining the readiness of individuals, Families, and communities within the Army by developing, coordinating, and delivering services that promote self-reliance, resiliency, and stability during war and peace. Services are offered to Active, Retired, Army Reserve and National Guard Soldiers and their Families members,

regardless of branch services, as well as, as DoD civilian employees and their family members. Programs offered include the Army Family Action Plan, Family Advocacy Program, Survivor Outreach Service, and Warriors in Transition.

3.6.7.1.3. Environmental Justice and Protection of Children

Table 3.6-7 summarizes the percent of minority and low income populations for the counties within the Fort Stewart ROI and the state of Georgia. See Section 3.1.5 on EO 13045, Protection of Children From Environmental Health Risks and Safety Risks.

Table 3.6-7 Minority and Low Income Populations within the Fort Stewart ROI

Demographic	Liberty County (%)	Bryan County (%)	Evans County (%)	Long County (%)	Tattnall County (%)	Georgia
Hispanic or Latino	11.7	6.2	11.9	11.7	10.7	9.2
Black or African American	39.3	14.8	30.2	23.2	28.9	30.5
American Indian/Alaska Native	0.4	0.5	0.0	0.4	0.3	0.2
Asian	2.1	2.0	0.8	1.2	0.3	3.6
Native Hawaiian/ Pacific Islander	0.4	0.0	0.0	0.2	0.0	0.0
Other Race	0.2	0.1	0.0	0.0	0.0	0.2
Two or More Races	3.4	1.8	0.4	4.0	1.1	1.7
Total Minority Population	57.6	25.3	43.4	40.8	41.3	45.4
Population below Poverty Level	17.7	13.6	27.7	17.9	29.2	18.4

U.S. Census Bureau, 2016c; U.S. Census Bureau, 2016d

Economic Development and Employment

Income and employment patterns provide insight into local economic conditions, including the strength of the local economy and well-being of the residents. Summary statistics covering these economic parameters are shown in Table 3.6-8. Table 3.6-9 shows ROI employment by sector.

Table 3.6-8 Income and Employment Conditions in the Fort Stewart ROI

Income and Employment Conditions	Liberty County	Bryan County	Evans County	Long County	Tattnall County	Georgia
2015 Per Capita Personal Income ($)	19,785	26,934	19,625	18,166	14,957	25,737
2015 Median Household Income ($)	42,201	63,327	37,865	48,863	33,980	49,620
Labor Force	26,091	17,017	4,927	7,458	9,553	5,088,267
Change in Employment, 2010-2017 (%)	1.4	20.1	0.0	20.3	4.3	13.7
2017 Unemployment (%)	4.7	3.8	3.9	4.5	4.4	4.2

Source: U.S. Census, 2016e; BLS 2017.

Table 3.6-9 Fort Stewart ROI Employment Distribution by Sector

Employment Sector	Liberty County (%)	Bryan County (%)	Evans County (%)	Long County (%)	Tattnall County (%)	Georgia
Agriculture, forestry, fishing and hunting, and mining	0.4	0.3	5.2	5.5	7.8	1.2
Construction	4.9	9.3	10.5	11.6	9.6	6.3
Manufacturing	6.6	13.1	16.6	7.7	7.8	10.7
Wholesale trade	2.2	2.0	3.0	1.1	4.3	2.9
Retail trade	13.3	10.5	11.1	13.0	13.5	11.9
Transportation and warehousing, and utilities	5.7	7.4	7.1	6.2	5.8	6.0
Information	0.8	0.5	0.3	1.3	0.6	2.5
Finance and insurance, and	4.0	4.2	3.6	4.4	2.9	6.3

Employment Sector	Liberty County (%)	Bryan County (%)	Evans County (%)	Long County (%)	Tattnall County (%)	Georgia
real estate and rental and leasing						
Professional, scientific, and management, and administrative and waste management services	7.4	7.3	3.9	5.9	6.1	11.6
Educational services, and health care and social assistance	17.9	23.0	20.5	16.6	19.9	21.0
Arts, entertainment, and recreation, and accommodation and food services	11.6	10.5	5.1	7.0	4.8	9.3
Other services, except public administration	4.4	5.9	7.5	5.3	5.6	5.0
Public administration	20.7	6.1	5.5	14.4	11.5	5.3

U.S. Census Bureau, 2016e

3.6.7.2. Environmental Consequences

3.6.7.2.1. No Action Alternative

Negligible adverse effects would occur at Fort Stewart under the No Action Alternative. Fort Stewart would not receive an additional ABCT and would continue to operate with its existing force. Fort Stewart's continuing operations represent a beneficial source of regional economic activity. No additional impacts to housing, public services, schools, or public safety are anticipated.

3.6.7.2.2. Alternatives 1, 2, 3, and 4

Similar to the No Action Alternative, negligible adverse effects would occur, as Fort Stewart would not receive an additional ABCT. The ABCT would be stationed at another installation.

3.6.7.2.3. Alternative 5

Alternative 5 would result in an increase of up to 4,132 Soldiers, an estimated 2,273 spouses and 3,967 dependent children, for a total population increase of 10,372. In addition, Alternative 5 would result in increased spending of up to $396 million for critical facilities required for ABCT stationing. Increases in Soldier and dependent population, as well in increases in MILCON construction spending, would be similar to those described in Section 3.1.5 and would lead to short-term and long-term beneficial impacts and growth of economic activity within the ROI.

3.6.7.2.4. Socioeconomic Impacts

Similar to as described in Section 3.2.7 for Fort Bliss, an increase of up to 10,372 Soldiers and dependents would result in long-term beneficial economic impacts at Fort Stewart. This increase would be of a similar magnitude analyzed in the 2013 Army 2020 PEA, which considered an increase of up to 7,554 Soldiers and dependents. Although Alternative 5 would represent a greater increase in Soldiers and dependents than considered in the Army 2020 PEA, Soldier population has decreased from the baseline analyzed in 2013 by 1,887 Soldiers, as described in Section 1.3. As a result, the gain scenario in Alternative 5 is within the magnitude of the gain analyzed in the 2013 PEA.

Liberty County and surrounding counties have been preparing for additional growth as a result of BCT stationing for the past decade. In 2008, the four-county Fort Stewart Growth Management Partnership (FSGMP) prepared a growth management study in anticipation of a newly-created IBCT that never materialized. Upon announcement of the IBCT that was scheduled to come to Fort Stewart in 2010, local governments, public service agencies, and private developers began a massive investment in preparing for anticipated growth of more than 10,000 people across the four-county region. Investments included a new wastewater treatment plant in the City of Hinesville; new administrative facilities in Liberty County and the City of Hinesville; a new college, career academy, and other capital improvements to existing facilities in the Liberty County School District; and additional capital improvements and new technology at the Liberty Regional Medical Center Hinesville Campus. When the aforementioned IBCT was rescinded suddenly in mid-2009, Congress provided $40 million in brigade-basing funds to compensate public entities for investments they made in preparing for the unrealized growth. As such,

Liberty County and the surrounding counties have already included stationing growth proposed under Alternative 5 into their future planning efforts. Specific impacts are described in detail below.

Population and Housing. Alternative 5 would result in an increase in population of 10,372 in the ROI. This would represent a seven percent increase in population in the region. This would be in the magnitude of the population increase considered in the 2013 Army PEA given the 1,887 Soldier population decrease from the baseline analyzed in the 2013 document.

Population increases would lead to an increase in demand for housing; however, as shown in Table 3.6-6 both rental and owner-occupied housing is available throughout the ROI. Additionally, as described in Section 3.6.7.1, housing development is ongoing in Bryan and Liberty counties, including the Richmond Hill area, and increases in the demand for off-post housing would be absorbed by existing and planned development. In addition, the MILCON construction part of the Alternative 5 would include funding for additional barracks space for single enlisted Soldiers and Family housing, which would alleviate any capacity concerns related to a population increase. Overall impacts to housing would be beneficial.

Public Services and Schools. Increased population would result in an increase in school-aged children in local school districts. As discussed in Section 3.6.7.1, Fort Stewart and Liberty County have capacity for growth and have had plans to accommodate the growth of a brigade-equivalent for more than a decade. An increase in students would be absorbed by existing capacities, and overall impacts to schools would be minor. School districts would also benefit from an increase in federal funding due to an increase in students of parents that live or work on federal property.

Increased population would result in a need for additional public services (i.e., police, fire, emergency, and medical services). These increases would be mostly absorbed by existing capacities planned for previous stationing actions, and overall impacts to public services under Alternative 5 would be minor.

Economic Development and Employment. Alternative 5 overall impacts would result in less than significant, beneficial impacts on economic development and employment through

increases in direct and indirect employment, sales volume, regional income, and tax revenue. See Section 3.1.5 and 3.2.7 for more information.

Environmental Justice. Alternative 5 would not result in disproportionately high adverse impacts, including adverse health impacts, to minorities, low-income populations, or children throughout the ROI. Economic impacts would be felt across economic sectors at all income levels and spread geographically throughout the ROI.

3.6.7.2.4.1. Construction

Impacts from construction activities resulting from the ABCT stationing would be similar to those described for Fort Bliss, and would be short-term and beneficial. See Section 3.2.7 for additional information.

3.6.7.3. Summary of Mitigation

Overall beneficial effects would occur; no mitigation would be required.

3.6.8. Traffic and Transportation

3.6.8.1. Affected Environment

3.6.8.1.1. Existing Installation Roadway Network

Fort Stewart anticipated, and planned for, receiving an additional brigade. Investments included capital improvements to existing facilities. When the aforementioned IBCT was rescinded suddenly in mid-2009, Congress provided $40 million in brigade-basing funds to compensate public entities for investments they made in preparing for the unrealized growth. The roadways leading to and within the installation, however, are currently sized for the presence of this additional brigade.

3.6.8.1.2. Existing Roadway Network Surrounding the Installation

The Georgia DOT has a robust planning, execution, and seemingly well-funded future for roadway construction projects. These projects are designed to upgrade roadways and intersections in an effort to reduce traffic congestion and increase economic activity. A number of these projects will affect Fort Stewart in a positive way upon their completion.

3.6.8.2. Environmental Consequences

3.6.8.2.1. No Action Alternative

Negligible adverse effects would occur as a result of the implementation of the No Action Alternative as Fort Stewart would not receive an additional ABCT.

3.6.8.2.2. Alternatives 1, 2, 3, and 4

Similar to the No Action Alternative, negligible adverse effects would occur, as Fort Stewart would not receive an additional ABCT. The ABCT would be stationed at another installation.

3.6.8.2.3. Alternative 5

Overall adverse impacts would be minor to moderate/ less than significant on traffic and transportation systems on the installation due to the presence of additional Soldiers in the training and construction components. The increase in off-post traffic would have minor adverse impacts on traffic in the community. Slowdowns that occur will not be severe, and only a minor slowdown of the traffic pace is expected at the gate areas. Minor slowdowns can also be expected during noontime when Soldiers travel to and from the post for lunch. The increase in traffic could contribute to a decrease in the LOS of the road networks and major routes leading to the installation, particularly during peak travel periods, but it is not expected to be significant.

Traffic issues were studied prior to the planned stationing action in 2009, and will be studied in more detail at Fort Stewart for future stationing decisions.

3.6.8.3. Summary of Mitigation

No mitigation measures have been identified.

3.6.9. Cumulative Effects

3.6.9.1. Region of Influence

The ROI for this cumulative impact analysis of the potential gain of an ABCT at Fort Stewart encompasses the counties of Liberty, Bryan, Evans, Long, and Tattnall. Hinesville is the largest community located near Fort Stewart and provides the center for commercial, manufacturing, transportation, and medical activities in the ROI. Fort Stewart has long been a key component of the economy of the ROI, employing several thousand Soldiers and Civilians within the ROI.

Numerous planned or Proposed Actions within the ROI have the potential to add cumulative impacts to the possible gain of an ABCT at Fort Stewart. These actions are either recently completed, currently occurring, or are reasonably foreseeable during the next three years.

3.6.9.2. Fort Stewart Projects

The projects that may add to the cumulative impacts from the implementation of the Fort Stewart stationing alternative are listed below. Projects that are currently under design or construction at Fort Stewart:

- Construct new Rail Marshalling Facility
- Renovate Volar Barracks Building 810
- Renovate Volar Barracks Building 720
- Construct Pedestrian Pathways to Motor pool
- Renovate General Purpose Areas for Recreation Users
- Renovate Volar Barracks Building 631
- Renovate Volar Barracks Buildings 630 and 636
- Renovate Building 620
- Establish Brigade Close-in Training - Clear and Fill
- Establish Brigade Close-in Training - Fill and Regrade
- Establish Brigade Close-in Training – Sight Lighting; Poles
- Improve 6th St. Pedestrian Path – Construct Curbs for Median
- Improve 6th St. Pedestrian Path – Add Lighting; Poles
- Qualification Raining Range
- Hunter Army Airfield Operations Building
- SOF Company Operations Facility

The following projects fall within the $500,000 and three-year threshold for inclusion in this cumulative effect discussion despite not being actively under construction at this time:

- Renovate BN HQ Buildings 819 and 811
- Upgrade 18th St. – Convert Open Storm Drain and other renovations
- Upgrade McFarland Ave.

3.6.9.2.1. Other Actions

Other known planned or ongoing projects that will cumulatively affect the ROI include several Georgia DOT projects. These projects are designed to upgrade roadways and intersections, in an effort to reduce traffic congestion and increase economic activity within the ROI. Liberty County has several projects that meet the threshold condition including construction of the Liberty Regional Medical Center East End Clinic, upgrading recreation facilities, and improving the Industrial Authority property. There is a housing development and some retail business development located in the ROI that are under construction, or will be under construction, within the next three years.

3.6.9.2.2. No Action Alternative

Negligible cumulative effects would occur at Fort Stewart under the No Action Alternative. Fort Stewart would not receive an additional ABCT and would continue to operate with its existing force. Fort Stewart's continuing operations represent a beneficial source of regional economic activity. No additional impacts to housing, public services, schools, or public safety are anticipated.

3.6.9.2.3. Alternatives 1, 2, 3, and 4

Similar to the No Action Alternative, negligible cumulative effects would occur, as Fort Stewart would not receive an additional ABCT. The ABCT would be stationed at another installation.

3.6.9.2.4. Alternative 5

Overall cumulative impacts as a result of the implementation of Alternative 5 range from minor adverse impacts to less than significant adverse impacts. In the VEC area of Socioeconomics, it

is anticipated the cumulative impacts would be long-term beneficial, with impacts to Public Services being minor in nature.

As a result of the implementation of Alternative 5, overall minor adverse cumulative impacts are expected in the following VECs: Air Quality/Greenhouse Gas for the construction component, Biological Resources for the construction component, Cultural Resources for the training component, and Soils for the construction component.

Overall cumulative impacts that are minor to moderate/ less than significant are anticipated for the following VECs: Biological Resources for the training and construction components, Soils for the training component, and Surface Water and Wetlands for the training component.

Overall negligible cumulative impacts are anticipated for the construction component of the Cultural Resources VEC.

Cumulative impacts will be controlled through existing measures including the continued compliance with existing plans and programs that protect the resource areas considered. Fort Stewart has experienced less growth in the past five years than anticipated and discussed in previous NEPA documents. As a result, some civilian and military infrastructure in the ROI has already been upgraded to manage the possible increase in population and associated cumulative effects. Overall, the implementation of Alternative 5 is anticipated to cause less than significant adverse cumulative impacts. This alternative would produce adverse socioeconomic impacts at Fort Carson as discussed in section 3.2.7.

4. SUMMARY OF ENVIRONMENTAL CONSEQUENCES AND PROPOSED MITIGATION

4.1. Environmental Effects Summary

The No Action Alternative would result in minimal to less than significant adverse effects on the VECs discussed. The Proposed Action and Alternatives would result in some degree of adverse effect on most environmental resources, and some beneficial effects at some installations. Table 4.1-1 presents a summary of the environmental consequences of the alternatives analyzed in this PEA. Under most alternatives, there will likely be a beneficial impact on the Socioeconomic VECs due to the increase in economic activities generated by the increase in the Soldier and Civilian population and money invested in the local economy, except at Fort Carson if they are losing the IBCT and not gaining the ABCT.

Overall, negligible to minor adverse impacts would be anticipated for the following VECs: Air Quality and GHG, Traffic and Transportation, Cultural Resources, Soils -construction component, Surface Water and Wetlands - construction component, and Biological Resources - construction component.

The remaining VECs have the potential for less than significant adverse impacts in large measure due to continued utilization of ongoing mitigation measures. In addition, installations plan on following its management plans, as well as abiding by the agreements between the installations and various State and Federal regulatory communities. Specifically, these VECs are as follows: Soils-training component, Biological Resources - training component, Surface Water and Wetlands - training component.

Table 4.1-1 Summary of the Environmental Consequences

Resource Area	No Action Alternative	Alternative 1: Fort Carson	Alternative 2: Fort Bliss	Alternative 3: Fort Hood	Alternative 4: Fort Riley	Alternative 5: Fort Stewart
Air Quality and Greenhouse Gases	Negligible adverse impacts	Minor to moderate/ less than significant adverse impacts for training component Minor adverse impacts for construction component	Minor to moderate/ less than significant adverse impacts for training component Minor adverse impacts for construction component	Minor to moderate/ less than significant adverse impacts for training component Minor adverse impacts for construction component	Negligible to minor adverse impacts for training component Minor adverse impacts for the construction component	Minor adverse impacts for training component Minor adverse impacts for construction component
Biological Resources	Negligible adverse impacts	Moderate/ less than significant adverse impacts for training component Minor adverse impacts for construction component	Moderate/ less than significant adverse impacts for training component Minor adverse impacts for construction component	Moderate/ less than significant adverse impacts for training component Minor adverse impacts for construction component	Moderate/ less than significant adverse impacts for training component Minor adverse impacts for construction component	Moderate/ less than significant adverse impacts for training component Minor adverse impacts for construction component
Cultural Resources	Negligible adverse impacts	Minor adverse impacts for training component Negligible for construction component	Minor adverse impacts for training component Negligible for construction component	Minor adverse impacts for training component Negligible for construction component	Minor adverse impacts for training component Negligible for construction component	Minor adverse impacts for training component Negligible for construction component
Geology and Soils	Negligible adverse impacts	Moderate/ less than significant adverse impacts for training component Minor adverse impacts for construction component	Moderate/ less than significant adverse impacts for training component Minor adverse impacts for construction component	Moderate/ less than significant adverse impacts for training component Minor adverse impacts for construction component	Moderate/ less than significant adverse impacts for training component Minor adverse impacts for construction component	Moderate/ less than significant adverse impacts for training component Minor adverse impacts for construction component

Resource Area	No Action Alternative	Alternative 1: Fort Carson	Alternative 2: Fort Bliss	Alternative 3: Fort Hood	Alternative 4: Fort Riley	Alternative 5: Fort Stewart
Socio-economics	Negligible adverse impacts	Moderate adverse impact	Long-term beneficial to receiving installation/ long term moderate adverse to Fort Carson	Long-term beneficial to receiving installation/ long term moderate adverse to Fort Carson	Long-term beneficial to receiving installation/ long term moderate adverse to Fort Carson	Long-term beneficial to receiving installation/ long term moderate adverse to Fort Carson
Water Resources	Negligible adverse impacts	Moderate/ less than significant adverse impacts for training component Minor adverse impacts for construction component	Minor adverse impacts for training component Moderate/ less than significant adverse impacts for construction component	Moderate/ less than significant adverse impacts for training component Minor adverse impacts for construction component	Moderate/ less than significant adverse impacts for training component Moderate/ less than significant adverse impacts for construction component	Moderate/ less than significant adverse impacts for training component Moderate/ less than significant adverse impacts for construction component
Traffic and Transport	Negligible adverse impacts	Negligible adverse impacts	Moderate/ less than significant adverse impacts for training component	Minor to less than significant adverse impacts for training component	Minor adverse impacts for training component	Minor to Moderate/ less than significant adverse impacts for training component
Cumulative	Negligible adverse impacts	Minor to less than significant adverse impacts Long-term negligible to socio-economic	Less than significant adverse impacts Long-term beneficial to socio-economic	Less than significant adverse impacts Long-term beneficial to socio-economic	Less than significant adverse impacts Long-term beneficial to socio-economic	Less than significant adverse impacts Long-term beneficial to socio-economic

4.2. Proposed Mitigation Summary

No new mitigation measures are needed nor have any been identified. The Army will continue to adhere to legal and regulatory requirements, and continue to implement its approved management plans, SOPs and BMPs. The Army will make final decisions regarding adoption and implementation of specific mitigation measures at the appropriate time. Most potential adverse impacts identified in this PEA would be either negligible to minor, or less than significant. These classifications are based on the fact that frequently the Army already has approved mitigation measures in place at each installation, or that new mitigation measures would be implemented based on site-specific requirements.

The installations identified as Alternatives for stationing the Proposed Action have planning tools (e.g., INRMPS and ICRMPS) in place. These plans include mitigation measures associated with anticipated training and construction requirements. These installations have State and/or Federal permits in place for Air Quality, Surface Waters and Wetlands, for example. These permits mandate mitigation measures to ensure potential adverse impacts are reduced to acceptable levels. It is anticipated that all permits will be reviewed, and new mandates established, at the installation that actually receives the new ABCT.

5. List of Acronyms

4th ID		4th Infantry Division
AAP		Army Alternate Procedures
ABCT		Armored Brigade Combat Team
AC		Active Component
ACHP		Advisory Council on Historic Preservation
AD		Armored Division
AIRFA		American Indian Religious Freedom Act
AK		Alaska
AQCR		Air Quality Control Region
AR		Arkansas
AR		Army Regulation
Army		Department of the Army
ARNG		Army National Guard
ARPA		Archaeological Resources Protection Act
ARRM		Army Range Requirements Model
ASB		Aviation Support Battalion
BCT		Brigade Combat Team
BDE		Brigade
BGEPA		Bald and Golden Eagle Protection Act
BLM		Bureau of Land Management
BLS		Bureau of Labor Statistics
BMP		best management practices
BN HQ		Battalion Headquarters
BRAC		Base Realignment and Closure
CA		Civil Affairs
CA BDE		Civil Affairs Brigade
CAA		Clean Air Act
CAB		Combat Aviation Brigade
CALFEX		Combined Arms Live-Fire Exercises
CAV		Cavalry
CD		Calvary Division
CDOW		Colorado Department of Wildlife
CDPHE		Colorado Department of Public Health and Environment
CEQ		Council on Environmental Quality
CFR		Code of Federal Regulations
CID		Criminal Investigation Command

CO		Colorado
CO		carbon monoxide
CO_2		carbon dioxide
CO_2e		carbon dioxide equivalent
COA		Course of Action
COARNG		Colorado Army National Guard
CRM		Cultural Resources Manager
CWA		Clean Water Act
DA		Department of the Army
DMDC		Defense Manpower Data Center
DNR		Department of Natural Resources
DoD		Department of Defense
DOPPA		Description of Proposed Action and Alternatives
DOT		Department of Transportation
DPTMS		Directorate of Plans, Training, Mobilization and Security
DPW		Directorate of Public Works
DPW-E		Directorate of Public Works – Environmental Division
EIS		Environmental Impact Statement
EISA		Energy Independence and Security Act of 2007
ESMP		Endangered Species Management Plan
EMU		Ecological Management Unit
EO		Executive Order
EOD		Explosive Ordnance Detachment
EPD		Environmental Protection Division
ESA		Endangered Species Act
FC Reg		Fort Carson regulation
FH Reg		Fort Hood regulation
FIS		Facility Investment Strategy
FM		Field Manual
FMWR		Family Morale, Welfare and Recreation
FNSI		Finding of No Significant Impact
FORSCOM		Army Forces Command
FSGMP		Fort Stewart Growth Management Partnership
FY		Fiscal Year
GA		Georgia
GAO		Government Accountability Office
GHG		greenhouse gas

GSAB		General Support Aviation Battalion
GTA		Grow the Army
ha		hectares
HAP		Hazardous Air Pollutant
HCM		Highway Capacity Manual
HET		Heavy Equipment Transport
HI		Hawaii
HPC		Historic Properties Component
HQ		Headquarters
HQDA		Headquarter, Department of the Army
HUC		hydrologic unit code
IBCT		Infantry Brigade Combat Team
ICRMP		Integrated Cultural Resources Management Plans
ID		Infantry Division
INRMP		Integrated Natural Resources Management Plans
IONMP		Installation Operational Noise Management Plan
IPMP		Integrated Pest Management Plan
ISD		Independent School District
ITAM		Integrated Training Area Management
JTF-N C2F		Joint Task Force North Command and Control Facility
KDHE		Kansas Department of Health and the Environment
km		kilometer
km^2		square kilometers
KS		Kansas
KY		Kentucky
LA		Louisiana
LFX		Live-Fire Exercise
LINR		Locally Important Natural Resource
LOS		Level of Service
LRAM		Land Rehabilitation and Maintenance
LUA		limited use area
LUAs		Limited Use Areas
M		million
mm		millimeter
m^2		square meter
m^3		cubic meter
MAAF		Marshall Army Airfield

MBTA		Migratory Bird Treaty Act
MEDDAC		Medical Department Activity
METL		Mission Essential Task List
mg		milligram
MILCON		Military Construction
MIM		Maneuver Impact Mile
µg		microgram
MMT		million metric tons
MPRC		Multi-Purpose Range Complex
MPTR		Multi-Purpose Training Range
MS4		Municipal Separate Storm Sewer System
MVA		Military Value Analysis
NAAQS		National Ambient Air Quality Standards
NAGPRA		Native American Graves Protection and Preparation Act
NATO		North Atlantic Treaty Organization
NC		North Carolina
NCO		Non-commissioned Officer
ND		no data
NEPA		National Environmental Policy Act
NESHAP		National Emission Standards for Hazardous Air Pollutants
NHPA		National Historic Preservation Act
NM		New Mexico
NMPDES		New Mexico Pollutant Discharge Elimination System
NO_2		nitrogen dioxide
NO_x		nitrogen oxides
NOA		Notice of Availability
NOI		Notice of Intent
NOTAM		Notice to Airmen
NPDES		National Pollutant Discharge Elimination System
NRCS		Natural Resources Conservation Service
NRHP		National Register of Historic Places
NSR		New Source Review
NWI		National Wetlands Inventory
NY		New York
O&M		Operations and Maintenance
O_3		ozone
OLAs		Off-limit areas

OSD		Office of the Secretary of Defense
PA		Programmatic Agreement
PAVER		Pavement Maintenance Management System
Pb		lead
PCMS		Piñon Canyon Maneuver Site
PEA		Programmatic Environmental Assessment
PM_{10}		particles with an aerodynamic diameter less than or equal to a nominal 10 micrometers
$PM_{2.5}$		particles with an aerodynamic diameter less than or equal to a nominal 10 micrometers
POL		petroleum, oils, and lubricants
POV		privately owned vehicle
PPACG		Pikes Peak Area Council of Government
ppb		parts per billion
ppm		parts per million
PRTCI		Properties of Religious, Traditional, and Cultural Importance
PSD		Prevention of Significant Deterioration
RCI		Residential Communities Initiative
REC		Record of Environmental Consideration
ROD		Record of Decision
ROI		Region(s) of Influence
RTLP		Range and Training Land Program
SBCT		Stryker Brigade Combat Team
SDDC-TEA		Surface Deployment Distribution Command-Transportation Engineering Agency
SESCC		Soil Erosion and Sediment Control Component
SF		square feet
SHPO		State Historic Preservation officer
SIP		State Implementation Plan
SMA		Standard Maneuver Areas
SME		subject matter expert
SO_2		sulfur dioxide
SOF		Special Operations Forces
SOPs		standard operating procedures
sq mi		square miles
SRM		Sustainment, Restoration, and Modernization
SRP		Sustainable Range Program
SSA		Supply and Services
SWMP		Stormwater Management Plan

SWPPP		Stormwater Pollution Prevention Plan
SY		square yards
TC		Training Circular
TCEQ		Texas Commission on Environmental Quality
TCP		Traditional Cultural Property
TEMF		Tactical Equipment Maintenance Facilities
TMDL		Total Maximum Daily Load
TPDES		Texas Pollutant Discharge Elimination System
tpy		tons per year
TRACR		Targetry Range Automated Control and Recording
TX		Texas
TxDOT		Texas Department of Transportation
U.S.		United States
UAS		Unmanned Aircraft System
UAV		Unmanned Aerial Vehicle
UEPH		Unaccompanied Enlisted Personnel Housing
USACE		United States Army Corps of Engineers
USAEC		United States Army Environmental Center
USAPHC		U.S. Army Public Health Command
USAR		U.S. Army Reserve
USD		Unified School District (KS)
USDA		U.S. Department of Agriculture
USEPA		U.S. Environmental Protection Agency
USFWS		U.S. Fish and Wildlife Service
USGS		U.S. Geological Survey
VEC		valued environmental component
VOCs		Volatile Organic Compounds
WA		Washington (state)
WWTP		wastewater treatment plant

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