DRAFT
ENVIRONMENTAL IMPACT STATEMENT

BRAC 2005 AND TRANSFORMATION ACTIONS AT FORT BENNING, GA

April 2007

prepared for
Garrison, U.S. Army Infantry Center
Fort Benning, GA

prepared by
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Volume I

The NEPA Process

NEPA – the National Environment Policy Act of 1969 – is our national charter for protecting the environment. The goal of NEPA is to consider all appropriate environmental factors when making decisions involve the affected and interested public early in the environmental analysis process, seek less environmental damaging ways to do our jobs, and document in plain language for the decisionmaker (in this case the Army) and the public the impact analysis we used for the Transformation at Fort Benning. The vehicle used to meet these goals is the Environmental Impact Statement, or EIS. This is the highest level of analysis prepared under NEPA and we are using it for the Fort Benning Transformation action. Compliance with NEPA guidance for our EIS preparation involves several critical steps:

1. *Announce that an EIS will be prepared*. For this EIS, a Notice of Intent was published November 23, 2005 in the *Federal Register*.

2. *Conduct Scoping*. This is the first major step in identifying the relevant issues to be analyzed in depth and eliminate the issues that are not relevant. Within this process we are very active in soliciting comments from the public, local governments, federal and state agencies, Native American Tribes, and environmental groups to ensure their concerns and issues about the proposed Transformation action are included in the analyses. For this EIS, the Army held a scoping meeting in May 23, 2006 in Columbus, GA. In addition, over 200 notices were sent to the public, elected officials, federal, state, and local regulatory agencies announcing the proposed Transformation action and the scoping meeting date, time, and location.

3. *Prepare a draft EIS.* The first comprehensive document for public and agency review is the draft EIS. This document examines the environmental impacts of the Transformation action that were determined to be relevant from our scoping initiatives, and analyzes all reasonable alternatives, and a no action alternative. This draft EIS has been distributed to agencies, the public who have requested copies, and numerous repositories, as well as posted on a public website, to ensure the widest dissemination possible. Once we have filed the Notice of Availability of this document in the *Federal Register*, we begin a 45-day public comment period.

4. *Have a public comment period.* Our goal during this process is to ensure we receive any oral and written comment about the analysis presented in the draft EIS. We accomplish this through receipt of comments through the mail as well as at the public meeting. This meeting provides an open forum for discussion of the Transformation action and its alternatives and provides a direct feedback mechanism for the public and agencies to orally address or submit written comments directly to the Army. We provide a written response to all of the formal comments we receive during the public comment period as well as the issues presented at the public meeting. As appropriate to the analysis, these issues are included in the preparation of the final EIS. All of the comment are documented in this phase of the NEPA process and disclosed to the decisionmaker as part of the administrative record.

5. *Prepare a final EIS.* Following the draft EIS public comment period, a final EIS is prepared. This document will be a revision of the draft EIS, include all public and agency comments and the Army's responses, and provide the decisionmaker a comprehensive review of all the alternatives, their environmental impacts, and mitigation measures to minimize these impacts.

6. *Issue a Record of Decision (ROD).* The final step in the NEPA process sis the ROD. It identifies which alternative has been selected by the decisionmaker and what measures will be carried out by the Army to reduce any adverse impacts to the environment.

In addition to the NEPA process, on-going consultation and permitting requirements are being undertaken with federal, state, and local regulatory agencies. For instance, under the Endangered Species Act, a written Biological Assessment is required for all major construction activities prior to a federal agency authorizing, funding, or implementing proposed actions that may adversely affect a federally threatened or endangered species or their critical habitat. Formal Consultation involves up to a 90-day consultation period and an additional 45-day period for the U.S. Fish and Wildlife Service (USFWS) to prepare a Biological Opinion (BO) (135 days total). A BO is a written statement from the USFWS which summarizes the information on which the opinion is based and details how the proposed action will affect the species or their critical habitat. The U.S. Army Corps of Engineers (Corps) also requires wetlands permits applications be submitted and then approved by the Corps prior to disturbing jurisdictional wetlands; and where applicable, construction permits and plans will need to be submitted to federal, state, and local agencies prior to any land disturbing activities can occur.

Draft Environmental Impact Statement
for BRAC 2005 and Transformation
Actions at Fort Benning, Maryland

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Environmental Impact Statement for BRAC 2005 and Transformation Actions at Fort Benning, Georgia

Lead/Responsible Agency:	U.S. Army Infantry Center
Title of the Proposed Action:	BRAC 05 Realignment and Transformation Actions at Fort Benning, Georgia Chattahoochee and Muscogee Counties
Designation:	Draft Environmental Impact Statement (EIS)
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Abstract: This Draft EIS has been prepared in accordance with the National Environmental Policy Act (NEPA) and Army implementing regulation. This document analyzes the potential environmental impacts of the proposed Transformation action at Fort Benning, Georgia. The proposed Transformation action includes: Base Closure and Realignment Commission (BRAC)-directed actions, Army Modular Force (AMF) initiatives whereby the Army is transitioning from a division-centric design to a standard brigade organization., as well as accommodating the reshaping of the domestic military infrastructure for the return of units currently based overseas as part of the Global Defense Posture and Realignment (GDPR). Finally, discretionary stationing actions (activations, inactivations, realignments, and relocations in response to BRAC-directed actions) contribute to and are interrelated with the Transformation process. These Realignment and Transformation actions have been grouped into one Transformation action and the potential environmental effects of these Transformation actions are being evaluated together in this draft EIS. Environmental consequences of two action alternatives—Alternative A and the preferred Alternative B—as well as the No Action Alternative were evaluated for 14 resources. For all resources, the No Action Alternative constitutes the existing conditions—if the proposed action were not implemented, the Installation would not experience the development described in this document and no changes to resources would occur. Under Alternative A, about 10,000 acres would be disturbed by Transformation activities; under Alternative B, 19,100 acres would be disturbed. Land use and management would not be altered under either action alternative; aesthetic and visual resources would experience short-term impacts due to construction activities but would not be adverse in the long term. In terms of socioeconomics, development would take place and positive input into the economy is anticipated under both action alternatives, housing would be required and if the local market could not support this increase in needs there could be minor short-term effects. On-Post traffic congestion both during the construction period and operational phases is anticipated as well as traffic build up at the main gate during peak hours; however, these would not be to such an extent to be adverse. Air quality would experience short term construction emissions increases but would not adversely affect regional air quality in the long term. Noise would increase off Post and could increase the potential for annoyance in adjacent communities but would not introduce adverse health impacts. Utilities and hazardous and toxic materials and waste would not be adversely impacted by the proposed action. However, soils, water resources (including wetlands and state designated impaired streams), special status species (particularly the a population of relict trillium and the Red-cockaded woodpecker), and Unique Ecological Areas could experience adverse impacts under either action alternative.

EXECUTIVE SUMMARY

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ES.1 INTRODUCTION

The Department of Defense (DoD) is reorganizing doctrine, force structure, and Installation infrastructure, to support more effectively its mission, increase operational readiness, and facilitate new ways of doing business. A primary vehicle for this reorganization effort and the overall military Transformation process is the Base Realignment and Closure (BRAC) process. On September 8, 2005, the Defense Base Closure and Realignment Commission ("BRAC Commission") recommended a set of domestic realignment and closure actions. These recommendations were approved by the President on September 15, 2005, and forwarded to Congress. The Congress did not alter any of the BRAC Commission's recommendations, and on November 9, 2005, the recommendations became law. The BRAC Commission recommendations must now be implemented as provided for in the Defense Base Closure and Realignment Act of 1990, Public Law (PL) 101-510, as amended (BRAC Law)

In addition, in October 1999, nearly 6 years prior to the BRAC Commission recommendations becoming law, the Secretary of the Army and the Chief of Staff articulated a vision about people, readiness, and Transformation of the U.S. Army (Army) to meet the demands of the 21st century. In what is termed the Army Modular Force (AMF) initiative, the Army is transitioning from a division-centric design to a standard brigade organization. The resultant combat arms brigades will be task-organized with organic combined arms capabilities, whereas supporting brigades will have standardized headquarters but variable subordinate units. The reshaping of the domestic military infrastructure also includes provision for the return of units currently based overseas as part of the Global Defense Posture Realignment (GDPR). Finally, discretionary stationing actions (activations, inactivations, realignments, and relocations) authorized by Army Regulation (AR) 5-10, Stationing, can contribute to and be interrelated with the Transformation process.

In accordance with 40 Code of Federal Regulation (CFR) Section 1502.4, of the National Environmental Policy Act (NEPA) implementing regulation, and the Army NEPA Regulation (32 CFR Part 651) the Army has determined that the BRAC, AMF, GDPR, and other stationing actions and development at Fort Benning are all Transformation activities closely related to each other and would be implemented in the same timeframe on Fort Benning. Thus, these Transformation actions have been grouped into one proposed action and the potential environmental effects of these Transformation actions are being evaluated together in this environmental impact statement (EIS).

ES 2 PURPOSE AND NEED

The underlying purpose of the Army's proposed action is to implement Transformation actions (BRAC, GDPR, AMF, and certain other stationing actions) that are interrelated to such an extent that they are, in effect, a single course of action. The overarching need for the proposed action is to improve the ability of the nation to respond rapidly to challenges of the 21st century. The Army mission is to defend the United States and its territories, support national policies and objectives, and defeat nations responsible for

aggression that endanger the peace and security of the United States. To carry out these tasks, the Army must adapt to changing world conditions and improve its capabilities to respond to a variety of circumstances across the full spectrum of military operations.

ES 3 PROPOSED ACTION

Under the proposed action, the Army would provide the facilities, infrastructure, and equipment needed to support the Transformation activities at Fort Benning: 1) BRAC, 2) GDPR (overseas re-stationing), 3) AMF, and 4) other related stationing activities. The construction activities associated with the proposed action would occur within the bounds of Fort Benning. The proposed construction of administrative, supply/storage, maintenance, barracks, commercial services, community facilities, medical and dental, and recreation facilities is focused on the cantonment areas. A combination of redevelopment (e.g., renovation), development, and expansion would occur at the four major cantonment areas: Main Post, Kelley Hill, Sand Hill, and Harmony Church. Training assets, in the form of ranges and maneuver areas, are found throughout the Installation. The proposed improvements/upgrades to existing ranges and maneuver areas and proposed new ranges were sited to align with these existing assets.

ES 3.1 BRAC-Directed Stationing Actions

The BRAC Commission directed the following actions at Fort Benning:

1. Relocate the Armor School and Center from Fort Knox, KY to Fort Benning. The U.S. Army Armor School (USAARMS) trains armor and cavalry Soldiers, noncommissioned officers, and officers to fight in full spectrum operations to meet the requirements of the Army in the contemporary operational environment. The USAARMS serves as the trainer of the current mounted force and develops the tools for the future mounted force. The School also trains Marines as M1A1 (Abrams) tank crewmen and tank mechanics; this training includes basic and advanced instruction for commissioned and noncommissioned officers. Once the Armor School and Center are relocated, they would join the existing Infantry Center and School at Fort Benning to create the Maneuver Center of Excellence where Soldiers and Marines would be trained in both armor and infantry tactics.
2. Relocate the 81st Regional Readiness Command (RRC) Equipment Concentration Site (ECS) from Fort Gillem, GA to Fort Benning. In general, the 81st RRC has command and control of units assigned to prepare for successful mission performance and mobilization. The RRC ECS supports the equipment used for mission performance and mobilization.
3. Close the U.S. Army Reserve Center (USARC) in Columbus, GA and relocate and consolidating the units (together with Army Reserve Units currently on Fort Benning) into a new USARC on Fort Benning. The Army Reserve's mission is to provide trained and ready Soldiers and units with the critical combat support capabilities necessary to support national strategy during peacetime, emergency contingencies, and war.

4. Relocate the Drill Sergeant School from Fort Benning to Fort Jackson, SC. The Drill Sergeant School trains noncommissioned officers in the duties and responsibilities associated with Drill Sergeants so that they can train, supervise, and lead initial entry Soldiers. Fort Jackson is preparing a separate NEPA document for this action.

ES 3.2 BRAC-Discretionary Stationing Actions

BRAC-discretionary Transformation actions involve those activities and/or missions that were not specifically directed by the BRAC Commission but were impacted because their current Installations' mission might have changed, have closed, and/or was realigned due to BRAC-directed actions. At Fort Benning these discretionary actions include:

- Criminal Investigation Command (CID) 86th Military Police (MP) Detachment from Fort McPherson and the 3rd MP Group (brigade headquarters) from Fort Gillem, GA would be relocated due to the BRAC-directed actions at both installations and join the existing CID operational battalions at Fort Benning.
- Veterinary Clinic represents the transfer of personnel currently assigned to the BRAC-directed installation for closure, Fort McPherson's Veterinary Clinic. In addition, Fort Benning is increasing the number of military working dog teams due to Transformation actions and the existing on-Post veterinary clinic is not large enough to support the increased number of military working dog units.
- The Blood Donor Center would be relocated from Fort Knox to Fort Benning. Currently, Fort Benning is served by the Blood Donor Center at Fort Gordon. With the Armor School and Center population move to Fort Benning, the Fort Knox center loses a great number of donors and it would be more efficient and effective to have an on-site blood donor center at Fort Benning with the increased number of potential donors.
- Reassign field auditors from the U.S. Army Audit Agency (USAAA) field office at the closing Fort McPherson to the realigned Fort Benning. This unit would be relocated to Fort Benning to remain a field office providing continued independent auditing services in the southeast region.

ES 3.3 GDPR Transformation

For the GDPR, the 286th MP (CID) would relocate from overseas to Fort Benning and join other CID units being relocated under BRAC as discretionary moves. In addition, an Explosive Ordinance Disposal Company and a Movement Control Team would be moved to Fort Benning from overseas.

ES 3.4 AMF Transformation

Under AMF, one brigade from the 3rd Infantry Division (3 ID) has been transformed to create the Army's new heavy BCT force structure at Fort Benning. The 36th Engineer Group (ENG) would continue to realign as a Sustainment Brigade, which includes the Multi-Role Bridge Company (MRBC). The 63rd Engineer Company (Combat Support Equipment [CSE]) would be converted to the 11th Engineer Battalion and the 507th Sustainment Group would be activated at Fort Benning in 2011.

ES 3.5 Other Army Stationing

For AR 5-10 stationing activities, the Special Operations Command (SOCOM) at Fort Benning would gain personnel from other locations across the United States. Figure ES-1 and Table ES-1 provide an overview of the Transformation activities that would occur at Fort Benning under the proposed action.

Figure ES-1: Overview of Fort Benning Transformation Actions

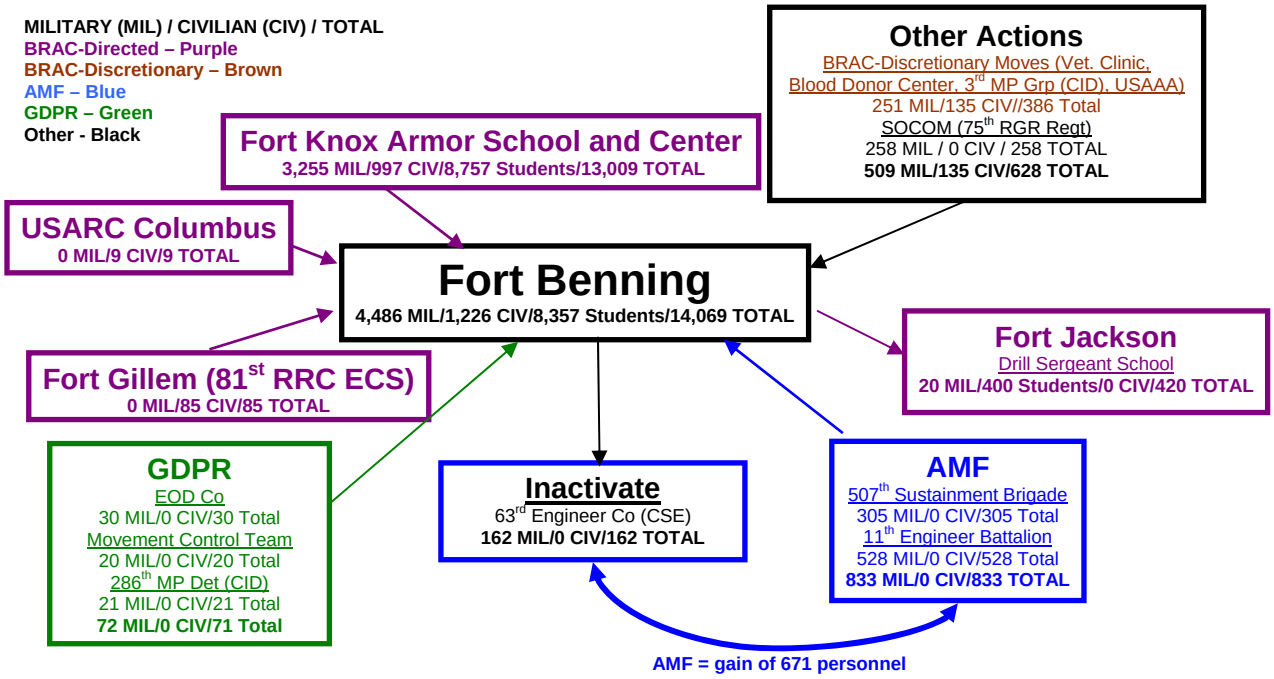

Table ES-1: Personnel Breakdown For Transformation Actions

TRANSFORMATION ACTION	PERSONNEL			
	Military	**Civilian**	**Students***	**Total**
BRAC-DIRECTED				
Relocate Army School and Center, Fort Knox, KY	3,255	997	8,757	13,009
Relocate USARC Columbus, GA	0	9	0	9
Relocate 81st RRC ECS, Fort Gillem, GA	0	85	0	85
Relocate Drill Sergeant School to Fort Jackson, SC	-20	0	-400	-420
TOTAL BRAC-DIRECTED	**3,235**	**1,091**	**8,357**	**12,683**
OTHER ACTIONS				
BRAC-Discretionary relocation of Veterinary (Vet.) Clinic, Blood Donor Center, 3rd MP Grp (CID), USAA	251	135	0	386
SOCOM (75th Ranger Regiment [RGR Regt])	258	0	0	258
TOTAL OTHER	**509**	**135**	**0**	**644**
AMF				
Inactivate 63rd Engineer Co	-162	0	0	-162
Activate 11th Engineer Battalion (Tied to Above)	528	0	0	528
Activate 507th Sustainment Brigade	305	0	0	305
TOTAL AMF	**671**	**0**	**0**	**671**
GDPR				
EOD Co	30	0	0	30
Movement Control Team	20	0	0	20
286th MP Det (CID)	21	0	0	21
TOTAL GDPR	**71**	**0**	**0**	**71**
TOTAL GAIN AT FORT BENNING	**4,486**	**1,226**	**8,357**	**14,069**

** Student totals represent the average daily number of students on Fort Benning.*

ES 3.6 Proposed Cantonment Area Development

Infrastructure development under the proposed action would occur within the four cantonment areas of Fort Benning (Main Post, Harmony Church, Kelley Hill, and Sand Hill) and training ranges. The precise locations of project siting, within the cantonment and training range areas, may change following finalization of design and issuance of the Record of Decision (ROD). If projects are moved/added/modified following the ROD, then evaluation will be done to determine the potential environmental impacts of these changes and the appropriate level of NEPA analysis required.

In general, cantonment area development to support Transformation activities include: headquarters buildings/facilities supporting administrative and operational functions, numerous barracks complexes to house Armor School student trainees; instructional/training classroom facilities; vehicle maintenance instruction facilities; vehicle maintenance shops, motor pools, and wash stands. In addition, to support the increased Fort Benning population, utility, road, and communication systems would need to be upgraded or built depending on the facility location; the existing hospital would be replaced; dental and medial clinics built and some existing health facilities expanded; child development centers established to meet increased pre- and elementary-school numbers; as well as a physical fitness center, chapel, lodging, and dining facilities.

ES 3.7 Proposed Range and Training Area Requirements

The range and training operations requirements of the proposed action are primarily driven by the gain of the Armor School and Center; however, they are also interrelated and synergistic with other

Transformation activities and existing missions at Fort Benning. Range and training operation requirements are reflected in the equipment to be used, the operations undertaken, and the ranges and maneuver areas proposed. The equipment used by units/organizations to be relocated to Fort Benning include tanks, Bradley Fighting Vehicles (BFVs), High Mobility Multipurpose Wheeled Vehicles (HMMWVs), trucks, and trailers for operational needs as well as maintenance instruction.

The construction and operation of the numerous new range training facilities identified for the Transformation activities at Fort Benning would support Armor School training requirements. Training units of the Armor School include the 1st Armor Training Brigade, 16th Cavalry Regiment, and U.S. Army Noncommissioned Officer Academy.

ES 4 ALTERNATIVES

Alternatives form the core of the NEPA process. In compliance with Army NEPA and Council of Environmental Quality (CEQ) regulations, the Army must consider reasonable alternatives to the proposed action. Only those alternatives determined as reasonable relative to their ability to fulfill the need for a proposed action warrant detailed analysis. In conformance with these requirements, the Army explored potential alternatives. Options considered included alternative locations for facilities, activities, and ranges; phasing of implementation; and modifying personnel realignments—few of these options proved reasonable relative to the purpose and need. In particular, the directed realignments of functions, units, and personnel, as specified under BRAC Law, must be implemented. BRAC Law states that NEPA does not apply to "the need for transferring functions to any military installation which has been selected as the receiving installation . . . Or military installations alternative to those recommended or selected." Since these realignment actions (e.g., Armor School and Center) constitute the majority of the proposed action and cannot be substantively modified, options for the remainder of the related (but non-BRAC) actions to support the realignments are, necessarily, constrained.

Following consideration of options, the Army has identified three alternatives: the No Action Alternative, Alternative A, and Alternative B (the Army preferred alternative). The following summarizes these alternatives.

ES 4.1 No Action Alternative

The CEQ regulations that implement NEPA require that a No Action Alternative must be included and analyzed (40 CFR 1502.14[d]). Under the No Action Alternative, existing Fort Benning missions would continue as they were being performed in November 2005 when the BRAC Commission recommendations became law, plus completion and operation of the Digital Multi-Purpose Range Complex. For this analysis, the No Action Alternative serves as the baseline against which the impacts of the two action alternatives (A and B) are measured. Because BRAC Law mandates closure and realignment of installations, the No Action Alternative is not possible for directed BRAC actions but would still be required for the other Transformation activities included in the proposed action.

ES 4.2 Cantonment Area Transformation Development Common to Both Alternatives A and B

Under Alternatives A and B, cantonment area development would be the same except for an interchange within Harmony Church (see ES 4.2.2). For each project, Table ES-2 indicates general location, the project type/title, the year in which the project is constructed, and building/facility footprint.

Table ES-2: Projected Cantonment Area Development—Transformation Alternatives A and B

Action	Project Title	Year Constructed	Facility Footprint (Acres)
BRAC	Infrastructure Support (includes Fire Station, Ammunition Supply Point, Access Control Points, Marne Rd./ Lindsay Creek Pkwy Intersection Improvements)	2008	21.00
BRAC	Construct Installation-Wide Roads, Paved	2010	94.39
Harmony Church			
BRAC	Initial Entry Training (IET) Brigade Headquarters Building	2007	7.59
BRAC	Trainee Barracks Complex 1	2007	60.00
BRAC	Training Support Brigade Complex (Phase I and 2)	2007-2008	100.00
NON-BRAC	Trainee Barracks Complex 3	2008	60.00
NON-BRAC	Maneuver Center Simulation Facility	2008	8.00
BRAC	Unit Maintenance Activity Facility	2008	20.00
BRAC	Troop Medical Clinic	2008	12.00
BRAC	16th CAV Regt HQ Building Complex (BDE, BN, and Company Operations Facilities (COFs)	2008	16.00
BRAC	Armor Officer Basic Course Headquarters Complex Conversions	2009	1.00
BRAC	Vehicle Maintenance Instruction Facility	2009	20.00
NON-BRAC	Centralized Wash Facility with Soaking Capability	2009	25.00
BRAC	Army Reserve Center	2010	6.20
BRAC	Equipment Concentration Site (ECS)	2010	9.86
NON-BRAC	Recreation Center, Harmony Church	2011	7.00
NON-BRAC	Physical Fitness Center with Pool	2011	20.00
NON-BRAC	3 ID BCT (Heavy) Complex	2011	4.09
NON-BRAC	Battle Command Training Center	2012	7.00
NON-BRAC	Chapel	2012	4.00
Kelley Hill			
BRAC	General Instruction Building Complex (includes Student Dining Facility and Main Post Quartel, Non-Unaccompanied Personnel Housing (UPH) Billeting Space to Transient UPH Advanced Skills Training, Infantry Officer Basic Course Headquarters Complex Building Conversions)	2008-2010	36.00
NON-BRAC	Direct Support/General Support (DS/GS) Vehicle Maintenance Facility	2012	37.00
Main Post			
BRAC	Child Development Center 6-10 Years	2007	9.00
NON-BRAC	Special Operations Forces (SOF) Special Troops Battalion HQ Building	2008	2.02
NON-BRAC	SOF Ranger HQ Addition	2008	0.29

Table ES-2: Projected Cantonment Area Development—Transformation Alternatives A and B

Action	Project Title	Year Constructed	Facility Footprint (Acres)
NON-BRAC	SOF Vehicle Maintenance Shop	2008	1.23
NON-BRAC	Maneuver Center Renovations, Building 4	2008-2010	1.84
NON-BRAC	CIDC Group/BDE Headquarters Building	2009	0.24
BRAC	Consolidated Troop Medical Clinic	2009	1
BRAC	Hospital Replacement	2009-2010	51.00
NON-BRAC	Museum Operations Support Buildings	2009	22.30
BRAC	Maneuver Center Headquarters Building Expansion and Capabilities Development and Integration (CDI) Directorate Facility	2010	10.00
NON-BRAC	Headquarters Complex, 14th Combat Support Hospital	2012	1.90
NON-BRAC	Barracks Complex	2011	20.00
NON-BRAC	SOF Ranger Support Company HQ	2011	0.94
NON-BRAC	Child Development Center Under 6 Years	2013	3.00
Sand Hill			
BRAC	Trainee Barracks Complex 2	2007	60.00
BRAC	Health Clinic Expansion - Winder	2008	1.50
BRAC	Solomon Dental Clinic Expansion	2008	1.30
BRAC	Training Aids Center Building Conversions	2008	2.60
NON-BRAC	Reception Station Barracks and Processing Center	2008-2010	20.00
NON-BRAC	Chapel	2012	4.00

ES 4.2.1 Range Development—Transformation Alternative A

To support the training range requirements, small- and large-caliber weapons ranges, heavy maneuver areas and corridors, a drivers training course, off-road drivers training area, and vehicle recovery area would need to be constructed. Table ES-3 lists these projects under Alternative A.

Table ES-3: Transformation Alternative A – Projected Range Development Projects

North of U.S. Highway 27/280			
Action	**Location**	**Year Constructed**	**Facility Footprint (Acres)**
BRAC	Tank/Fighting Vehicle Stationary Gunnery Range-ST1	2007	741.00
BRAC	Fire and Movement Range-FM1	2007	3.00
BRAC	Modified Record Fire Range-MRF2	2007	24.00
BRAC	Modified Record Fire Range-MRF4	2008	24.00
BRAC	Modified Record Fire Range-MRF6	2008	24.00
BRAC	Modified Record Fire Range-MRF3	2008	24.00
BRAC	Combat Pistol Qualification Complex	2008	2.00
NON-BRAC	Rifle/Machinegun Zero Range-Z1	2008	1.00
NON-BRAC	Rifle/Machinegun Zero Range-Z2	2008	1.00
NON-BRAC	Rifle/Machine Gun Zero Range-Z4	2008	1.00

Table ES-3: Transformation Alternative A – Projected Range Development Projects

Action	Location	Year Constructed	Facility Footprint (Acres)
NON-BRAC	Heavy Maneuver Corridor – South	2009	81.00
NON-BRAC	Basic and Advanced Drivers Training Course, Off-Road Drivers Training, and Vehicle Recovery Area	2009	48.00
NON-BRAC	Heavy Maneuver Area – North	2009	16.11
BRAC	Modified Record Fire Range-MRF5	2009	24.00
NON-BRAC	Rifle/Machine Gun Zero Range-Z5	2009	1.00
NON-BRAC	Combined Arms Collective Training Facility, Phase II (CACTF)	2009	9.80
NON-BRAC	Rifle/Machinegun Zero Range-Z3	2009	1.00
BRAC	Tank/Fighting Vehicle Stationary Gunnery Range-ST2	2009	741.00
NON-BRAC	Repair Existing Training Area Roads, Paved	2010	0.00
BRAC	Fire and Movement Range-FM3	2010	3.00
NON-BRAC	Multi-Purpose Machine Gun Range-MPMG3	2011	238.00
NON-BRAC	Rail Car Storage and Tracks for Deployment	2012	22.00
South of U.S. Highway 27/280			
NON-BRAC	Qualification Training Range-QTR	2011	238.00

ES 4.2.2 Range Development—Transformation Alternative B (Preferred Alternative)

Under preferred alternative, Alternative B, all cantonment area construction would be the same as that described in Alternative A, with the exception of the Harmony Church interchange. Under Alternative B, this interchange would be moved to another location within Harmony Church. In total, approximately 2,011 acres would be developed within the cantonment areas. Under Transformation Alternative B; however, several training areas would move or change. Table ES-4 lists these range projects, the major difference between the two alternatives is that the heavy maneuver training moves to the southern portion of the Installation, the drivers training area moves adjacent to Harmony Church cantonment area, the Heavy Maneuver Corridor – South decreases in size, and Heavy Maneuver Area – North would not be specifically managed for the Armor School training.

Table ES-4: Transformation Alternative B – Projected Range Development Projects

North of U.S. Highway 27/280			
Action	**Location**	**Year Constructed**	**Facility Footprint (Acres)**
BRAC	Fire and Movement Range-FM1	2007	3.00
BRAC	Modified Record Fire Range-MRF2	2007	24.00
BRAC	Tank/Fighting Vehicle Stationary Gunnery Range-ST1	2007	741.00
BRAC	Modified Record Fire Range-MRF4	2008	24.00
BRAC	Modified Record Fire Range-MRF6	2008	24.00
BRAC	Modified Record Fire Range-MRF3	2008	24.00
BRAC	Combat Pistol Qualification Complex	2008	2.00
NON-BRAC	Rifle/Machinegun Zero Range-Z1	2008	1.00
NON-BRAC	Rifle/Machinegun Zero Range-Z2	2008	1.00

Table ES-4: Transformation Alternative B – Projected Range Development Projects

Action	Location	Year Constructed	Facility Footprint (Acres)
NON-BRAC	Rifle/Machine Gun Zero Range-Z4	2008	1.00
NON-BRAC	Modified Record Fire Range-MRF5	2009	24.00
NON-BRAC	Rifle/Machine Gun Zero Range-Z5	2009	1.00
NON-BRAC	Combined Arms Collective Training Facility, Phase II (CACTF)	2009	9.80
NON-BRAC	Rifle/Machinegun Zero Range-Z3	2009	1.00
NON-BRAC	Modified Heavy Maneuver Corridor – South	2009	81.00
NON-BRAC	Basic/Advanced Drivers Training Course	2009	48.00
NON-BRAC	Vehicle Recovery Area	2009	NA
NON-BRAC	Off-Road Drivers Training	2009	16.11
BRAC	Tank/Fighting Vehicle Stationary Gunnery Range-ST2	2009	741.00
BRAC	Fire and Movement Range-FM3	2010	3.00
NON-BRAC	Repair Existing Training Area Roads, Paved	2010	0.00
NON-BRAC	Multi-Purpose Machine Gun Range-MPMG3	2011	238.00
NON-BRAC	Rail Car Storage and Tracks for Deployment	2012	22.00
South of U.S. Highway 27/280			
NON-BRAC	Good Hope Maneuver Area	2009	16.11
NON-BRAC	Road access, tank trail upgrades	2009	72 miles
NON-BRAC	Qualification Training Range-QTR	2011	238.00

Table ES-5 provides a comparison of Alternatives A and B, for disturbance areas. These disturbance areas include the construction footprints for facilities, infrastructure improvements, road construction/upgrades, and range establishment (including ordnance impact zones, heavy use areas where training activities and maintenance would occur, and heavy use within the maneuver corridors and areas). In summary, cantonment area disturbance, at 2,011 acres, would be the same under either alternative; however, Alternative A range improvements disturbance area would total 10,741 acres, whereas the preferred alternative (B) would total 19,012, acres. Alternative B includes greater acreage to allow for more training flexibility and avoidance of many sensitive environmental resources.

Table ES-5: Summary Area of Potential Effect by Geographic Area in Acres

ALTERNATIVE A								
	2007	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**Total**
Cantonment Areas								
Harmony Church	519	141	136	71	56	195	0	1,118
Kelley Hill	78	0	0	0	0	7	0	85
Main Post	220	119	181	0	0	34	8	562
Sand Hill	27	209	0	0	0	10	0	246
Cantonment Area Subtotals	**844**	**469**	**317**	**71**	**56**	**246**	**8**	**2,011**
Ranges								
Range Facilities North of U.S. Highway 27/280	1,338	736	1,312	95	407	95	0	3,983
Range Facilities South of U.S. Highway 27/280	0	0	0	15	433	0	0	448
Heavy Maneuver Area – North (North of U.S. Highway 27/280)	0	0	943	0	0	0	0	943
Heavy Maneuver Corridor – (North of U.S. Highway 27/280)	0	0	2,734	0	0	0	0	2,734
Drivers Training Area (includes Basic and Advanced Drivers Training Courses, Vehicle Recovery, and Off-Road Drivers Training) (North of U.S. Highway 27/280)	0	0	622	0	0	0	0	622
Range Area Subtotals	**1,338**	**736**	**5,611**	**110**	**840**	**95**	**0**	**8,730**
ALTERNATIVE A TOTALS	***2,182***	***1,205***	***5,928***	***181***	***896***	***341***	***8***	***10,741***
ALTERNATIVE B								
	2007	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**Total**
Cantonment Areas								
Harmony Church	519	141	136	71	56	195	0	1,118
Kelley Hill	78	0	0	0	0	7	0	85
Main Post	220	119	181	0	0	34	8	562
Sand Hill	27	209	0	0	0	10	0	246
Cantonment Area Subtotals	**844**	**469**	**317**	**71**	**56**	**246**	**8**	**2,011**
Ranges								
Range Facilities North of U.S. Highway 27/280	1,395	736	1,312	95	419	95	0	4,052
Range Facilities South of U.S. Highway 27/280	22	0	29	15	433	0	0	499
Good Hope Maneuver Area (South of U.S. Highway 27/280)	0	0	9,499	0	0	0	0	9,499
Heavy Maneuver Corridor – South (North of U.S. Highway 27/280)	0	0	1,866	0	0	0	0	1,866
Basic and Advanced Drivers Training Courses (Harmony Church)	0	0	201	0	0	0	0	201
Vehicle Recovery Area (Harmony Church)	0	0	513	0	0	0	0	513
Off-Road Drivers Training Area (North of U.S. Highway 27/280)	0	0	459	0	0	0	0	459
Range Area Subtotals	**1,417**	**736**	**13,879**	**110**	**852**	**95**	**0**	**17,089**
ALTERNATIVE B TOTALS	***2,261***	***1,205***	***14,196***	***181***	***908***	***341***	***8***	***19,100***

ES 5 ENVIRONMENTAL CONSEQUENCES

This EIS presents the existing environmental and potential environmental consequences that could result from each alternative. Under the No Action Alternative, the proposed personnel and functions associated with the BRAC, AMF, GDPR, and other stationing actions would not move to Fort Benning, no support facilities would be constructed, and no additional environmental impacts would occur. Under either action alternative (A and B) there is the potential to have significant and/or adverse effects, depending on the resource. A summary of impacts by resource area for the No Action Alternative and Transformation Alternatives A and B is provided in Table ES-6.

Table ES-6: Summary of Effects of the No Action Alternative and Transformation Alternatives A and B

Resource	No Action Alternative	Transformation Alternative A	Transformation Alternative B (Preferred Alternative)	Mitigation Measures
Land Use (Section 4.2)				
Fort Benning Land Use and Management	No change from existing conditions.	No adverse impacts are anticipated. Land use stays unchanged within the Installation. Cantonment-developed areas would increase but are consistent with existing land uses.	Same as Alternative A	No mitigation measures required.
Off-Post Land Use and Management	No change from existing conditions.	Land use outside Installation boundaries would not change; therefore, no adverse impacts would occur.	Same as Alternative A with the exception of the potential to adversely impact residential community adjacent to Good Hope Maneuver Area.	Mitigation measures include limiting nighttime training in Good Hope Maneuver Area and informing adjacent community of training schedule.
Aesthetic and Visual Resources (Section 4.3)				
Cantonment Areas	No change from existing conditions.	Minor visual impacts due to construction equipment. No adverse impacts because visual compatibility of new structures would be maintained through design and consistency with existing structures.	Same as Alternative A.	No mitigation measures required.
Range Areas	No change from existing conditions.	Minor impacts during construction phase; however, visual compatibility with adjacent training lands would be maintained.	Same as Alternative A.	No mitigation measures required.

Table ES-6: Summary of Effects of the No Action Alternative and Transformation Alternatives A and B

Resource	No Action Alternative	Transformation Alternative A	Transformation Alternative B (Preferred Alternative)	Mitigation Measures
Socioeconomics (Section 4.4)				
Economic Developments and Demographics	No change from existing conditions.	Minor direct and indirect beneficial effects due to increase in population and services required to support this growth.	Same as Alternative A.	No mitigation measures required.
Housing	No change from existing conditions.	Minor effects anticipated if local housing stock not able to meet growth.	Same as Alternative A.	No mitigation measures required.
Quality of Life	No change from existing conditions.	Minor negative effects expected on schools if community cannot accommodate the increased population. No adverse effects anticipated for public services such as health care, police, or fire departments. Positive impacts to employment and income.	Same as Alternative A.	No mitigation measures required.
Environmental Justice and Protection of Children	No change from existing conditions.	No adverse impacts anticipated to disproportionately impact low income or minority populations or children's health.	Same as Alternative A.	No mitigation measures required.

Table ES-6: Summary of Effects of the No Action Alternative and Transformation Alternatives A and B

Resource	No Action Alternative	Transformation Alternative A	Transformation Alternative B (Preferred Alternative)	Mitigation Measures
Transportation (Section 4.5)				
Main Post Cantonment Area	No change at three intersections from existing conditions. One additional intersection fails; therefore, severe impacts are anticipated. Implementation of traffic study recommendations to widen roads and improve intersections would minimize impacts.	Severe impacts at several intersections where level of service decreases to threshold levels of failure in the morning and evening peak hours. Implementation of traffic study recommendations to widen roads and improve intersections would minimize impacts.	Same as Alternative A.	No mitigation measures required.
Kelley Hill Cantonment Area	No substantive change from existing conditions. Level of service decreases at two existing failed intersections; therefore, severe, but not adverse, impacts would result. Implementation of traffic study recommendations to widen roads and improve intersections would minimize impacts.	Severe impacts at one intersection where level of service decreases to threshold levels. Implementation of traffic study recommendations to widen roads and improve intersections would minimize impacts.	Same as Alternative A.	No mitigation measures required.

Table ES-6: Summary of Effects of the No Action Alternative and Transformation Alternatives A and B

Resource	No Action Alternative	Transformation Alternative A	Transformation Alternative B (Preferred Alternative)	Mitigation Measures
Sand Hill Cantonment Area	No change from existing conditions	Severe impacts at two intersections where level of service decreases to threshold levels. Implementation of traffic study recommendations to widen roads and improve intersections would minimize severity of impacts.	Same as Alternative A.	No mitigation measures required.
Harmony Church Cantonment Area	No change from existing conditions	Moderate impacts to level of service during morning and evening peak hours at access control point due to construction of new interchange in Harmony Church under the proposed action. Implementation of traffic study recommendations to widen roads and improve intersections would minimize impacts.	Same as Alternative A for cantonment area access. For heavy maneuver training access, a dedicated heavy vehicle overpass would be built and would preclude conflicts with local traffic; therefore, no adverse impacts.	No mitigation measures required.
Utilities (Section 4.6)				
Potable Water Supply, Wastewater System, Stormwater System, and Energy Sources	No change from existing conditions	No adverse impacts anticipated if all existing federal, state, and local regulatory procedures and permitting requirements are followed.	Same as Alternative A.	No mitigation required.

Table ES-6: Summary of Effects of the No Action Alternative and Transformation Alternatives A and B

Resource	No Action Alternative	Transformation Alternative A	Transformation Alternative B (Preferred Alternative)	Mitigation Measures
Noise (Section 4.7)				
	No change from existing conditions; sensitive noise receptors within and outside the Installation would continue to be adversely impacted from exposure to Zone III noise levels.	Impacts from construction activities would not be adverse. Impacts from Zone III noise levels would increase outside of the Installation by 11 acres creating continued adverse impacts to one residence. Human hearing and health would not be adversely impacted by these noise levels. Zone III levels would increase on Post by about 10,700 acres, but would decrease within the cantonment areas. Exposure to Zone III levels of sensitive receptors; however, would continue.	All impacts would be the same as described for Alternative A except that increased vehicular noise and training weapons use would occur in the Good Hope Maneuver Area and the associated noise would be negligible but not adverse to the adjacent community near Cusseta.	Incompatible land uses (such as the hospital and homes) within Zone III may require noise attenuation for mitigation.
Air Quality (Section 4.8)				
	No change from existing conditions; continued training, operations/maintenance, and prescribed burning would introduce pollutants into the regional air quality but would continue to be moderately adverse.	Short term emissions from construction would increase but would not adversely affect regional air quality and no Class I PSD areas would be affected. Long-term impacts from increased operations and maintenance activities would be minimal and would not adversely impact regional air quality or Class I PSD areas.	All impacts would be the same as described for Alternative A.	No mitigation required.

Table ES-6: Summary of Effects of the No Action Alternative and Transformation Alternatives A and B

Resource	No Action Alternative	Transformation Alternative A	Transformation Alternative B (Preferred Alternative)	Mitigation Measures
Hazardous and Toxic Materials and Waste (Section 4.9)				
Hazardous Materials Storage, Use, and Handling	No change from existing conditions	Materials used, stored, and handled would increase; however, existing procedures, regulations, and facilities would be able to meet storage, use, and handling requirements. No adverse impacts anticipated.	All impacts would be the same as described for Alternative A.	No mitigation required.
Toxic Substances Management and Hazardous Waste Management	No change from existing conditions	Existing management plans would need to be updated to reflect the change in mission at Fort Benning. This would not introduce any adverse impacts.	All impacts would be the same as described for Alternative A.	No mitigation required.
Contaminated Sites	No change from existing conditions	Impacts would occur if unknown contaminated sites are discovered during construction. Existing procedures for regulatory coordination and cleanup requirements would need to be followed for all contaminated sites to ensure no adverse impacts.	All impacts would be the same as described for Alternative A.	No mitigation required.

Table ES-6: Summary of Effects of the No Action Alternative and Transformation Alternatives A and B

Resource	No Action Alternative	Transformation Alternative A	Transformation Alternative B (Preferred Alternative)	Mitigation Measures
Water Resources (Section 4.10)				
Surface Water, Hydrogeology/Groundwater, Floodplains, Wetlands	No change from existing conditions	No adverse impacts are anticipated if all applicable management plans are followed; federal, state, and Installation regulations are met, and all necessary permits are submitted.	Same as Alternative A.	No mitigation measures required. Application of management actions through design, construction, operation, and maintenance would minimize to insignificance any adverse impacts.
Geology and Soils (Section 4.11)				
Geologic and Topographic Conditions and Soils	No change from existing conditions	Severe impacts to the highly erodible soils as a result of training operations, all required permits would be obtained and implemented and all appropriate site-specific management practices and existing mitigation measures would be implemented to help off-set these impacts. As a result, adverse impacts to soils from on-going and future use of the Installation's training ranges would occur.	Same as Alternative A.	No mitigation measures required. Application of existing management actions, design, construction, operation, and maintenance would minimize to insignificance any adverse impacts.

Table ES-6: Summary of Effects of the No Action Alternative and Transformation Alternatives A and B

Resource	No Action Alternative	Transformation Alternative A	Transformation Alternative B (Preferred Alternative)	Mitigation Measures
Biological Resources (Section 4.12)				
Vegetation	No change from existing conditions	Alternative A could result in potential adverse effects to vegetation. A substantial amount of native habitat would be lost, and disruption of ecosystem function in the disturbed areas would occur.	Same as Alternative A, but with an increase in total number of acres of native habitat removed.	No mitigation measures required. Continued adherence to Integrated Natural Resource Management Plan procedures and prescribed practices would minimize impacts to non adverse.
Aquatic Habitats	No change from existing conditions	Alternative A would result in adverse effects to aquatic and wetland habitats, including streambanks from construction, demolition, road upgrades, and range projects.	Same as Alternative A.	Unavoidable impacts to wetlands would be compensated by habitat restoration or by purchase of wetlands credits. Wetlands would be restored, enhanced, or created at locations to be determined through the Section 404 permitting process.
Fish, Wildlife, and other Animal Species	No change from existing conditions	These species and their associated habitat would experience minor impacts by the proposed Transformation action.	Same as Alternative A.	No mitigation measures required Continued adherence to Integrated Natural Resource Management Plan procedures and prescribed practices would minimize impacts to non adverse.

Table ES-6: Summary of Effects of the No Action Alternative and Transformation Alternatives A and B

Resource	No Action Alternative	Transformation Alternative A	Transformation Alternative B (Preferred Alternative)	Mitigation Measures
Special Status Species	No change from existing conditions	Federally listed species, adverse impacts. Portions of the Randall Creek North relict trillium population would be removed. Fifty-four Red-cockaded Woodpecker (RCW) clusters would be taken as a result of Alternative A. Likely adverse impacts to recovery goals. State listed species, would have moderate impacts, continuing adherence to plans, policies, and practices and existing mitigation measures for these special status species would reduce the impact to a level that is less than adverse.	Same as Alternative A for relict trillium population and state listed species. A total of 32 RCW clusters would be taken as a result of Alternative B to likely create adverse impacts. RCW recovery goal; however, is not anticipated to be adversely impacted.	All avoidance, compensation, and minimization measures identified in the Biological Assessment and subsequent Biological Opinion will be implemented to reduce adverse effects on federally listed specie. For state listed species, continued adherence to Integrated Natural Resource Management Plan procedures and prescribed practices would minimize impacts to non-adverse.

Table ES-6: Summary of Effects of the No Action Alternative and Transformation Alternatives A and B

Resource	No Action Alternative	Transformation Alternative A	Transformation Alternative B (Preferred Alternative)	Mitigation Measures
Unique Ecological Areas (UEA)	No change from existing conditions	The Prosperity Church Oak-Hickory Forest UEA would be adversely impacted.	Same as Alternative A with the addition of adverse impacts to the Backwaters UEA due to heavy use of the Good Hope Maneuver Area.	Mitigation measures to avoid and/or minimize impacts could include: siting and design to avoid impacts to sensitive resources in the UEAs. Stream crossings be limited and soil stabilization BMPs be implemented along roadsides. Range facilities, targets, and berms should be configured to avoid wetlands and sensitive vegetation within the UEAs and where possible, incorporate additional acreage that includes appropriate habitat features into existing UEAs to offset losses caused by the Transformation action alternatives.
Cultural Resources (Section 4.13)				
Cantonment Areas and Ranges	No change from existing conditions	Potential adverse impacts to 38 eligible and recommend eligible archaeological sites, 27 architectural resources, and 12 cemeteries.	Potential adverse impacts to 118 eligible and recommend eligible archaeological sites, 28 architectural resources, and 12 cemeteries.	Same for Alternatives A and B. Mitigation measures include avoiding sites, protecting resources from potential indirect impacts, prohibiting access to sites, excavate/recover resources that cannot be avoided or mitigated. Construct compatible structures to minimize impacts to historic structures and districts.

Table ES-6: Summary of Effects of the No Action Alternative and Transformation Alternatives A and B

Resource	No Action Alternative	Transformation Alternative A	Transformation Alternative B (Preferred Alternative)	Mitigation Measures
Safety (Section 4.14)				
Public, Construction, Explosive, and Range Safety	No change from existing conditions	There would be increased safety risks introduced within the training areas due to the increased tank and heavy vehicle traffic and ordnance use, but implementation of all existing safety programs would minimize safety hazards to non-adverse. Unauthorized entry onto Installation lands could be minimized by erecting fences and ensuring that Range Safety Officers undertake thorough review of downrange activities prior to range use. Under these circumstances, safety would be protected and not be adversely impacted.	Same as Alternative A.	No mitigation measures required.

TABLE OF CONTENTS

TABLE OF CONTENTS

EXECUTIVE SUMMARY ES-1
ES 1 Introduction ES-1
ES 2 Purpose and Need ES-1
ES 3 Proposed Action ES-2
ES 3.1 BRAC-Directed Stationing Actions ES-2
ES 3.2 BRAC-Discretionary Stationing Actions ES-3
ES 3.3 GDPR Transformation ES-3
ES 3.4 AMF Transformation ES-3
ES 3.5 Other Army Stationing ES-4
ES 3.6 Proposed Cantonment Area Development ES-5
ES 3.7 Proposed Range and Training Area Development ES-5
ES 4 Alternatives ES-6
ES 4.1 No Action Alternative ES-6
ES 4.2 Cantonment Area Transformation Development Common to Both Alternatives A and B ES-7
ES 4.2.1 Range Development—Transformation Alternative A ES-8
ES 4.2.2 Range Development—Transformation Alternative B (Preferred Alternative) ES-9
ES 5 Environmental Consequences ES-12

1.0 PURPOSE, NEED AND SCOPE 1-1
1.1 Introduction 1-1
1.2 Purpose and Need 1-3
1.3 Scope of Environmental Impact Statement 1-6
1.3.1 BRAC and Transformation NEPA Context 1-7
1.3.2 Scope of Environmental Analysis 1-7
1.4 Public Involvement 1-8
1.4.1 General public Involvement Process 1-8
1.4.2 Notice of Intent 1-9
1.4.3 Scoping Process 1-9
1.4.3.1 Project Mailing List 1-9
1.4.3.2 Public Scoping Process 1-9
1.4.3.3 Scoping Summary of Issues and Concerns 1-10
1.5 Impact Analyses Performed 1-11
1.6 Framework For Transformation Activities 1-12
1.6.1 BRAC Procedural Requirements 1-13
1.6.2 Other Procedural Requirements and Consultation 1-13
1.6.3 Relevant Statutes, Executive Orders, and Permits 1-16

2.0 DESCRIPTION OF THE PROPOSED ACTION 2-1
2.1 Introduction 2-1
2.2 Proposed Action 2-1
2.2.1 BRAC-Directed Stationing Actions 2-3
2.2.2 BRAC Discretionary Stationing Actions 2-3
2.2.3 GDPR Transformation 2-4
2.2.4 AMF Transformation 2-4
2.2.5 Other Army Stationing 2-5
2.3 Armor School and Center Mission 2-6
2.3.1 Armor School Mission 2-6
2.3.2 Armor Center Mission 2-7
2.4 Proposed Transformation Development Actions 2-7
2.4.1 Overview 2-7
2.4.2 Proposed Cantonment Area Development 2-9
2.4.3 Proposed Range and Training Area Requirements 2-9

3.0 ALTERNATIVES 3-1
3.1 Introduction 3-1
3.2 Alternatives 3-1
3.2.1 Alternatives Considered But Not Addressed in Detail 3-2
3.2.1.1 Alternative Locations 3-2
3.2.1.2 Implementation Phasing Alternative 3-3
3.2.1.3 Modifying Personnel Alternative 3-4
3.2.2 Alternatives Carried Forward for Further Analysis 3-4
3.2.2.1 Cantonment Area Transformation Development Common to Both Alternatives A and B 3-4
3.2.2.2 Transformation Alternative A 3-12
3.2.3 Transformation Alternative B (Preferred Alternative) 3-18
3.3 No Action Alternatives 3-24
3.3.1 Fort Benning Baseline Mission 3-24
3.3.2 Fort Benning Baseline Training Assets 3-25
3.3.3 Fort Benning Baseline Operations 3-26

4.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES 4-1
4.1 Introduction 4-1
4.1.1 Methodology 4-2
4.1.2 Fort Benning Ongoing Environmental Protection Process for Training Activities 4-4
4.1.3 Role of Integrated Training Area Management Program 4-5

4.2 Land Use 4-6
4.2.1 Affected Environment 4-7
4.2.1.1 Fort Benning Land Use 4-7
4.2.1.2 Off-Post Land Use and Management 4-17
4.2.2. Environmental Consequences 4-25
4.2.2.1 No Action Alternative 4-25
4.2.2.2 Transformation Alternative A 4-26
4.2.2.3 Transformation Alternative B (Preferred Alternative) 4-29
4.2.3 Mitigation Measures 4-31
4.3 Aesthetics and Visual Resources 4-32
4.3.1 Affected Environment 4-32
4.3.2 Environmental Consequences 4-37
4.3.2.1 No Action Alternative 4-38
4.3.2.2 Transformation Alternative A 4-38
4.3.2.3 Transformation Alternative B (Preferred Alternative) 4-42
4.3.3 Mitigation Measures 4-42
4.4 Socioeconomics 4-43
4.4.1 Affected Environment 4-43
4.4.1.1 Economic Development 4-43
4.4.1.2 Demographics 4-44
4.4.1.3 Housing 4-44
4.4.1.4 Quality of Life 4-45
4.4.1.5 Environmental Justice 4-48
4.4.1.6 Protection of Children 4-49
4.4.2 Environmental Consequences 4-50
4.4.2.1 No Action Alternative 4-50
4.4.2.2 Transformation Alternative A 4-51
4.4.2.3 Transformation Alternative B (Preferred Alternative) 4-55
4.4.3 Mitigation Measures 4-55
4.5 Transportation 4.56
4.5.1 Affected Environment 4-56
4.5.1.1 Description of On and Off Post Roadways 4-56
4.5.1.2 Existing Installation Transportation 4-61
4.5.1.3 Existing Public Transportation 4-61
4.5.1.4 Intersection Level of Service Analysis 4-62
4.5.1.5 Existing Traffic Conditions 4-64
4.5.2 Environmental Consequences 4-68
4.5.2.1 No Action Alternative 4-69
4.5.2.2 Transformation Alternative A 4-74

4.5.2.3 Transformation Alternative B (Preferred Alternative) 4-79
4.5.3 Mitigation Measures....4-81
4.6 Utilities....4-82
4.6.1 Affected Environment....4-82
4.6.1.1 Potable Water Supply....4-82
4.6.1.2 Wastewater System 4-82
4.6.1.3 Storm Water System....4-83
4.6.1.4 Energy Sources....4-84
4.6.1.5 Communications....4-84
4.6.1.6 Solid Waste 4-85
4.6.2 Environmental Consequences 4-85
4.6.2.1 No Action Alternative 4-86
4.6.2.2 Transformation Alternative A 4-86
4.6.2.3 Transformation Alternative B (Preferred Alternative) 4-89
4.6.3 Mitigation Measures....4-89
4.7 Noise 4-90
4.7.1 Affected Environment....4-93
4.7.2 Environmental Consequences 4-97
4.7.2.1 No Action Alternative 4-97
4.7.2.2 Transformation Alternative A 4-98
4.7.2.3 Transformation Alternative B (Preferred Alternative) 4-103
4.7.3 Mitigation Measures....4-103
4.8 Air Quality 4-104
4.8.1 Affective Environment....4-104
4.8.1.1 Ambient Air Quality Conditions 4-104
4.8.1.2 Installation Air Pollutant Emissions....4-106
4.8.2 Environmental Consequences 4-107
4.8.2.1 No Action Alternative 4-107
4.8.2.2 Transformation Alternative A 4-107
4.8.2.3 Transformation Alternative B (Preferred Alternative) 4-112
4.8.3 Mitigation Measures....4-113
4.9 Hazardous and Toxic Materials and Waste....4-114
4.9.1 Affected Environment....4-115
4.9.1.1 Hazardous Materials Storage, Use, and Handling....4-115
4.9.1.2 Toxic Substances Management 4-116
4.9.1.3 Hazardous Waste Generation and Disposal 4-118
4.9.1.4 Contaminated Sites....4-119
4.9.2 Environmental Consequences 4-119
4.9.2.1 No Action Alternative 4-119

4.9.2.2 Transformation Alternative A 4-119
4.9.2.3 Transformation Alternative B (Preferred Alternative) 4-123
4.9.3 Mitigation Measures....4-124
4.10 Water Resources....4-125
4.10.1 Affected Environment....4-125
4.10.1.1 Surface Water....4-126
4.10.1.2 Hydrogeology/Groundwater....4-136
4.10.1.3 River and Stream Floodplains 4-136
4.10.1.4 Stormwater Management 4-137
4.10.1.5 Sediment and Erosion Regulations....4-140
4.10.2 Environmental Consequences 4-141
4.10.2.1 No Action Alternative 4-141
4.10.2.2 Transformation Alternative A 4-142
4.10.2.3 Transformation Alternative B (Preferred Alternative) 4-151
4.10.3 Mitigation Measures....4-154
4.11 Geology and Soils 4-159
4.11.1 Affected Environment....4-159
4.11.2 Environmental Consequences 4-162
4.11.2.1 No Action Alternative 4-162
4.11.2.2 Transformation Alternative A 4-164
4.11.2.3 Transformation Alternative B (Preferred Alternative) 4-170
4.11.3 Mitigation Measures....4-173
4.12 Biological Resources....4-174
4.12.1 Affected Environment....4-174
4.12.1.1 Vegetation 4-174
4.12.1.2 Aquatic Habitats....4-181
4.12.1.3 Fish and Wildlife....4-185
4.12.1.4 Special-Status Species....4-187
4.12.1.5 Unique Ecological Areas (UEAs) 4-208
4.12.2 Environmental Consequences 4-214
4.12.2.1 No Action Alternative 4-214
4.12.2.2 Transformation Alternative A 4-215
4.12.2.3 Transformation Alternative B (Preferred Alternative) 4-233
4.12.3 Mitigation Measures....4-241
4.12.3.1 Transformation Alternative A 4-241
4.12.3.2 Transformation Alternative B (Preferred Alternative) 4-244

4.13 Cultural Resources 4-245
4.13.1 Affected Environments 4-246
4.13.1.1 Prehistoric and Historic Resources 4-246
4.13.1.2 Management 4-250
4.13.2 Environmental Consequences 4-255
4.13.2.1 No Action Alternative 4-270
4.13.2.2 Transformation Alternative A 4-270
4.13.2.3 Transformation Alternative B (Preferred Alternative) 4-272
4.13.3 Mitigation Measures 4-273
4.13.3.1 Transformation Alternative A 4-273
4.13.3.2 Transformation Alternative B (Preferred Alternative) 4-274
4.14 Safety 4-275
4.14.1 Affected Environment 4-278
4.14.2 Environmental Consequences 4-280
4.14.2.1 No Action Alternative 4-280
4.14.2.2 Transformation Alternative A 4-280
4.14.2.3 Transformation Alternative B 4-283
4.14.3 Mitigation Measures 4-285
4.14.3.1 Transformation Alternative A 4-285
4.14.3.2 Transformation Alternative B 4-286
4.15 Cumulative Effects 4-287
4.15.1 Region of Influence 4-287
4.15.2 Past and Present Actions within the ROI 4-287
4.15.3 Reasonably Foreseeable Future Actions within the ROI 4-293
4.15.4 Cumulative Effects under the No Action Alternative 4-301
4.15.5 Cumulative Effects under Alternatives A and B 4-302
4.15.5.1 Land Use 4-302
4.15.5.2 Aesthetics and Visual Resources 4-305
4.15.5.3 Socioeconomics 4-305
4.15.5.4 Transportation 4-306
4.15.5.5 Utilities 4-308
4.15.5.6 Noise 4-309
4.15.5.7 Air Quality 4-312
4.15.5.8 Hazardous Materials, Toxic Substances, and Hazardous Waste 4-314
4.15.5.9 Water Resources 4-314
4.15.5.10 Geology and Soils 4-315

4.15.5.11 Biological Resources 4-316
4.15.5.12 Cultural Resources 4-317
4.15.5.13 Safety 4-320
4.16 Irreversible or Irretrievable Commitments of Resources 4-321
4.16.1 Irreversible and Irretrievable Commitment of Resources 4-321
4.16.2 Unavoidable Adverse Effects 4-321

5.0 LIST OF PREPARERS 5-1

6.0 DISTRIBUTION LIST 6-1

7.0 REFERENCES CITED 7-1

8.0 PERSONS CONSULTED 8-1

9.0 ACRONYMS AND ABBREVIATIONS 9-1

APPENDICES

A Notice of Intent A-1
B Ammunition Operational Data B-1
C Economic Impact Forecast System (EIFS) C-1
D Transportation Report D-1
E Air Quality Approach and Calculations E-1
F Biological Assessment F-1
G Mitigation and Monitoring Plan G-1
H Tribal Consultation Letters H-1
I Cultural Resources Report I-1

LIST OF TABLES

Table ES. 1 Personnel Breakdown For Transformation Actions ES-5
Table ES.2 Projected Cantonment Area Development—Transformation Alternatives A and B ES-7
Table ES.3 Transformation Alternative A—Projected Range Development Projects ES-8
Table ES.4 Transformation Alternative B—Projected Range Development Projects ES-9
Table ES-5 Summary Area of Potential Effects by Geographic Area in Acres ES-11
Table ES-6 Summary of Effects of the No Action Alternative and Transformation Alternative A and B ES-13
Table 1.6-1 Other Major Environmental Statutes, Regulations, and Executive Orders Applicable to Federal Projects 1-17
Table 2.2-1 Personnel Breakdown for Transformation Actions 2-6
Table 2.4-1 Armor School Vehicle Inventory Projected at Fort Benning 2-10
Table 2.4-2 Projected Annual Weapon Ammunition Use for Transformation Actions 2-11
Table 2.4-3 Armor School Maneuver Training Requirements 2-13
Table 3.2-1 Alternatives Screening Criteria 3-2
Table 3.2-2 Projected Cantonment Area Development: Transformation Alternatives A and B 3-7
Table 3.2-3 Transformation Alternative A: Projected Range Development Projects 3-13
Table 3.2-4 Transformation Alternative B: Projected Range Development Projects 3-19
Table 3.2-5 Summary Area of Potential Effect by Geographic Area in Acres 3-20
Table 3.3-1 Current Fort Benning Workforce Levels and Student Populations 3-25
Table 3.3-2 Baseline Annual Weapon Use Fort Benning 3-26
Table 3.3-3 Fort Benning Vehicle Inventory 3-26
Table 3.3-4 Baseline Training Throughput at Fort Benning 3-27
Table 4.2-1 Fort Benning Training Lands 4-7
Table 4.2-2 Range Training Inventory and Utilization 4-10
Table 4.2-3 Baseline Community Support Facilities at Fort Benning 4-14
Table 4.2-4 Baseline Assets 4-14
Table 4.2-5 Military Housing Baseline 4-15
Table 4.2-6 Land Use Categories 4-15
Table 4.4-1 ROI Population Growth 1980-2005 4-44
Table 4.4-2 Housing Characteristics for the ROI (2000 Census) 4-45
Table 4.4-3 Distribution of Fort Benning Housing Units by Type 4-46
Table 4.4-4 2003-2004 School Year Public Education Statistics 4-47
Table 4.4-5 Race, Ethnicity, and Poverty Status 4-49
Table 4.4-6 Alternative A EIFS Inputs and Outputs 4-52
Table 4.5-1 Description of Levels of Service 4-64
Table 4.5-2 Existing LOS 4-65
Table 4.5-3 No Action LOS 4-70
Table 4.5-4 Overall LOS Comparison 4-73

Table 4.5-5 Transformation Alternative A LOS for Fort Benning 4-75
Table 4.5-6 Overall LOS Comparison 4-79
Table 4.7-1 Common Sound Levels Measured in Decibels 4-90
Table 4.7-2 Zone and Compatibility 4-93
Table 4.7-3 Acres within Existing LUPZs 4-97
Table 4.7-4 Acres within Existing and Projected LUPZs 4-99
Table 4.8-1 Georgia and National Ambient Air Quality Standards 4-105
Table 4.8-2 Total Pollutant Emissions Columbus, GA-AL MSA (tons/year) 4-106
Table 4.8-3 Criteria Pollutant Construction Emissions Alternative A: Tons per Year 4-108
Table 4.8-4 Control Options for General Construction Open Sources of PM_{10} 4-109
Table 4.8-5 Criteria Pollutant Operation Emissions Under Either Action Alternative Tons per Year 4-112
Table 4.8-6 Criteria Pollutant Construction Emissions Alternative B: Tons per Year 4-113
Table 4.9-1 Transformation Projects Potentially Generating Toxic Substances 4-121
Table 4.10-1 Impaired Streams at Fort Benning 4-134
Table 4.10-2 Potential Water Source Impacts (Harmony Church Cantonment Area)—Alternative A 4-143
Table 4.10-3 Potential Water Source Impacts (Sand Hill Cantonment Area)—Alternative A 4-144
Table 4.10-4 Potential Water Source Impacts (Main Post Cantonment Area)—Alternative A 4-145
Table 4.10-5 Potential Water Source Impacts (Kelly Hill Cantonment Area)—Alternative A 4-146
Table 4.10-6 Potential Water Source Impacts (Ranges North of U.S. Highway 27/280))—Alternative A 4-149
Table 4.10-7 Potential Water Source Impacts (Ranges South of U.S. Highway 27/280))—Alternative A 4-151
Table 4.10-8 Low Water Crossings Proposed with Alternative A 4-151
Table 4.10-9 Potential Water Source Impacts (Good Hope Maneuver Area)—Alternative B 4-152
Table 4.10-10 Low Water Crossings Proposed with Alternative B 4-153
Table 4.11-1 Geologic Formation Descriptions 4-159
Table 4.11-2 Soil Series Descriptions 4-161
Table 4.11-3 Erodibility of Soils Associated with Transformation Alternative A 4-165
Table 4.11-4 Coverage of Soil Associations per Total Area of Alternative A Actions 4-167
Table 4.11-5 Erodibility of Soils Associated with Transformation Alternative B 4-171
Table 4.11-6 Coverage of Soil Associations per Total Area of Alternative B Actions 4-172
Table 4.12-1 Acreage of Upland Vegetation (Ecological Groups) at Fort Benning 4-176
Table 4.12-2 Acreage of Aquatic Habitats at Fort Benning 4-182
Table 4.12-3 Plant Species of Conservation Concern at Fort Benning 4-193
Table 4.12-4 Special Status Animal Species Occurring at Fort Benning 4-200
Table 4.12-5 Fort Benning Unique Ecological Areas Potentially Affected by Transformation 4-210
Table 4.12-6 Vegetation Impacted by Transformation Alternative A 4-216
Table 4.12-7 Yearly Acres of Upland Vegetation Affected by Transformation Alternative A 4-216

Table 4.12-8 Aquatic Habitats Potentially Impacted by Transformation Alternative A.....4-219
Table 4.12-9 Wetlands Potentially Affected by Transformation Alternative A 4-219
Table 4.12-10 State-Listed Species Impacted by Transformation Alternative A 4-228
Table 4.12-11 UEAs Impacted by Transformation Alternative A 4-232
Table 4.12-12 Upland Vegetation Impacted by Transformation Alternative B.....4-234
Table 4.12-13 Yearly Acres of Upland Vegetation Affected by Transformation Alternative B 4-234
Table 4.12-14 Aquatic Habitats Potentially Impacted by Transformation Alternative B.....4-235
Table 4.12-15 Wetlands Potentially Affected by Transformation Alternative B 4-235
Table 4.12-16 State-Listed Species Impacted by Transformation Alternative B 4-238
Table 4.12-17 UEA Impacted by Transformation Alternative B 4-240
Table 4.13-1 Eligible and Unevaluated Archaeological Resources within the APE 4-256
Table 4.13-2 Eligible and Unevaluated Architectural Resources within the APE.....4-268
Table 4.13-3 Cemeteries within the APE.....4-269
Table 4.13-4 Cultural Resource Affected Under the Action Alternatives 4-271
Table 4.14-1 Baseline Annual Weapons Use Fort Benning 4-279
Table 4.15-1 Transformation Related Future Project List 4-296
Table 4.15-2 Trip Generation Comparison – Cumulative Versus
Transformation Alternative Actions.....4-307
Table 4.15-3 Traffic at Two ACPs Under the No Action Alternatives.....4-308
Table 4.15-4 Comparison of Existing, Projected, and Cumulative LUPZs 4-309
Table 4.15-5 Comparison of Noise Sensitive Receptors Noise Contours.....4-312
Table 4.15-6 Criteria Pollutant Construction Emissions Tons per Year.....4-313
Table 4.15-7 Eligible and Unevaluated Archaeological Site Affected, Cumulative.....4-318
Table 4.15-8 Eligible and Unevaluated Architectural Resources Affected, Cumulative.....4-319
Table 4.15-9 Cemeteries Affected, Cumulative.....4-319

LIST OF FIGURES

Figure ES-1 Overview of Fort Benning Transformation Actions..... ES-4
Figure 1.1-1 Fort Benning Vicinity.....1-2
Figure 2.2-1 Fort Benning Cantonment and Training Ranges.....2-2
Figure 2.2-2 Overview of Fort Benning Transforming Action.....2-5
Figure 2.4-1 Fort Benning Cantonment Areas.....2-8
Figure 3.2-1a Alternative A Cantonment Area Transformation Development.....3-5
Figure 3.2-1b Alternative B Cantonment Area Transformation Development.....3-6
Figure 3.2-2: Transformation Alternative A North of U.S. Highway 27/280 Range Development.....3-15
Figure 3.2-3: Transformation Alternative A South of U.S. Highway 27/280 Range Development.....3-16
Figure 3.2-4 Transformation Alternative A Heavy Maneuvering Use Area.....3-17
Figure 3.2-5 Transformation Alternative B North of U.S. Highway 27/280 Range Development 3-21
Figure 3.2-6: Transformation Alternative B South of U.S. Highway 27/280 Range Development 3-22

Figure 3.2-7 Transformation Alternative B Heavy Maneuver Use Area 3-23
Figure 4.2-1 Fort Benning Operational Land use 4-8
Figure 4.2-2 Region of Influence for Land Use in Muskogee and Chattahoochee Counties 4-21
Figure 4.2-3 Existing Land Use Cover Data for Counties in the Vicinity of Fort Benning 4-24
Figure 4.5-1 Fort Benning ACPs 4-58
Figure 4.5-2 Road Network and Intersections Analyzed at Fort Benning 4-63
Figure 4.5-3 Existing Levels of Service, Morning Peak 4-66
Figure 4.5-4 Existing Level of Service, Evening Peak 4-67
Figure 4.5-5 LOS Resulting From No Action Alternative: Morning Peak 4-71
Figure 4.5-6 LOS Resulting From the No Action Alternative: Evening Peak 4-72
Figure 4.5-7 LOS Resulting From the Transformation Alternative: Morning Peak 4-76
Figure 4.5-8 LOS Resulting From the Transformation Alternative: Evening Peak 4-77
Figure 4.7-1 Existing Noise Contour Levels Generated from Large Caliber Weapons 4-94
Figure 4.7-2 Existing Noise Level Contours at Lawson AAF 4-95
Figure 4.7-3 Common Construction Noise Levels 4-98
Figure 4.7-4 Projected Noise Contour Levels Generated from Large Caliber Weapons under Alternatives A and B 4-101
Figure 4.10-1 Fort Benning Watershed Management Units 4-127
Figure 4.10-2 Surface Waters Found at Fort Benning—Alternative A 4-131
Figure 4.10-3 Surface Waters Found at Fort Benning—Alternative B 4-132
Figure 4.11-1 Soil Associations in Relation to Transformation Actions Alternatives A and B 4-166
Figure 4.12-1 Ecological Groups – Northern Installation 4-177
Figure 4.12-2 Ecological Groups – Southern Installation 4-178
Figure 4.12-3 Known Occurrence of Federally Listed Species and Unique Ecological Areas 4-189
Figure 4.12-4 Known Occurrence of State Listed Species and Unique Ecological Areas 4-190
Figure 4.12-5 Red-cockaded Woodpecker Clusters Under Transformation Alternative A 4-191
Figure 4.12-6 Red-cockaded Woodpecker Clusters Under Transformation Alternative B 4-192
Figure 4.14-1 Typical SDZ 4-277
Figure 4.14-2 Existing SDZs 4-281
Figure 4.14-3 Proposed SDZs Under Transformation Alternatives A and B 4-284
Figure 4.15-1 Projects Considered for Cumulative Effects 4-288
Figure 4.15-2 Actions for Cumulative Analysis at Fort Benning 4-295
Figure 4.15-3 Cumulative Noise Contour Levels Generated by Large Caliber Arms Weapons 4-310

CHAPTER 1

PURPOSE, NEED AND SCOPE

1.0 PURPOSE, NEED, AND SCOPE

1.1 INTRODUCTION

The Department of Defense (DoD) is reorganizing doctrine, force structure, and Installation infrastructure, to support more effectively its mission, increase operational readiness, and facilitate new ways of doing business. A primary vehicle for this reorganization effort and the overall military transformation process is the Base Realignment and Closure (BRAC) process. On September 8, 2005, the Defense Base Closure and Realignment Commission ("BRAC Commission") recommended a set of domestic realignment and closure actions (BRAC Commission 2005). These recommendations were approved by the President on September 15, 2005, and forwarded to Congress (DoD 2005). The Congress did not alter any of the BRAC Commission's recommendations, and on November 9, 2005, the recommendations became law (DoD 2006). The BRAC Commission recommendations must now be implemented as provided for in the Defense Base Closure and Realignment Act of 1990, Public Law (PL) 101-510, as amended (BRAC Law).

In addition, nearly 6 years prior to the BRAC Commission recommendations becoming law (in October 1999), the Secretary of the Army and the Chief of Staff articulated a vision about people, readiness, and Transformation of the U.S. Army (Army) to meet the demands of the 21st century (USACE 2002a). In what is termed the Army Modular Force (AMF) initiative, the Army is transitioning from a division-centric design to a standard brigade organization. The resultant combat arms brigades will be task-organized with organic combined arms capabilities, whereas supporting brigades will have standardized headquarters but variable subordinate units (Eastin 2006). The reshaping of the domestic military infrastructure also includes provision for the return of units currently based overseas as part of the Global Defense Posture and Realignment (GDPR) (Commission on Review 2005). Finally, discretionary stationing actions (activations, inactivations, realignments, and relocations) authorized by Army Regulation (AR) 5-10, Stationing (U.S. Army 2001), can contribute to and be interrelated with the Transformation process.

In accordance with 40 Code of Federal Regulation (CFR) Section 1502.4 of the National Environmental Policy Act (NEPA) implementing regulation, and the Army NEPA Regulation (32 CFR 651, also known as AR 200-2), the Army has determined that the BRAC, AMF, GDPR, and other stationing actions and development at Fort Benning are all Transformation activities closely related to each other and would be implemented in the same timeframe on Fort Benning. Thus, these Transformation actions have been grouped into one proposed action and the potential environmental effects of these Transformation actions are being evaluated together in this environmental impact statement (EIS).

Fort Benning consists of 181,275 acres of federally-owned land south and east of Columbus, Georgia (GA), south of Phenix City, Alabama (AL), on the banks of the Chattahoochee River (Figure 1.1-1). Virtually all of the training facilities and 93 percent of the total land area is in Georgia, within Chattahoochee and Muscogee counties. The remaining southwestern corner of the Installation,

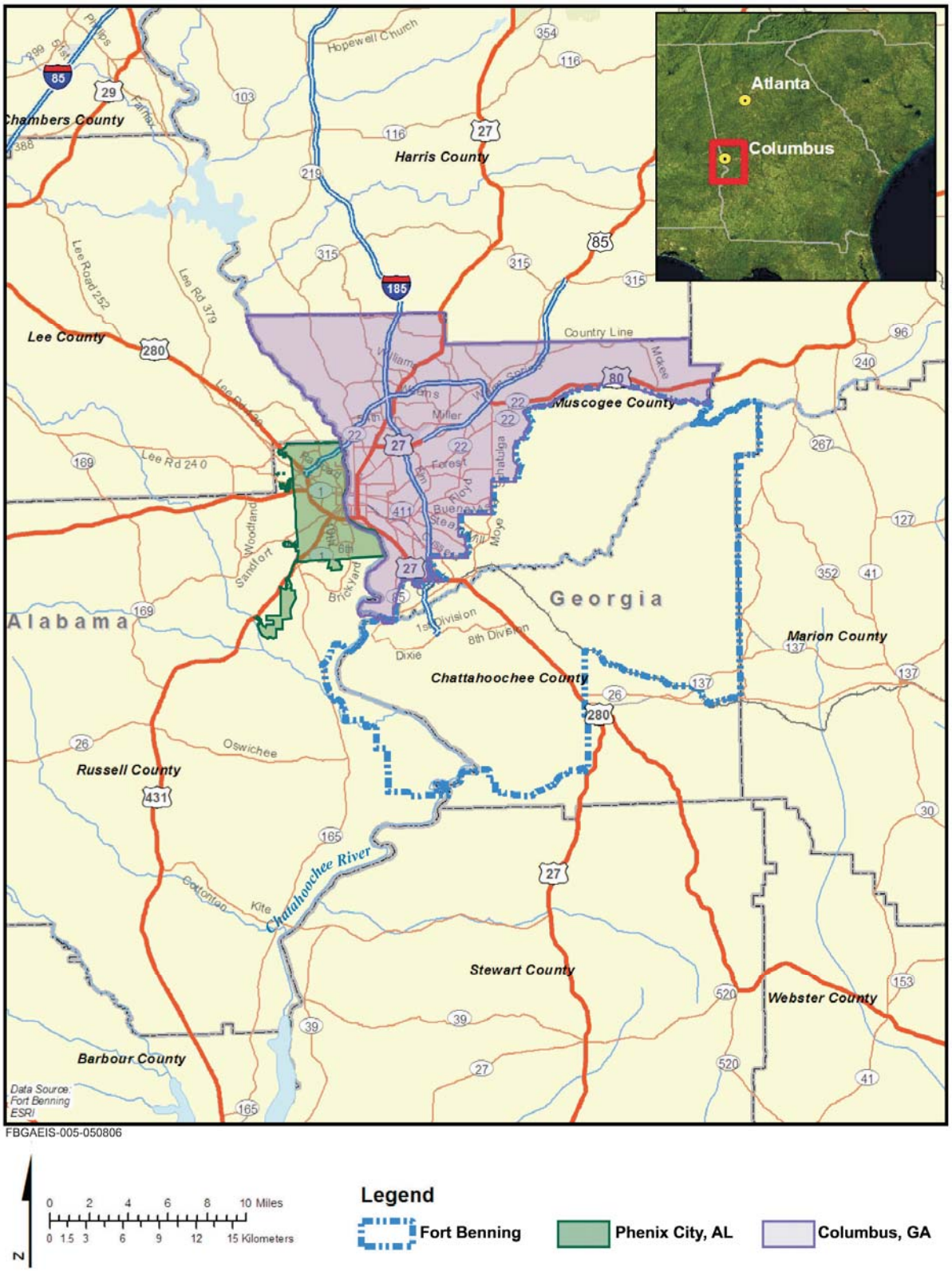

Figure 1.1-1: Fort Benning Vicinity

approximately 12,000 acres, is located in Russell County, AL. Among DoD Installations, Fort Benning is the sixth largest in terms of land area and the third largest in terms of troop numbers. Currently, there are approximately 16,800 military personnel, 9,400 students (daily average or the number of students being trained on any one day, based on a total annual attendance), and 7,600 civilian employees stationed at Fort Benning (Fort Benning 2006a, USACE 2003a).

The largest-scale Transformation activity considered in this EIS is the BRAC action to relocate the Armor School and Center from Fort Knox to Fort Benning. Once relocated to Fort Benning, the Armor School and Center would be combined with the existing Infantry Center and School to create a Maneuver Center of Excellence for ground forces training and doctrine development. A gain of 13,009 personnel at Fort Benning (67 percent of whom would be students) is expected with implementation of this Armor School and Center relocation. The other Transformation activities evaluated in this EIS (inclusive of other BRAC commission recommendations, GDPR, AMF, and certain other discretionary stationing actions) are smaller in scale, ranging from gains of 30 to over 800 personnel and with BRAC, represent a combined net gain of 14,469 personnel (military, civilian, and student) at Fort Benning. Under these programs, which are described below, Fort Benning would receive additional troops; restructure its forces; realign existing missions in response to all of the Transformation actions; and implement new training programs. Carrying out these requirements would involve:

- constructing new facilities and renovating/upgrading existing facilities and infrastructure to support additional Soldiers and their family members;
- constructing and modifying ranges and training areas; and
- increasing the use of live fire training ranges and maneuver areas at Fort Benning.

1.2 PURPOSE AND NEED

The underlying purpose of the Army's proposed action is to implement Transformation actions (BRAC, GDPR, AMF, and certain other stationing actions) that are interrelated to such an extent that they are, in effect, a single course of action. The overarching need for the proposed action is to improve the ability of the nation to respond rapidly to challenges of the 21st century. The Army mission is to defend the United States and its territories, support national policies and objectives, and defeat nations responsible for aggression that endanger the peace and security of the United States. To carry out these tasks, the Army must adapt to changing world conditions and improve its capabilities to respond to a variety of circumstances across the full spectrum of military operations. The following discusses the major initiatives that contribute to the Army's need for the proposed action.

Base Realignment and Closure. The Army needs to carry out the BRAC-directed actions at Fort Benning in order to achieve the objectives for which Congress established the BRAC process. The 2005 BRAC represents the fifth round of BRAC. Unlike prior BRAC rounds, the BRAC Commission evaluated DoD's recommendations in the context of a stable or increasing force structure, an ongoing conflict in Southwest Asia, and the projected redeployment of 70,000 service and their family members from Europe and Asia to the United States. In previous rounds of BRAC, the explicit goal was to save

money and downsize the military in order to reap a "peace dividend." While acknowledging the importance of savings as a BRAC goal in this round, the BRAC Commission went beyond a business model analysis of DoD's recommendations and weighed the strategic environment within which recommendations would be implemented and their effect on DoD's Transformational goals. The purpose of many 2005 BRAC recommendations was to advance the goals of Transformation, improve capabilities, and enhance military value (BRAC Commission 2005).

The *BRAC-directed actions* at Fort Benning, as defined by the BRAC Commission recommendations, are reiterated here:

- Relocate the Armor School and Center at Fort Knox to Fort Benning.
- 81st Regional Readiness Command (RRC) Equipment Concentration Site (ECS): to be relocated to Fort Benning as part of the closure of Fort Gillem, GA.
- U.S. Army Reserve Centers (USARC): close the reserve center in Columbus, GA and relocate and consolidate those units together with the existing units at Fort Benning to create a new USARC at Fort Benning.
- Drill Sergeant School: to relocate the existing school (with 400 students) at Fort Benning to create a single Drill Sergeant School at Fort Jackson, South Carolina (SC) (BRAC Commission 2005).

The need for the proposed *BRAC-discretionary actions* is closely related to the BRAC-directed actions. The U.S. Army Base Realignment and Closure Manual for Compliance with the National Environmental Policy Act (U.S. Army 2006b, section 3.5.2) states that BRAC-discretionary actions, at installations receiving BRAC-directed realignments (such as Fort Benning), should be considered part of the proposed action. In this case, these discretionary actions address functions that are currently located at two Georgia installations that are directed for closure under BRAC (Fort McPherson and Fort Gillem). While not specifically directed in the BRAC recommendations, most of these functions have been relocated to join similar missions at Fort Benning or should be retained in Georgia to accomplish their regional missions. The following BRAC-discretionary actions would be implemented at Fort Benning:

- Criminal Investigation Command (CID) 86th Military Police (MP) Detachment from Fort McPherson and the 3rd MP Group (brigade headquarters) from Fort Gillem would be relocated due to the BRAC-directed actions at both installations and join the existing CID operational battalions at Fort Benning (personal communication, J. Brown III 2007).
- Veterinary Clinic represents the transfer of personnel currently assigned to the BRAC-directed installation for closure, Fort McPherson's Veterinary Clinic. In addition, Fort Benning is increasing the number of military working dog teams due to Transformation actions and the existing on-Post veterinary clinic is not large enough to support the increased number of military working dog units (personal communication, J. Brown III 2007).
- The Blood Donor Center would be relocated from Fort Knox to Fort Benning. Currently, Fort Benning is serviced by the Blood Donor Center at Fort Gordon. With the Armor School and Center population move to Fort Benning, the Fort Knox center loses a great number of donors

and it would be more efficient and effective to have an on-site blood donor center at Fort Benning with the increased number of potential donors (personal communication, J. Brown III 2007).

- Reassign field auditors from the U.S. Army Audit Agency (USAAA) field office at the closing Fort McPherson to Fort Benning. This unit would be relocated to Fort Benning to remain a field office providing continued independent auditing services in the southeast region.

Army Modular Force (AMF). The strategic significance of land forces continues to lie in their ability to fight and win wars and provide options to shape the global environment to benefit the United States and its allies. Transformation responds to the Army's need to become more strategically responsive and dominant at every point on the spectrum of operations. In March 2002, the Army published its *Programmatic Environmental Impact Statement for Army Transformation* for its proposal to conduct a multi-year, phased, and synchronized program of Transformation. This EIS covers a series of Transformation activities affecting virtually all aspects of Army doctrine, training, leadership development, organizations, Installations, materiel, and Soldiers to occur over a 30-year time period. On April 11, 2002, the Army issued a Record of Decision (ROD) reflecting its intent to transform the Army (USACE 2002a).

The AMF initiative involves converting to a modular force to make the Operational Army more powerful, more flexible, and more rapidly deployable. That modular conversion effort is driven both by wartime necessities and the need to support the homeland. AMF is the greatest restructuring of Army forces since World War II and it affects nearly every combat and support organization in the Army's inventory. AMF is aimed at increasing the quality and the effectiveness of the Army through the creation of Brigade Combat Teams (BCTs), which are the Army's essential fighting units and standardizing Support Brigades, Theater Commands, and Headquarters that are all organized for immediate deployment and employment. The Army's three primary goals for reorganizing into a modular, brigade-based force are as follows:

- Increase the number of available BCTs to meet operational commitments while maintaining combat effectiveness that is equal to or better than that of previous divisional BCTs.
- Create brigade-based combat and support formations of common organizational designs that can be easily tailored to meet the varied demands of the Geographic Combatant Commanders—reducing joint planning and execution complexities.
- Redesign organizations to perform as integral parts of the Joint Force—making them more effective across the range of military operations and enhancing their ability to contribute to joint, interagency, and multinational efforts (Army 2006a).

The Army's plan is to form a rotational pool of 70 BCTs in order to sustain global commitments, surge forces for unforeseen contingencies, and reduce stress on Soldiers and equipment. Of this rotational pool of 70 BCTs, 42 will be in the active component and 28 will be in the Army National Guard. These BCTs will be organized into one of three standard designs: Infantry, Heavy, or Stryker. More than 200 active and reserve Support Brigades will support these BCTs to enable the BCTs to accomplish a broad range of

missions and provide essential capabilities to support civil authorities in homeland defense missions, including consequence management (i.e., actions taken to counter the effects of an attack from nuclear, chemical, biological weapons of mass destruction) and disaster relief (Army 2006a). The Secretary of Defense justification for the BRAC action, to relocate the Armor School and Center allows for AMF Transformation at Fort Knox (BRAC Commission 2005). At Fort Benning, these AMF initiatives, which have previously been completed, include Transformation of the 3rd Infantry Division (3 ID) Heavy and the 36th Engineer Company's establishment of the Multi-Role Bridge Company (MRBC).

Global Defense Posture Realignment (GDPR). At the request of the Chairman of the Joint Chiefs of Staff, combatant commanders submitted a series of recommendations for overseas basing plans for their respective areas of responsibility. The recommendations were part of an interagency assessment of the DoD's long-term overseas force projection and basing needs. The assessment resulted in a series of recommendations known as the GDPR, which provides the blueprint outlining the size, character, and location of long-term overseas force presence. On the basis of the GDPR results, the Secretary of Defense announced that some forces currently based overseas will return to the United States over a period of years (Commission on Review 2005). The 2005 BRAC recommendations take into account and adopt some of the basing recommendations of the GDPR. The Secretary of Defense justification for the relocation of the Armor School and Center to Fort Benning includes the use of Fort Knox facilities, ranges, and training land for the relocation of GDPR-related units returning from overseas and the activation of units as part of the AMF initiatives at Fort Knox (BRAC Commission 2005).

Other Actions. Special Operations Command (SOCOM) would also experience changes, due to Transformation activities across the Army, and move personnel to Fort Benning in accordance to Army initiative RANGER XXI whereby each operational battalion is assigned a weapons company and a regiment (such as the existing 75th Ranger Regiment at Fort Benning) would receive a brigade support battalion (Personal communication, Jay Brown III, 2007).

1.3 SCOPE OF ENVIRONMENTAL IMPACT STATEMENT

This EIS identifies, documents, and evaluates environmental effects of Transformation activities at Fort Benning, GA in accordance with the National Environmental Policy Act (NEPA) of 1969 and implementing regulations issued by the President's Council on Environmental Quality (CEQ) (40 CFR Parts 1500-1508) and the Army (32 CFR Part 651). The purpose of the EIS is to inform decisionmakers and the public of the possible and probable environmental consequences of the proposed action and alternatives and associated mitigation. The range of actions, alternatives, and impacts considered in this EIS are intertwined with the requirements for BRAC analysis and the *Programmatic Environmental Impact Statement for Army Transformation* ROD (USACE 2002a). As further described below, the scope of this EIS includes the geographic area potentially influenced by the Transformation activities at Fort Benning as well as the area of potential environmental effect, which varies by resource.

1.3.1 BRAC and Transformation NEPA Context

BRAC Law Context. The Defense Base Closure and Realignment Act of 1990, as amended, specifies that NEPA does not apply to actions of the President, the BRAC Commission, or the DoD, except "(i) during the process of property disposal, and (ii) during the process of relocating functions from a military Installation being closed or realigned to another military Installation after the receiving Installation has been selected but before the functions are relocated" (BRAC Law, as amended). The law further specifies that in applying the provisions of NEPA to the process, the Secretary of Defense and the secretaries of the military departments concerned do not have to consider "(i) the need for closing or realigning the military Installation which has been recommended for closure or realignment by the Commission, (ii) the need for transferring functions to any military Installation which has been selected as the receiving Installation, or (iii) military Installations alternative to those recommended or selected" (Sec. 2905(c)(2)(B)). Accordingly, this EIS does not address the need for realigning Fort Knox by relocating the Armor School and Center to Fort Benning; the closure of Fort Gillem or Fort McPherson; the closure of Army Reserve Center in Columbus, GA and consolidation with Army Reserve units currently at Fort Benning; or the realignment of the Drill Sergeant School to Fort Jackson. As appropriate, separate NEPA documents are being prepared for the redevelopment and/or realignment of these Installations. Additionally, this EIS does not consider the need for transferring the BRAC-directed functions to alternative military Installations.

Transformation NEPA Context. As mentioned above, BRAC-discretionary actions at installations receiving BRAC-directed realignments (such as Fort Benning), should be considered as part of the proposed action (U.S. Army 2006b). For the GDPR and AMF actions, the ROD resulting from the *Programmatic Environmental Impact Statement for Army Transformation* calls for site-specific NEPA analyses (such as this EIS) prior to implementing overseas and AMF modular force relocation actions (USACE 2002a. Other Army actions are being covered as part of this Transformation action because of the relocations of due to BRAC actions at other units across the Army and their interrelatedness with existing Fort Benning missions. Accordingly, this EIS is addressing the potential environmental impacts of implementing all of these interrelated Transformation actions at Fort Benning.

1.3.2 Scope of Environmental Analysis

The Army's NEPA Regulation calls for the environmental analysis to be proportionate to the nature and scope of the action, the complexity and level of anticipated effects on important resources, and the capacity of Army decisions to influence those effects in a productive, meaningful way from the standpoint of environmental quality. The environmental analysis for this EIS is necessarily broad, commensurate with the planning horizon and diverse array of actions associated with Transformation at Fort Benning. The actual process of change at Fort Benning will begin following a decision on this EIS (a ROD is scheduled to be signed and made public by the Fall of 2007; necessary consultations and permits will also need to be in place) and will be marked by a period of a high volume of construction and long-term changes in the operational and training environment at the Installation. Specific activities and related timeframes and locations for each of the projects have been identified to the fullest extent possible for

those occurring through 2013; however, while projects and locations have been identified for those occurring after 2011, the timing, scope, and location may change due to Congressional funding or other considerations. To evaluate conservatively the environmental impacts of all these actions, the analysis approach taken here is conducted at the scale appropriate for addressing potential broad-level environmental impacts, such as those that may impact threatened and endangered species habitat and the watershed. This approach will also assist in consultations with participating regulatory agencies such as the U.S. Fish and Wildlife Service (USFWS) and Georgia Environmental Protection Division (EPD).

For this Transformation proposal some project footprints and/or year of construction start may be modified through the consultation and design process. Should this occur, follow-on NEPA evaluations will be made by the Army to determine the level of NEPA analysis required for such changes. The associated agency consultation, coordination, and permitting/plan development and submittals will also take place if the changes warrant such actions. CEQ regulations address "tiering" for subsequent narrower analyses that will rely on and incorporate the information as provided in this EIS. Tiered analysis, if necessary, will focus on specific project details and more narrow and specific environmental issues.

An interdisciplinary team of environmental scientists, biologists, planners, economists, engineers, archaeologists, historians, attorneys, and military technicians has analyzed the proposed action and alternatives in light of existing conditions and has identified relevant beneficial and adverse effects and proposed mitigation. The proposed action is described in Section 2.0, and alternatives, including the no action alternative, are described in Section 3.0. A general description of baseline operational conditions is also provided in Section 3.0 since the no action alternative is evaluated as the continuation of the missions at Fort Benning as they were being performed in November 2005. Section 4.0, Affected Environment and Environmental Consequences, presents the potential environmental and socioeconomic effects of the proposed action and alternatives as compared to the baseline condition of specific environmental resources. Section 4.0 also addresses the potential for cumulative effects, and mitigation measures are identified where appropriate.

Environmental resources addressed in this EIS include land use, aesthetics and visual resources, noise, socioeconomics, transportation, utilities, hazardous and toxic substances and waste, air quality, water resources, geology and soils, biological and cultural resources, and safety.

1.4 PUBLIC INVOLVEMENT

1.4.1 General Public Involvement Process

The Army invites public participation in the NEPA process. Consideration of the views and information of all interested persons promotes open communication and enables better decision making. All agencies, organizations, and members of the public having a potential interest in the proposed action, including minority, low-income, and/or disadvantaged groups, are urged to participate in the decision making process. The term "public" is used within the Notice of Intent (NOI) to describe individuals who reside in communities near the project proposal area or who might be interested or affected by the proposed

action; "stakeholders" include federally-recognized Indian Tribes associated with the Fort Benning area (Tribes); federal, state, and local governmental agencies with regulatory authority over Fort Benning (e.g., USFWS and Georgia EPD); special interest groups with a charter involving environmental or military matters; and any other person that may have a particular interest in Fort Benning.

Public participation opportunities with respect to this EIS and decision making on the proposed action are guided by Army NEPA regulation, which requires the preparation and implementation of a Public Involvement Plan (PIP) to guide the public and stakeholder involvement process throughout the EIS process. The PIP is available upon request in hard copy from Mr. John Brent, Fort Benning Directorate of Public Works, Environmental Management Division, Bldg #6 (Meloy Hall), Room 310, Fort Benning, GA 31905, or by visiting the website at http://www.hqda.army.mil/acsim/brac/nepa_eis_docs.htm.

1.4.2 Notice of Intent

The Army published a Notice of Intent (NOI) announcing the development of eight EISs for realignment actions resulting from the 2005 BRAC Commission's Recommendations in the *Federal Register* on November 23, 2005 (Volume 70, Number 225, Pages 70793-70795). Appendix A provides a copy of the NOI.

1.4.3 Scoping Process

1.4.3.1 Project Mailing List

A mailing list has been developed for this project. It includes federal and state agencies, elected officials, American Indian representatives, interest groups, libraries, and media points of contact. The list will be continually updated throughout the NEPA process.

1.4.3.2 Public Scoping Process

Scoping is an early and open process for (1) actively bringing the public into the decision-making process, (2) determining the scope of issues to be addressed, and (3) identifying the major issues related to a proposed action (40 CFR 1501.7). CEQ and Army NEPA regulations require a scoping process in the development of an EIS. The scoping period began on May 16, 2006 with the announcement of the scoping meeting and comment period in the local Columbus newspapers, starting with *Ledger-Enquirer* on May 16. The scoping meeting was held on May 23, 2006 at Founders Hall, Columbus State University in Columbus, GA. Forty-three people attended. In addition to the general public, the Mayor of Columbus; a member of the Muscogee County School Board; representatives from federal, state, and local agencies; and a reporter from the *Ledger-Enquirer* were in attendance. The public was informed that comments would be accepted throughout the NEPA process, but encouraged to submit scoping comments no later than June 14, 2006.

1.4.3.3 Scoping Summary of Issues and Concerns

In total, 10 written comments, 5 oral comments, and 1 petition signed by 63 individuals were received during the official scoping period. The following summarizes the comments/issues raised to the Army representatives. in these comments and/or during the scoping meeting.

- Concerns for impacts in the Chattsworth Road area expressed by citizens living in this area regarding quality of life and property values; noise, health (lead from ammunition and smoke generation from pyrotechnics), and safety impacts that may occur from range operations; and dust generation from military traffic on adjacent Installation roads.
- A comment suggested examining the impacts on habitat, green space, water quality, and air quality not only from the physical impacts of new infrastructure but also from the "ripple effect" through population, development, and traffic off Post.
- A suggestion to convert Lindsay Creek from a concrete culvert to a more naturalized park-like setting.
- A perceived need for another Fort Benning commissary on the main Post or an extension to the one at the mall.
- A request from the Alabama Historical Commission for additional information in order to complete the review of the project.
- A suggestion that the Army have a better Army Compatible Use Buffer (ACUB) program for Fort Benning.
- An issue to evaluate potential noise due to increases in helicopter traffic.
- A concern about the potential for noise from the Installation that could affect classroom instruction.
- A citizen who owns land adjacent to Fort Benning has a wetland area that the citizen would like the Army to consider as a potential bank through which to mitigate wetland impacts.

These issues and concerns are addressed in Section 2.0 (Proposed Action) where the Army's proposal for any new access points and gates is presented. Sections 4.1 (Land Use), 4.2 (Aesthetics), and 4.4 (Socioeconomics) evaluate quality of life, property values, and natural settings; Sections 4.7 (Noise), 4.8 (Air Quality), 4.10 (Water Resources), and 4.14 (Safety) present analysis of construction/demolition activities as well as range operational impacts such as ordnance safety zones and unexploded ordnance (UXO) on the human and natural environment. Section 4.13 (Cultural Resources) addresses potential impacts to archaeological and historic resources and consultation with the GA and AL State Historic Preservation Offices (SHPOs) as well as with American Indian Tribal representatives during the NEPA process. Section 4.16 (Mitigation Summary) addresses mitigation measures that would be undertaken to minimize impacts to the environment.

In addition to the concerns highlighted above, suggestions were offered for evaluation in the EIS, followed by an explanation of the approach that the Army is taking in this EIS (in italicized text):

- A new access road into the northern ranges; for instance, from 10th Division Road instead of Chattsworth Road was suggested. *From the beginning, the Army has never intended to use Chattsworth Road as an access to the new ranges, thus the reason for proposed new roads and existing road upgrades within the Installation to be detailed in Section 2.1.*
- Another suggestion was to locate the small arms ranges farther away from the Installation northwestern boundaries or move to them to another location within the Installation. *Every endeavor was taken to maximize the distance between the ranges, the Installation boundary, and adjacent communities. When siting the proposed ranges, many criteria were applied: 1) safety constraints such as surface danger zones prescribed by weapons footprints; 2) environmental constraints such as noise, wetlands, threatened and endangered species and associated habitat, slope and aspect of topography, and archaeological and historic resources; 3) accessibility; 4) line of sight; and 5) construction costs. These criteria were applied when evaluating proposed new range locations. Fort Benning will install hard road surfaces to reduce dust, and consider erecting fences to enhance security.*
- Another suggestion was to construct a public access road off of Lynch Road. *At this time, the Army has no plan to construct a public access point to the northern range via a new road outside the Installation, but would upgrade and/or expand the existing road network within the Post boundaries for internal traffic.*
- There was an additional suggestion to mitigate and minimize impacts through investment, partnership, and collaboration with local landowners and the greater community. *The Army has been working closely with the community throughout the BRAC process to ensure the quality of life is not endangered, but is enhanced by these Transformation activities. Fort Benning has also been engaged in the ACUB program that supports the Army's responsibility as a federal agency to protect endangered species habitat. By working in partnership with conservation organizations, ACUBs coordinate habitat conservation planning at the ecosystem level to ensure that greater benefits are realized towards species and habitat recovery.*

1.5 IMPACT ANALYSES PERFORMED

For this Transformation EIS, the analysis of potential impacts is focused on the cantonment and training areas. The four cantonment areas (Main Post, Kelley Hill, Sand Hill, and Harmony Church) are located in the western portion of the Installation east of the Chattahoochee River (GA/AL state boundary) and south and east of Columbus, GA. Cantonment areas, a term used for administrative and residential areas of Army installations, are where living and working populations are concentrated and buildings and infrastructure are developed to support those populations. Other areas of the Installation may contain some buildings, structures, and infrastructure, but primarily serve various maneuver and range training purposes (including safety buffers). The maneuver, training, and range areas are generalized as north and south, with U.S. Highway 27/280 and Georgia State Route 1/520 (hereafter, referred to as U.S. Highway 27/280) bisecting the Installation northwest to southeast (see Figure 1-1), acting as the dividing line between these areas. Section 2.0 provides further definition of these geographic areas.

1.6 FRAMEWORK FOR TRANSFORMATION ACTIVITIES

Army and CEQ NEPA regulations define the steps and milestones in the environmental impact analysis process. The major milestones include:

1. *Announce that an EIS will be prepared*. For this EIS, a Notice of Intent was published November 23, 2005 in the *Federal Register*.
2. *Conduct Scoping*. This is the first major step in identifying the relevant issues to be analyzed in depth and eliminate the issues that are not relevant. Within this process we are very active in soliciting comments from the public, local governments, federal and state agencies, Native American Tribes, and environmental groups to ensure their concerns and issues about the proposed Transformation action are included in the analyses. For this EIS, the Army held a scoping meeting in May 23, 2006 in Columbus, GA. In addition, over 200 notices were sent to the public, elected officials, federal, state, and local regulatory agencies announcing the proposed Transformation action and the scoping meeting date, time, and location.
3. *Prepare a draft EIS.* The first comprehensive document for public and agency review is the draft EIS. This document examines the environmental impacts of the Transformation action that were determined to be relevant from our scoping initiatives, and analyzes all reasonable alternatives, and a no action alternative. This draft EIS has been distributed to agencies, the public who have requested copies, and numerous repositories, as well as posted on a public website, to ensure the widest dissemination possible. Once we have filed the Notice of Availability of this document in the *Federal Register*, we begin a 45-day public comment period.
4. *Have a public comment period.* Our goal during this process is to ensure we receive any oral and written comments about the analysis presented in the draft EIS. We accomplish this through receipt of comments through the mail as well as at the public meeting. This meeting provides an open forum for discussion of the Transformation action and its alternatives and provides a direct feedback mechanism for the public and agencies to orally address or submit written comments directly to the Army. We provide a written response to all of the formal comments we receive during the public comment period as well as the issues presented at the public meeting. These issues are considered in the preparation of the final EIS. All of the comments are documented in this phase of the NEPA process and disclosed to the decisionmaker as part of the administrative record.
5. *Prepare a final EIS.* Following the draft EIS public comment period, a final EIS is prepared. This document will be a revision of the draft EIS, include consideration of all public and agency comments and the Army's responses, and provide the decisionmaker a comprehensive review of all the alternatives, their environmental impacts, and mitigation measures to minimize adverse impacts.
6. *Issue a Record of Decision (ROD).* The final step in the NEPA process sis the ROD. It identifies which alternative has been selected by the decisionmaker and what measures will be carried out by the Army to reduce any adverse impacts to the environment.

For the EIS, the Army has invited cooperating agency status; however, no agencies requested such designation.

1.6.1 BRAC Procedural Requirements

As noted in Section 1.3.1, the Defense Base Closure and Realignment Act of 1990 specifically addresses the applicability of NEPA to BRAC-directed actions, the Congressional waiver of the procedural elements of NEPA to the actions of DoD and the BRAC Commission in recommending bases for closure and realignment, and to the actions of the President in approving or disapproving the BRAC Commission's recommendations. The BRAC Commission procedures for identifying affected Installations and bases are specified by this law and include the DoD Force Structure Plan, selection criteria (published in the *Federal Register* for public comment) (Volume 70, Number 225, Pages 70793-70795), DoD recommendations, review and recommendations by the BRAC Commission, and review by the President.

Additionally, the Defense Base Closure and Realignment Act of 1990 requires that all BRAC-directed closures and realignments must be initiated within 2 years of the date on which the President transmits the BRAC commission's report to Congress (Sec. 2904 (a)(3) PL 101-510, as amended). All such closures and realignments must be completed within 6 years of that same date (Sec. 2904(a)(4), PL 101-510, as amended). President Bush approved the recommendations and forwarded the report to Congress on September 15, 2005. Therefore, the BRAC actions at Fort Benning must be initiated no later than September 15, 2007 and completed no later than September 15, 2011.

1.6.2 Other Procedural Requirements and Consultation

In accordance with Section 7(a)(2) of the Endangered Species Act, the Army must consult with the Secretary of the Interior to ensure that implementation of the proposed action is not likely to jeopardize the continued existence of any federally threatened or endangered species or result in the destruction or adverse modification of any habitat determined to be critical to threatened or endangered species. Formal consultations are required prior to federal agencies authorizing, funding, or implementing proposed actions that may adversely affect a threatened or endangered species or its critical habitat. Fort Benning does not support any designated critical habitat so that will not be discussed further in this EIS. Preparation of a biological assessment (BA) (evaluating the potential impact to federally threatened or endangered species) is required before initiation of formal consultation. Formal consultation involves up to a 90-day consultation period, and an additional 45-day period for the USFWS to prepare a biological opinion (BO) (135 days total). A BO is a written statement from the USFWS regarding its opinion of the biological assessment and a summary of the information on which the BO is based, detailing how the agency action affects the species. The BO provides measures that they deem should be implemented in conjunction with a proposed action to avoid or minimize impacts. The USFWS also provides nonbinding conservation recommendations as part of the BO.

Section 106 of the National Historic Preservation Act (NHPA) requires all federal agencies to take into account the effects of their actions on properties listed or eligible for inclusion on the National Register of

Historic Places. The Advisory Council on Historic Preservation (ACHP) is also provided an opportunity to comment on those actions and their potential effects. The proposed action is subject to Section 106 review. In accordance with the ACHP's implementing regulation (36 CFR Part 800), the Army is required to consult with the GA and AL State Historic Preservation Officers (SHPO), concerned federally recognized Indian Tribes, and others, about the proposed action and its potential effects on eligible properties. For the Transformation actions addressed in this EIS, the Army is using its Army Alternate Procedures (as allowed under 36 CFR 800.14) for compliance with Section 106 of the NHPA, as detailed in Fort Benning's Historic Property Component Plan. Alternate procedures include among other actions, timely consultation with Stakeholders via NEPA documentation and processes should adverse effects to historic properties be expected, but only yearly summaries of actions, should actions with no adverse effect be contemplated as determined by Fort Benning. Only those historic properties determined eligible for, or already on, the National Register of Historic Places (NRHP) are managed with preference for avoidance of impacts as the best management practice. Evaluations of historic properties to determine eligibility for their inclusion on the NRHP will be completed prior to any proposed disturbance by Army Transformation activities. The Army is seeking input and concurrence from GA SHPO and Tribes via the NEPA process and this EIS.

The 1972 amendments to the Federal Water Pollution Control Act (FWPCA), also referred to as the Clean Water Act or (CWA) prohibit the discharge of any pollutant to waters of the United States from a point source unless the discharge is authorized by a National Pollutant Discharge Elimination System (NPDES) permit. Efforts to improve water quality under the NPDES program have focused traditionally on reducing pollutants in discharges from industrial and municipal wastewater treatment plants. Prior to 1990, efforts to address storm water discharges under the NPDES program have generally been limited to a few industrial categories with storm water effluent limitations.

Phase I of the U.S. Environmental Protection Agency's (EPA) storm water program was promulgated in 1990 under the CWA. Phase I relies on NPDES permit coverage to address storm water runoff from: (1) "medium" and "large" municipal separate storm sewer systems (MS4s) generally serving populations of 100,000 or greater, (2) construction activity disturbing 5 acres of land or greater, and (3) eleven categories of industrial activity. Georgia has been delegated the NPDES program and is therefore responsible for implementation of a program to control storm water discharges. EPD has issued NPDES MS4 permits for the Phase I large and medium municipal areas and a general permit for the ten categories of industrial activity. A general permit for construction activity disturbing 5 acres of land or greater was issued on June 12, 2000 with an effective date of August 1, 2000.

On December 8, 1999 EPA published the Storm Water Phase II Final Rule, which expanded the Phase I program by requiring additional operators of small MS4s and operators of small construction sites (1 to 5 acres) to be covered by NPDES permits and to implement programs and practices to control polluted storm water runoff. In conjunction with the federal regulations, the Georgia Environmental Protection Division (EPD) amended the Georgia Rules and Regulations for Water Quality Control (Rules) in April 2001 to incorporate all Phase II regulations.

EPD has issued three NPDES general permits that authorize the discharge of storm water from three distinct types of construction activity. These permits became effective in August of 2003, and regulate all construction activity disturbing 1 or more acres. The first permit regulates stand-alone construction activity (GAR100001); the second regulates infrastructure (i.e., linear) construction sites (GAR100002); the third regulates common development construction (GAR100003). Each permit contains significant common language and requirements as well as individual differences specific to each type of activity.

The permits were issued pursuant to the authority contained in O.C.G.A. §§ 12-5- 27 and 12-5-30. As required, the permits incorporated the applicable provisions of O.C.G.A. §§ 12-7-6. The permits include the requirement that regulated activities perform turbidity sampling on all receiving water(s), or all storm water outfalls, or a combination of receiving water(s) and outfall(s). The numbers applicable to the alternative outfall monitoring were established as estimated surrogates for the otherwise applicable in-stream turbidity levels using factors applicable on average basis statewide.

The permits define construction activities as those disturbing a land area of 1 acre or greater, or tracts of less than 1 acre that are part of a larger overall development with a combined disturbance of 1 acre or greater (i.e., common plan of development or sale). EPD can require an applicant to submit an NPDES permit application for an individual NPDES permit upon written notification to the applicant. In addition to storm water discharges, the proposed general NPDES permits authorize certain non-storm water discharges such as fire fighting water and uncontaminated groundwater. The proposed general permits are valid for a term of 5 years.

The major provisions of the proposed permits include a notification of the facility/site's intent to comply with the permit by submitting a Notice of Intent (NOI), an Erosion, Sedimentation and Pollution Control Plan (ESPCP), and implementation of this Plan. Coverage under the permits is achieved by submitting a NOI to EPD by the permittee(s). A permittee structure for common developments remains similar to the previous permit. A primary permittee is the facility/site owner or operator. A secondary permittee is a home builder, a utility contractor, or similar entity conducting land disturbance activities within a common development. Both stand-alone and infrastructure construction activities have primary permittees only. NOIs are required to be submitted to EPD by all permittees at least 14 days prior to the commencement of the construction activity, with certain exceptions specified in the permits. The NOI includes basic information about the facility/site including the specific waters of Georgia where the discharges will occur, except in the case of Blanket NOIs for utility companies and utility contractors that are secondary permittees. Specific forms are available from EPD and must be used for the NOI. Coverage by the general NPDES permit is provided without acknowledgment from EPD. When final stabilization of the facility/site is achieved, the permittee must notify EPD they are terminating coverage under the general NPDES permit by submitting a Notice of Termination (NOT).

The ESPCP details those best management practices to be used at the facility/site to control erosion, sedimentation and other pollutants. The primary permittee is responsible for developing and implementing the ESPCP for the entire infrastructure, stand-alone or common development construction site. The plan must be prepared, on the behalf of the primary permittee, by an individual licensed by the

State of Georgia in the field of engineering, architecture, landscape architecture, forestry, geology or land surveying; or by a person that is a Certified Professional in Erosion and Sediment Control (CPESC) with a current certification by the International Erosion Control Association.

The plan is also required to establish procedures to collect and analyze samples from the receiving stream(s) or the storm water outfall(s) based on the methodologies set forth in the proposed permits. Permittees are required to perform sampling of turbidity levels as a means of determining whether an additional violation of the permit terms and conditions has occurred in the event best management practices (BMPs) were not properly designed, installed, or maintained. Sampling shall be performed during qualifying rain events following distinct points in the construction process as outlined in the permits.

Permittees must maintain records of their activities relative to compliance with the terms and conditions of the proposed general NPDES permits. These records include copies of the NOI, plan, site inspections, sampling results and NOT. For new facilities/sites disturbing more than 50 acres, the Plan must be submitted to EPD with the NOI. For new facilities/sites disturbing between one and 50 acres and where there is no local issuing authority pursuant to the Georgia Erosion and Sedimentation Act, the plan must be submitted to EPD with the NOI.

No federal agencies or other entities are acting as cooperating agencies on this EIS; and, therefore no procedural requirements for cooperating agencies apply.

In addition to the completed and signed ROD on this EIS, the BO must be issued and other permits for specific projects, such as those for the protection of wetlands, water quality, air quality, etc., must be in place prior to breaking ground on any of those projects addressed as part of the Transformation action.

1.6.3 Relevant Statutes, Executive Orders, and Permits

In accordance with CEQ NEPA regulations (40 CFR 1502.25), the Army has prepared this EIS concurrently with and integrated with environmental impact analyses and related surveys and studies required by the Fish and Wildlife Coordination Act (16 U.S. Code [USC] 661 *et seq*.), the National Historic Preservation Act of 1966 (16 USC 470 *et seq*.), the Endangered Species Act of 1973 (ESA, 16 USC 1531 *et seq*.), and other environmental review laws (and their implementing regulations), and Executive Orders (EOs) outlined by environmental resource in Table 1.6-1.

Table 1.6-1: Other Major Environmental Statutes, Regulations, and Executive Orders Applicable to Federal Projects

Environmental Resources	Statute, Regulation, or Executive Order
Air Quality	Clean Air Act (CAA) of 1970 (PL 95-95), as amended in 1977 and 1990 (PL 91-604); U.S. Environmental Protection Agency (USEPA), Subchapter C-Air Programs (40 CFR 52-99); 40 CFR Part 63 Subpart PPPPP, National Emissions Standards for Hazardous Air Pollutants (NESHAP); Georgia Rules for Air Quality Control (Chapter 391-3-1)
Noise	Noise Control Act of 1972 (PL 92-574) and Amendments of 1978 (PL 95-609); USEPA, Subchapter G-Noise Abatement Programs (40 CFR 201-211)
Geology and Soils	National Pollutant Elimination Discharge System (NPDES) Construction Activity General Permit (40 CFR 122-124); Georgia Erosion and Sediment Control Act of 1975
Water Resources	Federal Water Pollution Control Act (FWPCA) of 1972 (PL 92-500) and Amendments; Clean Water Act (CWA) of 1977 (PL 95-217); National Pollutant Discharge Elimination System (NPDES) Construction Activity General Permit (40 CFR 122-124), NPDES Industrial Permit and NPDES Municipal Separate Storm Sewer System (MS4) Permit; CWA 40 CFR 112 Spill Prevention Control and Countermeasure (SPCC); USEPA, Subchapter D-Water Programs (40 CFR 100-145); Water Quality Act of 1987 (PL 100-4); USEPA, Subchapter N-Effluent Guidelines and Standards (40 CFR 401-471); Safe Drinking Water Act (SDWA) of 1972 (PL 95-923) and Amendments of 1986 (PL 99-339); USEPA, National Drinking Water Regulations and Underground Injection Control Program (40 CFR 141-149)
Biological Resources	Migratory Bird Treaty Act of 1918; Fish and Wildlife Coordination Act of 1958 (PL 85-654); Sikes Act of 1960 (PL 86-97) and Amendments of 1986 (PL 99-561) and 1997 (PL 105-85 Title XXIX); Endangered Species Act of 1973 (PL 93-205) and Amendments of 1988 (PL 100-478); Fish and Wildlife Conservation Act of 1980 (PL 96-366); Lacey Act Amendments of 1981 (PL 97-79); Responsibilities of Federal Agencies to Protect Migratory Birds (EO 13186)
Wetlands and Floodplains	Section 401 and 404 of the Federal Water Pollution Control Act of 1972 (PL 92-500); USEPA, Subchapter D-Water Programs 40 CFR 100-149 (105 ref); Floodplain Management-1977 (EO 11988); Protection of Wetlands-1977 (EO 11990); Emergency Wetlands Resources Act of 1986 (PL 99-645); North American Wetlands Conservation Act of 1989 (PL 101-233)
Cultural Resources	NHPA (16 USC 470 et seq.) (PL 89-865) and Amendments of 1980 (PL 96-515) and 1992 (PL 102-575); Protection and Enhancement of the Cultural Environment-1971 (EO 11593); Indian Sacred Sites-1966 (EO 13007); American Indian Religious Freedom Act (AIRFA) of 1978 (PL 94-341); Antiquities Act of 1906; Archaeological Resources Protection Act (ARPA) of 1979 (PL 96-95); Native American Graves Protection and Repatriation Act (NAGPRA) of 1990 (PL 101-601); Protection of Historic Properties (36 CFR 800) – Fort Benning has a Historic Properties Component of the Integrated Cultural Resource Management Plan (ICRMP) in lieu of these regulations for Section 106 compliance of the NHPA (Fort Benning 2004a)
Hazardous and Toxic Substances and Waste	Resource Conservation and Recovery Act (RCRA) of 1976 (PL 94-5800), as Amended by PL 100-582; USEPA, subchapter I-Solid Wastes (40 CFR 240-280); Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980 (42 USC 9601) (PL 96-510); Toxic Substances Control Act (TSCA) (PL 94-496); USEPA, Subchapter R-Toxic Substances Control Act (40 CFR 702-799); Federal Insecticide, Fungicide, and Rodenticide Control Act (40 CFR 162-180); Emergency Planning and Community Right-to-Know Act (40 CFR 300-399); Federal Compliance with Pollution Control Standards-1978 (EO 12088), Superfund Implementation (EO 12580); Greening the Government Through Waste Prevention, Recycling, and Federal Acquisition (EO 13101), Greening the Government Through Efficient Energy Management (EO 13123), Greening the Government Through Leadership in Environmental Management (EO 13148); Georgia Hazardous Waste Management Act
Socioeconomics	Federal Action to Address Environmental Justice in Minority Populations and Low-Income Populations (EO 12898); Protection of Children from Environmental Health Risks and Safety Risks (EO 13045)

CHAPTER 2

DESCRIPTION OF THE PROPOSED ACTION

2.0 DESCRIPTION OF THE PROPOSED ACTION

2.1 INTRODUCTION

This section describes the Army's proposed action for carrying out the BRAC-directed actions of relocating the Armor School and Center to Fort Benning; relocating the 81st RRC ECS to Fort Benning as part of the closure of Fort Gillem, GA; closing the USARC in Columbus, GA and consolidating it with other Fort Benning Army Reserve units at a new USARC at Fort Benning; and relocating the existing Drill Sergeant School from Fort Benning to Fort Jackson, SC (BRAC Commission 2005). In addition to these BRAC-directed actions, the Army is undertaking further, interrelated Transformation activities associated with GDPR, the AMF initiative, and other stationing actions associated with AR 5-10.

2.2 PROPOSED ACTION

Under the proposed action, the Army would provide the facilities, infrastructure, and equipment needed to support the Transformation activities at Fort Benning first identified in Section 1.0: 1) BRAC, 2) GDPR (overseas re-stationing), 3) AMF, and 4) other related stationing activities. The construction activities associated with the proposed action would occur within the bounds of Fort Benning. The proposed construction of administrative, supply/storage, maintenance, barracks, commercial services, community facilities, medical and dental, and recreation facilities is focused on the cantonment areas. A combination of redevelopment (e.g., renovation), development, and expansion would occur at the four major cantonment areas: Main Post, Kelley Hill, Sand Hill, and Harmony Church (Figure 2.2-1). Training assets, in the form of ranges and maneuver areas, are found throughout the Installation. The proposed improvements/upgrades to existing ranges and maneuver areas and proposed new ranges were sited to align with these existing assets.

The following describes the missions being relocated, activated, and inactivated under the proposed action; the personnel, force structure, or mission changes associated with these Transformation efforts; the construction activities supporting these mission changes and relocations; operation and maintenance of all types of facilities; as well as the associated equipment use and operational needs. Personnel gains/losses are as reported in the most recent G-3 Force File, Army Stationing and Installation Plan (ASIP), and Pending Unit Action List (PUAL) as of July 2006.

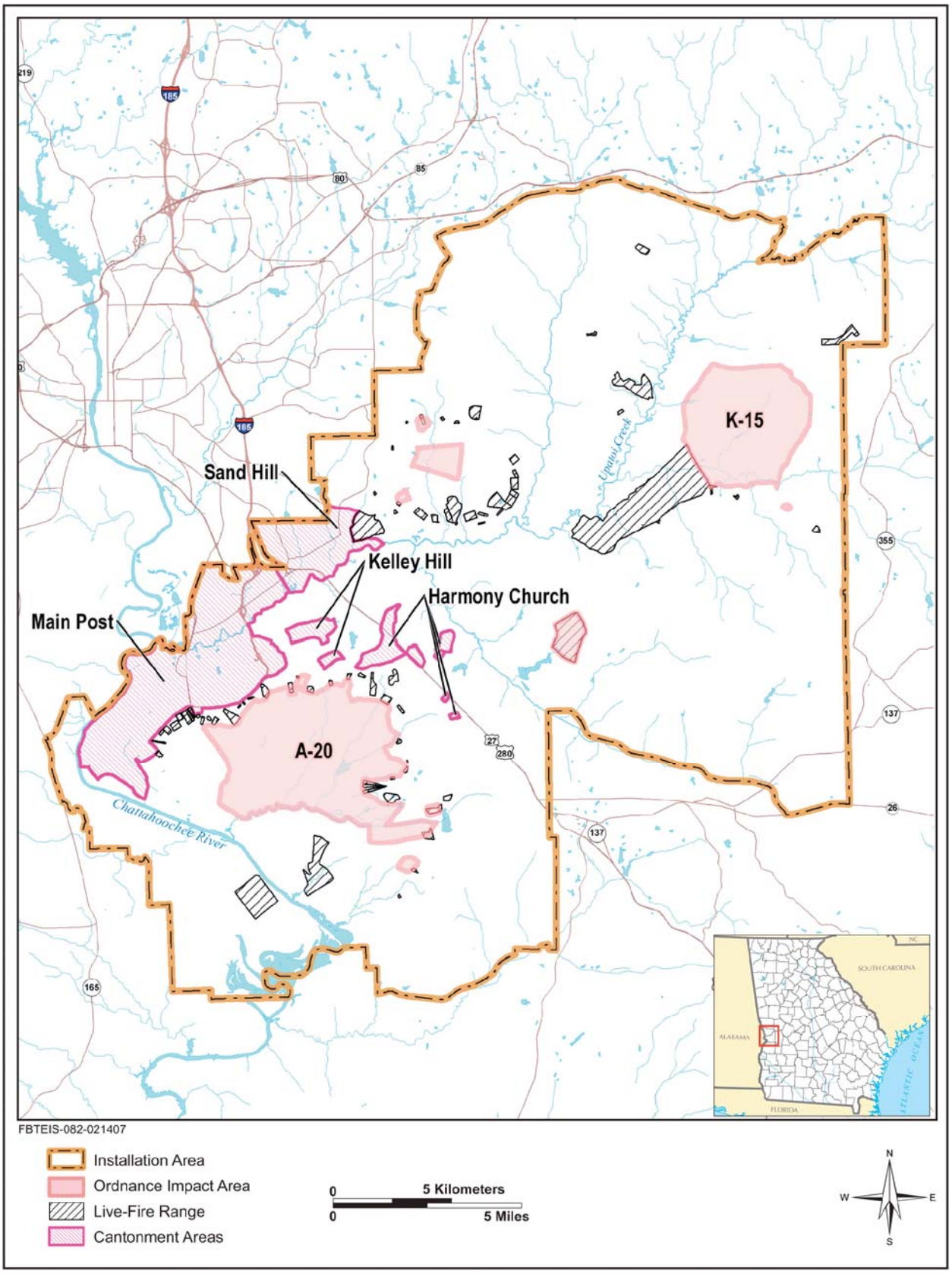

Figure 2.2-1: Fort Benning Cantonment and Training Ranges

2.2.1 BRAC-Directed Stationing Actions

The BRAC Commission directed the following actions at Fort Benning:

1. Relocating the Armor School and Center from Fort Knox to Fort Benning. The U.S. Army Armor School (USAARMS) trains armor and cavalry Soldiers, noncommissioned officers, and officers to fight in full spectrum operations to meet the requirements of the Army in the contemporary operational environment. The USAARMS serves as the trainer of the current mounted force and develops the tools for the future mounted force. The School also trains Marines as M1A1 (Abrams) tank crewmen and tank mechanics; this training includes basic and advanced instruction for commissioned and noncommissioned officers. Once the Armor School and Center are relocated, they would join the existing Infantry Center and School at Fort Benning to create the Maneuver Center of Excellence where Soldiers would be trained in both armor and infantry tactics. Section 2.4 provides a more detailed description of the Armor School and Center missions since they drive the majority of the Transformation activities under this proposed action.
2. Relocating the 81st RRC ECS from Fort Gillem, GA to Fort Benning. In general, the 81st RRC has command and control of units assigned to prepare for successful mission performance and mobilization. The RRC ECS supports the equipment used for mission performance and mobilization.
3. Closing the USARC in Columbus, GA and relocating and consolidating the units (together with Army Reserve Units currently on Fort Benning) into a new USARC on Fort Benning (U.S. Army Reserve 2006). The Army Reserve's mission is to provide trained and ready Soldiers and units with the critical combat support capabilities necessary to support national strategy during peacetime, emergency contingencies, and war.
4. Relocating the Drill Sergeant School from Fort Benning to Fort Jackson, SC. The Drill Sergeant School trains noncommissioned officers in the duties and responsibilities associated with Drill Sergeants so that they can train, supervise, and lead initial entry Soldiers.

2.2.2 BRAC-Discretionary Stationing Actions

BRAC-discretionary Transformation actions are those activities and/or missions that were not specifically directed by the BRAC Commission but were indirectly impacted because their current Installations' mission might have changed, closed, and/or should be relocated due to BRAC-directed actions. At Fort Benning these discretionary actions include:

1. Relocating the CID function from Fort McPherson to Fort Benning. CID's mission is to investigate and deter serious crimes in which the Army has an interest. CID collects, analyzes, processes, and disseminates criminal intelligence; conducts protective service operations; provides forensic laboratory support to all DoD investigative agencies, and maintains Army criminal records. CID also provides criminal investigative support to all Army elements and deploys on short notice in support of contingency operations worldwide. CID is a worldwide command with fewer than 2,000 Soldiers and civilians and approximately 900 special agents. CID special agents primarily

investigate felony-level crime across the Army and provide investigative support to field commanders. They conduct a wide variety of investigations to include deaths, sexual assault, armed robbery, procurement fraud, computer crimes, counter-drug operations, and war crimes. CID agents also provide counter-terrorism support, criminal intelligence support, force protection, forensic laboratory investigative support, and protective services for key DoD and senior Army leadership.

2. Relocating the 3rd MP Grp (CID) from Fort Gillem to Fort Benning. As part of centralizing the CID functions, this MP Grp will relocate to Fort Benning. It supports commanders by conducting criminal investigations of serious, sensitive, or special interest matters; preventing crime; preserving the force and Army resources in peacetime; and support combat and contingency operations throughout the group's area of operations. The 3rd MP Grp is responsible for all felony criminal investigation matters with an Army interest throughout the eastern half of the United States, the Caribbean, Central America (less Mexico), and South America.
3. Relocating the Veterinary Clinic from Fort McPherson to Fort Benning. The clinic provides quality, economical animal care and preventive medicine for all pets of authorized personnel. The clinic's area of concentration is in the prevention and control of diseases, which may be transmissible to humans or animals, or situations that may be community health problems, or are of significant public interest to the pets of military personnel.
4. Relocating the Blood Donor Center from Fort Knox, KY to Fort Benning. The donor center helps Soldiers by collecting blood from the military community, for the military community. It provides quality blood products, blood substitutes, and services for all worldwide Soldiers in peace and war.
5. Relocating the 86th MP Detachment (CID) from Fort McPherson to Fort Benning. Its mission is similar to that described for the 3rd MP Grp from Fort Gillem.
6. Reassigning field auditors from the U.S. Army Audit Agency (USAAA) in Atlanta, GA to Fort Benning. The USAAA provides objective and independent auditing services to assist the Army in making informed decisions, resolving issues, using resources effectively and efficiently, and satisfying statutory and fiduciary responsibilities.

2.2.3 GDPR Transformation

For the GDPR, the 286th MP (CID) would relocate from overseas to Fort Benning and join other CID units being relocated under BRAC. In addition, an Explosive Ordinance Disposal Company and a Movement Control Team would be moved to Fort Benning from overseas.

2.2.4 AMF Transformation

Under AMF, one brigade from the 3rd Infantry Division (3 ID) would continue to transform to create the Army's new heavy BCT force structure at Fort Benning. The 36th Engineer Group (ENG) would continue to realign as a Sustainment Brigade, which includes the MRBC. The 63rd Engineer Company (Combat Support Equipment [CSE]) would be converted to the 11th Engineer Battalion and the 507th Sustainment Group would be activated at Fort Benning in 2011.

2.2.5 Other Army Stationing

For AR 5-10 stationing activities, the SOCOM (75th RGR Regt) at Fort Benning would gain personnel from other locations across the United States. Figure 2.2-2 and Table 2.2-1 provide an overview of the Transformation activities that would occur at Fort Benning under the proposed action.

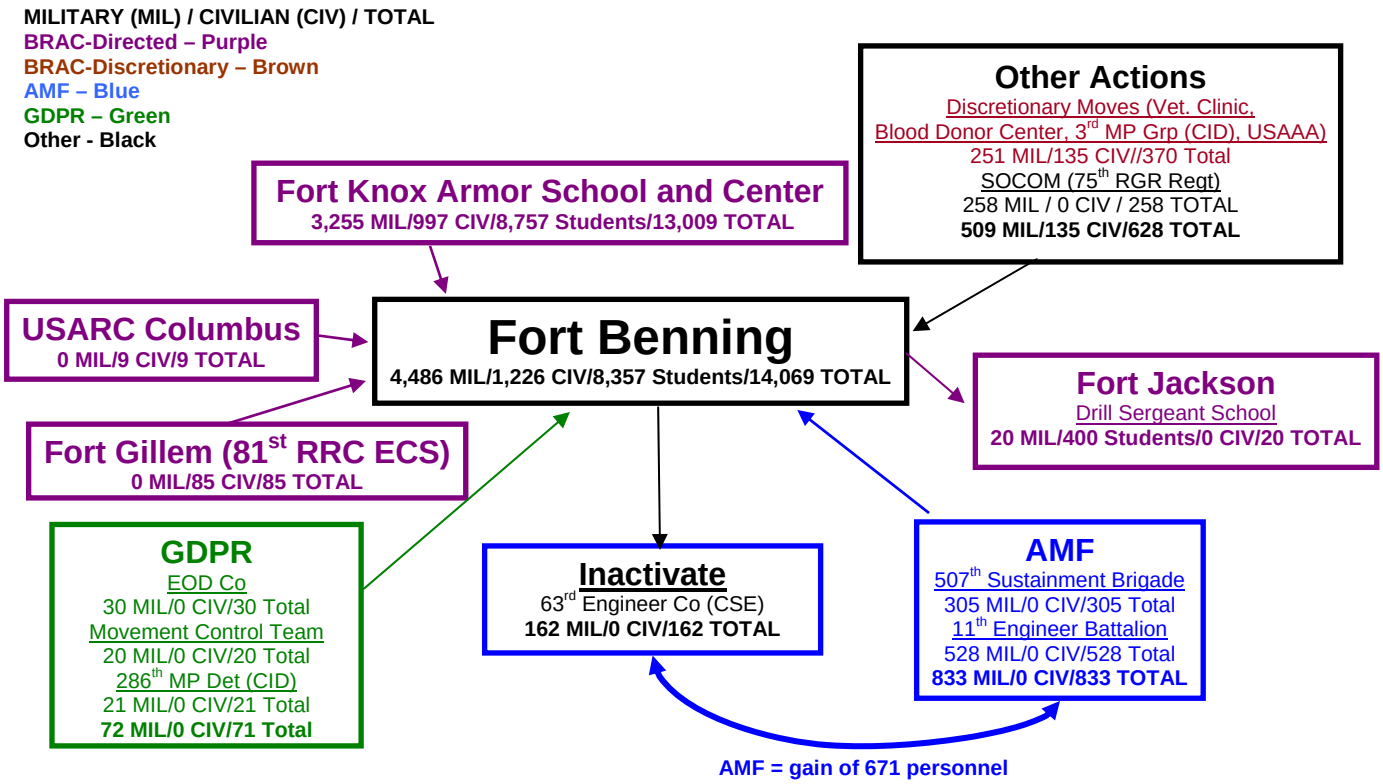

Figure 2.2-2: Overview of Fort Benning Transformation Actions

Sources: Personal communication J.W. Brown III December2006 and Fort Benning 2006a

Table 2.2-1: Personnel Breakdown For Transformation Actions

TRANSFORMATION ACTION	PERSONNEL			
	Military	Civilian	Students*	Total
BRAC-DIRECTED				
Relocate Army School and Center, Fort Knox, KY	3,255	997	8,757	13,009
Relocate USARC Columbus, GA	0	9	0	9
Relocate 81st RRC ECS, Fort Gillem, GA	0	85	0	85
Relocate Drill Sergeant School to Fort Jackson, SC	-20	0	-400	-420
TOTAL BRAC	**3,235**	**1,091**	**8,357**	**12,683**
OTHER ACTIONS				
BRAC-Discretionary relocation of Veterinary (Vet.) Clinic, Blood Donor Center, 3rd MP Grp (CID), USAA	251	135	0	386
SOCOM (75th Ranger Regiment [RGR Regt])	258	0	0	258
TOTAL OTHER	**509**	**135**	**0**	**644**
AMF				
Inactivate 63rd Engineer Co	-162	0	0	-162
Activate 11th Engineer Battalion (Tied to Above)	528	0	0	528
Gain 507th Sustainment Brigade	305	0	0	305
TOTAL AMF	**671**	**0**	**0**	**671**
GDPR				
EOD Co	30	0	0	30
Movement Control Team	20	0	0	20
286th MP Det (CID)	21	0	0	21
TOTAL GDPR	**71**	**0**	**0**	**71**
TOTAL GAIN AT FORT BENNING	**4,486**	**1,226**	**8,357**	**14,069**

*Source: Fort Benning 2006b; *student totals represent the average daily number of students on Fort Benning Personal communication, J.W. Brown III December 2006*

As presented in Figure 2.2-2 and Table 2.2-1, approximately 90 percent of the Transformation personnel realignment is related to BRAC-directed actions. Once all Transformation activities are complete, there would be a 40 percent increase (i.e., 14,069) in Fort Benning personnel (military, civilian, and student). It is assumed that all BRAC personnel will arrive at For Benning no later than 15 September 2011 in accordance with the BRAC legislation.

2.3 ARMOR SCHOOL AND CENTER MISSION

The Armor School and Center comprise the majority of construction activity and personnel reassignments considered in this Transformation EIS. With the move from Fort Knox to Fort Benning, the mission and operations of the Armor School and Center would remain unchanged.

2.3.1 Armor School Mission

The Armor School's mission is to provide basic combat training to Soldiers and Marines in tank and fighting vehicle operation, weapons system deployment, and armor vehicle maintenance. Armor crewmen (tankers) work as part of a team to operate armored equipment and fire weapons to destroy enemy targets. During peacetime, tank and armor units must stay ready to defend the United States and U.S. national interests and international policy, anywhere in the world. During combat, their role is to operate tanks and amphibious assault vehicles to engage and destroy the enemy. Tanks (like the M1A1 and M1A2 Abrams) use mobility, firepower, and shock effect to engage enemy forces.

2.3.2 Armor Center Mission

The Armor Center consists of agencies, directorates, and units that oversee and support operations for the Armor Force; most of these activities are of an administrative nature and would not require the breadth of facility and range construction found with the establishment of the Armor School (U.S. Army 2006c). Some of the agencies and directorates associated with the Center include:

Directorate of Training, Doctrine and Combat Development (DTDCD): This organization develops and provides Doctrine, Training Products, Systems and Organizations to enhance the combat effectiveness of the current and future Armor and Reconnaissance/Cavalry Force.

TRADOC System Manager (TSM) for the Abrams Series of Tanks and TRADOC Capability Manager for Platform Battle Command/Combat Identification: These organizations function as the Army's centralized managers for all combat developments and user activities associated with Platform Battle Command and Combat Identification mission areas. Combat Identification is the process of attaining an accurate characterization of detected objects in the joint battlespace to the extent that high confidence, timely application of military options, and weapons resources can occur.

2.4 PROPOSED TRANSFORMATION DEVELOPMENT ACTIONS

2.4.1 Overview

Proposed action implementation would require construction, demolition, renovation, additions, and infrastructure improvements throughout the approximate 2,010 acres of Fort Benning cantonment areas (Figure 2.4-1): Harmony Church 1,118 acres; Kelley Hill 85 acres; Main Post 562 acres; and Sand Hill 246 acres (Fort Benning Geographic Information System [GIS] data 2006d). Throughout the cantonment areas, new facility construction was sited to coincide with and/or be a complement to:

- existing missions;
- facility operations and functions;
- using existing infrastructure to the greatest extent possible;
- minimizing potential impacts to the environment (e.g., avoid sensitive species habitat); and
- locating Transformation activities on previously disturbed/developed locations.

Training range and maneuver area construction and operation/maintenance activities would be implemented on approximately 157,000 acres set aside for such activities. For ease of explanation in this document, these areas are presented in text and figures as follows: 1) those Transformation activities proposed within ranges located in the northern part of the Installation (north of U.S. Highway 27/280) and 2) those south of the highway.

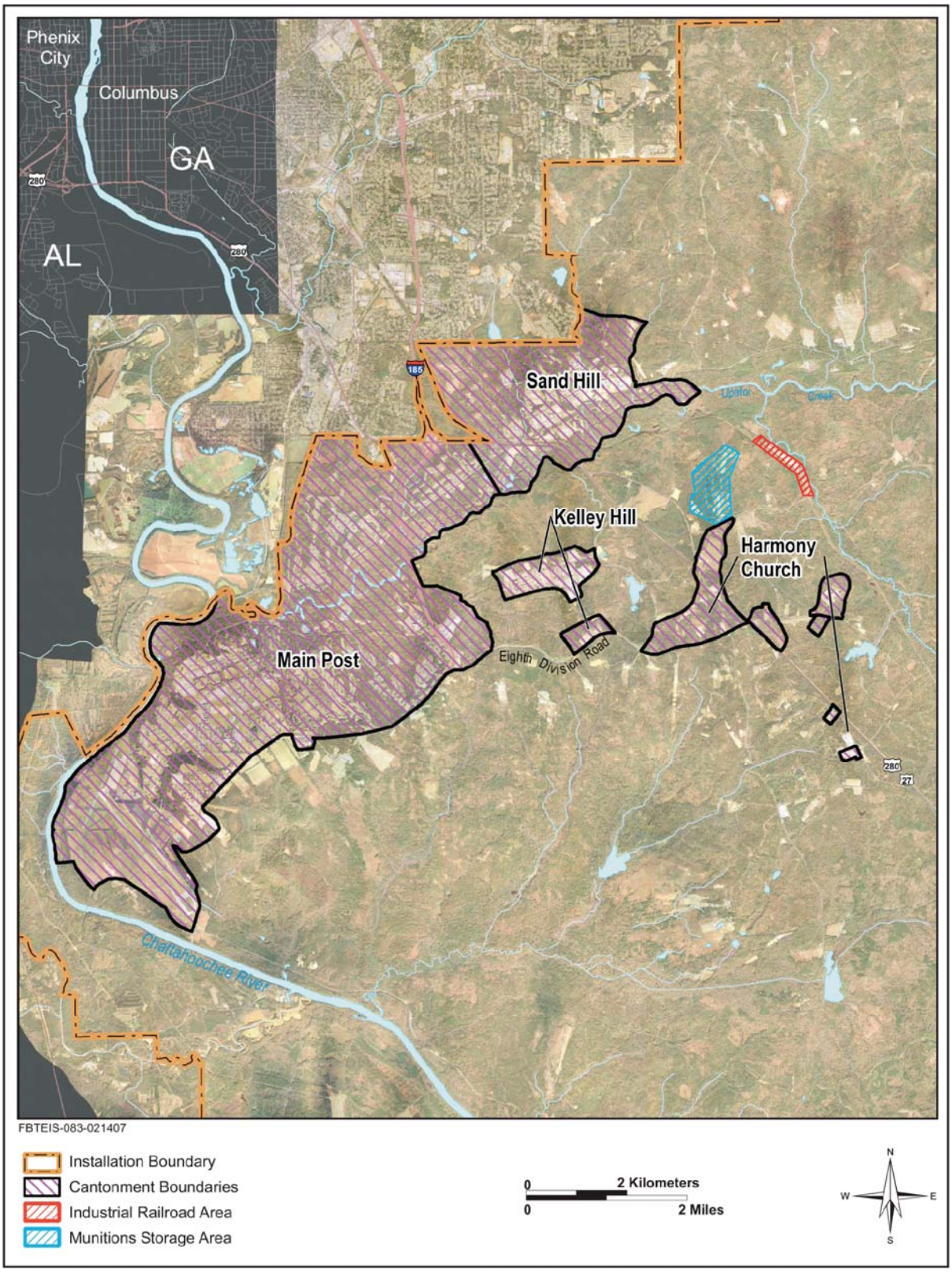

Figure 2.4-1: Fort Benning Cantonment Areas

2.4.2 Proposed Cantonment Area Development

The proposed development under the proposed action would occur within the four cantonment areas and training ranges (both north and south of U.S. Highway 27/280). The precise locations of project siting, within the cantonment and training range areas, may change following finalization of design. It is anticipated that due to the similarity of these areas in habitat and topography, and the relationship with adjacent missions and land uses, the final locations should not demonstrably change the overall analysis presented in this EIS. As discussed in Section 1.0, other NEPA documentation may be required and undertaken following the ROD if some projects are relocated or change dramatically in their scope (e.g., size). The following provides a general description of the proposed development within the cantonment areas.

In general, cantonment area development to support Transformation activities include: headquarters buildings/facilities supporting administrative and operational functions, numerous barracks complexes to house Armor School student trainees; instructional/training classroom facilities; vehicle maintenance instruction facilities; vehicle maintenance shops, motor pools, and wash stands. In addition, to support the increased Fort Benning population, utility, road, and communication systems would need to be upgraded or built depending on the facility location; the existing hospital would be replaced; dental and medial clinics built and some existing health facilities expanded; child development centers established to meet increased pre- and elementary-school numbers; as well as a physical fitness center, chapel, lodging, and dining facilities (Fort Benning 2005a). Section 3.2 provides specific location and size for these Transformation development activities.

2.4.3 Proposed Range and Training Area Requirements

The range and training operations requirements of the proposed action are primarily driven by the gain of the Armor School and Center; however, they are also interrelated and synergistic with other Transformation activities and existing missions at Fort Benning. Range and training operation requirements are reflected in the equipment to be used, the operations undertaken, and the ranges and maneuver areas proposed. The equipment used by units/organizations to be relocated to Fort Benning include tanks, Bradley Fighting Vehicles (BFVs), High Mobility Multipurpose Wheeled Vehicles (HMMWVs), trucks, and trailers for operational needs as well as maintenance instruction. Table 2.4-1 provides an overview of these vehicles currently in the Armor School inventory and projected to move to Fort Benning.

Table 2.4-1: Armor School Vehicle Inventory Projected at Fort Benning

Vehicle	Type	Armor School
Tracked Armor Equipment	Includes Tanks, Armored Personnel Carriers, BFVs, Recovery Vehicles, Tanks With Assault Bridges, And Mine Clearers	530
Wheeled Heavy Equipment	Stryker, HMMWVS (Carriers, Cargo, Armament, And Heavy Weight Trucks)	311
Wheeled Heavy Trucks	Heavy Cargo Equipment Transport, Fuel Tankers, Wrecker/Recovery Vehicles	37
Wheeled Trailers	Low-Bed Trailers For Armaments, Water, And Utility Towing	67
Wheeled Medium/Light Trucks	Fork Lifts, Cargo, And General Personnel Carriers	90
	Total Vehicles	**1,040**

Source: Personal communication, Bartlett Nov 2006, Fort Knox Nov 2006a.

The construction and operation of the numerous new range training facilities identified to support the Transformation activities at Fort Benning would support Armor School training requirements. Training units of the Armor School include the 1st Armor Training Brigade, 16th Cavalry Regiment, and U.S. Army Noncommissioned Officer Academy (NCOA). The 1st Armor Training Brigade's mission is to conduct Initial military training to standard, producing soldiers who are technically and tactically competent, focused on teamwork, infused with the warrior ethos, and ready to take their place in the values-based Army at war. Additionally, it prepares and executes stages of the Fort Knox Mobilization plan, sustains programs, and on order, executes support functions for Fort Knox and the Armor Force. The mission of the 16th Cavalry Regiment is to support the nation at war by developing agile, adaptive, and competent leaders skilled in mounted maneuver and prepared to conduct Full Spectrum Operations in the contemporary operating environment. The mission of the NCOA is to conduct tough and demanding primary, basic, and advanced level courses which develop adaptive, self-confident leaders who motivate teams to solve complex problems, while operating in a full spectrum and contemporary operating environment in an army transforming into the future force (personal communication, Stoinoff 2007).

The training that is currently conducted at Fort Knox in more than 70 training courses ranging in length from 20 weeks to 1 week courses would be shifted to Fort Benning. The Armor Crewman/Scout Advanced NCO Course (ANCOC) is combining with the Infantry ANCOC to form the Maneuver ANCOC. The Armor Captains Career Course and the Infantry Captains Career Course are combining to form the Maneuver Captains Career Course. Both of these new courses will be taught by a mixture of infantry and armor Soldiers and officers and include a mixed student population from both branches. These courses will train graduates in the skills common to mounted and dismounted Soldiers and leaders, as well as in the unique skills specific to their military occupational specialty and unit of assignment. The courses will occur at both Fort Benning and Fort Knox until Fort Benning has the training facilities, ranges, classrooms, and billets to accommodate this training by 2011.

Proposed Range Facilities

- *Rifle/Machine Gun Zero Ranges* – used to train individual Soldiers on the skills necessary to align the sights and practice basic marksmanship techniques against stationary targets. The range is designed for training in shot-grouping and zeroing exercises with the M16 and M4 series rifles as well as crew-served machine guns (U.S. Army 2004a).
- *Modified Record Fire Ranges* – used to train and test individual Soldiers on the skills necessary to identify, engage, and defeat stationary infantry targets for day/night qualification requirements with the M16 and M4 rifles. This range combines the capabilities of automated field fire, automated record fire, and automated night fire ranges to reduce land and maintenance requirements and increase efficiencies (U.S. Army 2004a).
- *Automated Combat Pistol/Multi-Purpose Firearm Qualification Complex* – used to train and test Soldiers in the skills necessary to detect, identify, engage, and defeat stationary targets in a tactical array. The complex satisfies the training and qualification requirements of the 9mm, 0.38-caliber, and 0.45-caliber pistols (U.S. Army 2004a).
- *Multi-Purpose Machine Gun Ranges* – used to train and test Soldiers on the skills necessary to zero various machine gun and semi-automatic weapons systems, detect, identify, engage, and defeat stationary infantry targets in a tactical array (U.S. Army 2004a).
- *Fire and Movement Ranges* – used to train individual Soldiers and teams on basic fire and movement techniques against stationary infantry targets. Soldiers show their ability to select covered and concealed positions, move while under fire, apply principles of teamwork, and use suppressive fire on enemy Soldier targets (U.S. Army 2004a).
- *Tank/Fighting Vehicle Stationary Gunnery Ranges* – used to train Soldiers in conducting weapons system bore sighting, screening, zeroing and/or harmonization (U.S. Army 2004b).

Under the proposed action, Transformation activities would also include an increase in weapons use at existing and new ranges. Table 2.4-2 provides an overview of small caliber (i.e., those used in rifles, pistols, shotguns, and grenade launchers) and large caliber (i.e., inert and high explosive field artillery and mortar shells from howitzers, tanks, and BFVs); a more detailed list is provided at Appendix B.

Table 2.4-2: Projected Annual Weapon Ammunition Use for Transformation Actions

Weapon	Day	Night	Total
Small Caliber	7,629,799	745,596	**8,384,395**
Percent Day/Night	91	9	
Large Caliber	416,231	67,759	**483,990**
Percent Day/Night	86	14	

Source: Fort Benning 2006a and U.S. Army Center for Health Promotion and Preventive Medicine (USACHPPM) 2006a.

Proposed Tracked Vehicle Drivers Training Course, Off-Road Drivers Training Area, Vehicle Recovery Area, Heavy Maneuver Areas, and Range Roads

- *Tracked Vehicle Drivers Training Course* – used to teach the basic driving skills of steering and gear shifting on a level course. Primary facilities include a variety of paved and unpaved driving courses with terrain variations and slopes, road crossovers, observation tower, lighting, maintenance building, hardstand, standard small range operations area.
- *Off-Road Drivers Training Area* – used to provide basic training for off-road driving. Training would occur on existing heavy maneuver areas and tank trails but in a location specifically designated and scheduled for Armor School training.

Heavy maneuver training in the maneuver corridors would include off-road tank formations similar to those pictured here at Fort Knox.

- *Vehicle Recovery Area* – used to train Soldiers on how to retrieve tracked vehicles when mired and/or overturned. This includes maintaining the towing equipment (brakes, hydraulics, and winches), towing techniques, and driving the tow vehicles while towing the tracked vehicles.
- *Heavy Maneuver Areas* – used to conduct force-on-force heavy maneuver training, field training exercises, and situational training exercises using various types of vehicles and equipment, including tracked vehicles movements and tactics by individual units or multiple units supporting one another (combined arms) (U.S. Army 2004b). The Armor School heavy maneuvering occurs in those areas and corridors that would be available to and managed and scheduled primarily to accommodate the Armor School heavy maneuver training requirements.

Key Armor School training events that drive maneuver requirements, including end of cycle training, situational training exercises (STXs) and field training exercises (FTXs), are summarized in Table 2.4-3.

Table 2.4-3: Armor School Maneuver Training Requirements

Course	Scope	Training Event	Duration (Days)	Number of Classes/ Year	Total Annual Days
1st Armor Training Brigade (ATB)					
19D OSUT Cavalry Scout	Basic combat training tasks; Army values; physical fitness; first aid; nuclear, biological and chemical threats; engineer; communications; land navigation; weapons; individual tactical training; intelligence; M3 Bradley and M1025 series HMMWV operation and maintenance	End of cycle exercise	2	26	52
19K OSUT A1A Abrams Armor Crewman	Same as above, but includes M1A1 tank operation and maintenance.	End of cycle exercise	2	26	52
63A10 OSUT M1A1 Abrams Tank System Maintainer	Test and troubleshoot systems; inspect, service, lubricate, replace and adjust components; use of publications, special tools, test measurement and diagnostic equipment; fundamentals and principles of engine, fuel, exhaust, cooling, and electrical systems; track, suspension, steering control, hydraulic systems, engine power train and hull of the M1A1 Abrams tank, perform preventive maintenance checks and services; inspect, service, lubricate, replace, remove, install, adjust, test, purge, and troubleshoot components and control of electrical, mechanical, fire control components on the M1A1 tank turret.	STXs, FTXs	18	23	414
63M10 M2/M3 Bradley Fighting Vehicle (BFV) System Maintainer	Same as above, but for the M2/M3 BFV.				
ASI H8 Tank Vehicle Recovery Specialist	Test and troubleshoot systems; inspect, service, lubricate, replace and adjust components; starting, charging, auxiliary power units, brakes, and main winch systems; operating, servicing and using track recovery vehicles and equipment; procedures used in rigging, recovering and towing of track vehicles.	Field Training	9	25	225
U.S. Marine Corps	Similar training to the 19 K OSUT, A1A Abrams Armor Crewman, and 63A10 OSUT, M1A1 Abrams Tank System Maintainer, but for the Marine Corps.	Field Training	20	9	180

Table 2.4-3: Armor School Maneuver Training Requirements

Course	Scope	Training Event	Duration (Days)	Number of Classes/ Year	Total Annual Days
16th Cavalry Regiment					
Basic Officer Leader Course (BOLC) III	Indoctrination of Army programs and initiatives; military problem solving; risk management; after action review; suicide prevention; combat stress; 9mm pistol qualification; and a two-day field exercise designed to validate pre-commissioning skills. Hands-on equipment oriented instruction is used to train preventive maintenance, checks and services and the M1A1 tanks, tank crew station tasks, and pre-gunnery skills culminating with the tank crew gunnery skills test; property accountability; platoon maintenance operations; and individual and crew nuclear, biological, and chemical operations. Fundamentals of platoon offensive and defensive operations and FTX including force-on-force, free-play, offensive/defensive exercise with opposing forces, conduct troop leading procedures; pre-deployment and deployment operations; and Post-exercise inspections. Also includes tank gunnery, completion training, and cavalry enhancement training.	STXs, FTXs	28	11	308
2E-F137/521-F2 Scout Leaders Course	Identify and operate within the contemporary operating environment, applying the skills, knowledge and capabilities necessary to ascertain and communicate the nature of the threat with respect to the operating environment to ensure mission success. Involves constructive, virtual, live and computer based training. Includes intelligence preparation of the battlefield and practical exercises to plan and conduct advance reconnaissance and security missions on linear and nonlinear modern day battlefields. Tactical and technical proficiency in all aspects of mounted and dismounted reconnaissance and security operations.	Mounted Tactical Training	5	14	60

Table 2.4-3: Armor School Maneuver Training Requirements

Course	Scope	Training Event	Duration (Days)	Number of Classes/ Year	Total Annual Days
NCOA					
19D BNCOC	In a combat simulated cavalry scout platoon environment: mine warfare; secure communications; tactical movements; demolitions; nuclear, biological, chemical threats; maintenance; safety; troop leading procedures; physical fitness training; training management; tactics; conduct of fire training; BFV gunnery; Field FTXs; Common Leader Training ; Common Military Training; and tactical seminars in a 24-hour a day NCOA environment.	Field Training	3	5	15
19K BNCOC	In a combat-simulated tactical environment: armor tactics; secure communications; maintenance; tank gunnery; mine warfare; tank weapons; tank crew gunnery skills test; safety; troop leading procedures; physical fitness training; conduct of fire trainer; STXs; and tactical seminars in a 24-hour a day NCOA environment.	Field Training	3	5	15

Sources: Fort Knox 2006a and Army Training Requirements and Resources System 2006

- *Other Heavy Maneuver Training Lands* – The heavy maneuver training that is not conducted within the proposed maneuver areas would be conducted within the other training lands that Fort Benning has identified for heavy maneuver training. Of the approximately 63,900 acres of total Fort Benning heavy maneuver training lands (Fort Benning 2006a), about 10,000 acres would become dedicated to Armor School maneuver areas/corridors, an approximate 16 percent reduction of training land availability in the existing heavy maneuver areas. Therefore, there would be approximately 53,900 acres of heavy maneuver area left to maintain existing training levels. Surface Danger Zones (SDZs), at an existing 52,396 acres, would increase by about 9 percent, or 4,529 acres, with the creation of the new heavy maneuver area/corridors and SDZs (at 14,529 acres). Section 4.14 (Safety) addresses SDZs specifically but they are areas designated to ensure military personnel and public safety when the ranges are active. Total existing heavy maneuver areas available for training would be reduced by about 23 percent if all ranges were active at the same time. While this situation would be unlikely and would not impact existing training, there would be a net decrease in available maneuvering areas for existing training, with the addition of the Armor School.

  Within this 49,371-acre area, heavy maneuver impacts would most likely occur in the vicinity of existing tank trails and firing points. There are currently approximately 82 miles of tank trails.

Approximately 10 to 20 miles of existing tank trails would become dedicated to Armor School use under the proposed action and support an estimated 80 percent of Armor School training.

The estimated 20 percent of Armor School training that would not occur within the maneuver area and/or corridors, along with existing Fort Benning heavy maneuver training displaced by the proposed action, would become more concentrated along existing tank trails outside of the proposed maneuver area and corridors.

- *Range Roads* – Under the proposed action, up to 35 miles of new tank trails could be constructed. The disturbance area for the establishment of new tank trails is estimated at 60 feet (ft) from the centerline, or 120-ft wide, to include berms and erosion control measures. Once trails are established it is expected that the ongoing average operational width of the road would be 30 ft, including the berms to support the variety of wheeled and tracked vehicles (BFVs to HMMWVs) used for Armor School training.

  Up to 24 new water crossings would be established along these proposed range roads and a 25-ft buffer would be identified adjacent to any streams. The low water crossings would be about 30 ft wide and use metal culverts, topped with concrete to ensure access road and streambank stability.

  Existing tank trails in the maneuver corridors would be upgraded. Outside of the maneuver corridors, up to 60 miles of existing tank trails would be upgraded. The disturbance area associated with these upgrade projects is 40 ft from the road centerline (or 80 ft wide) and the operational width following the upgrade would be the same as for new tank trails, 30 ft wide.

- *Changes in Maneuver Operational Tempo* – In accordance with the methodology defined in Army Training Circular 25-1 (TC 25-1), Fort Benning completed a Range and Training Land Program (RTLP) Development Plan in June 2006 (Fort Benning 2006a). One purpose of the study was to identify the heavy maneuver training requirements associated with the Armor School programs of instruction (POIs) in support of the proposed action.

  Heavy maneuver requirements were calculated in terms of square kilometer days (km^2 days) using methodology from TC 25-1, which takes into account the area needed to complete a task, the number of units involved, number of days per task, and the number of iterations conducted per year. An example is shown below:

Area (km^2)	x	Number Iterations	x	Days/ Iteration	x	Number Units	=	km^2 days
24		4		2		6		1,152

  Using the current POI requirements for the Fort Benning Infantry School, the study indicated that the 3rd Brigade has an existing heavy maneuver requirement of 42,625 km^2 days. Further, the study determined that the heavy maneuver requirements to support the Armor School POIs would total 105,425 km^2 days. This represents an increase in maneuver training of more than 247 percent upon implementation of the proposed action.

Range Logistics. To the north of the Harmony Church cantonment area, existing logistical facilities would be expanded as a result of the proposed action with two projects. A project programmed for fiscal year (FY) 2008 would construct additional ammunition storage igloos in the existing ammunition storage area. A project programmed for FY 2012 would expand the rail car storage/loading area to support the increased number of units stationed at Fort Benning. Both of these areas are located within Training Area P1 in the northern range area.

CHAPTER 3

ALTERNATIVES

3.0 ALTERNATIVES

3.1 INTRODUCTION

Alternatives form the core of the NEPA process. In compliance with Army NEPA and CEQ regulations, the Army must consider reasonable alternatives to the proposed action. Only those alternatives determined as reasonable relative to their ability to fulfill the need for a proposed action warrant detailed analysis. To be considered reasonable, an alternative must not only fulfill the purpose and need for the action, it must be technically and fiscally feasible. Through a rigorous evaluation, an agency needs to examine a range of alternatives, determining those deemed reasonable, and summarize those not carried forward for detailed analysis.

In conformance with these requirements, the Army explored potential alternatives. Options considered in this examination included alternative locations for facilities, activities, and ranges; phasing of implementation; and modifying personnel realignments. As discussed below, few of these options proved reasonable relative to the purpose and need. In particular, the directed realignments of functions, units, and personnel, as specified under the BRAC Law must, according to law, be implemented. BRAC Law states that the provisions of NEPA shall not apply to the consideration of alternatives for BRAC-directed actions to the military installation which has been recommended for realignment, or alternatives for transferring functions to any military Installation selected as the receiving installation. Since these realignment actions (e.g., Armor School and Center) constitute the majority of the proposed action and cannot be substantively modified, options for the remainder of the related (but non-BRAC) actions to support the realignments are, necessarily, constrained.

3.2 ALTERNATIVES

Criteria used in screening potential alternatives from further consideration are presented in Table 3.2-1. Only alternatives that would meet these criteria were carried forward for further analysis. Following application of these criteria it was determined that two action alternatives would meet the purpose and need of the proposed action: Transformation Alternative A and Transformation Alternative B. In addition to the two alternatives (A and B), the No Action Alternative is also carried forward for further analysis. The No Action Alternative, while not a viable one for BRAC-directed projects, serves as the baseline against which the environmental impacts of the two action alternatives are measured.

Table 3.2-1: Alternatives Screening Criteria

Transformation – each alternative must:
• Implement the BRAC Commission recommendations for Fort Benning • Support the initiation of BRAC-directed actions at Fort Benning no later than September 15, 2007 and the completion of these actions no later than September 15, 2011 • Provide for the implementation of the AMF actions at Fort Benning • Provide for the implementation of the GDPR actions at Fort Benning • Provide for the implementation of the AR 5-10 stationing actions at Fort Benning *Note*: each of these is identified in the description of purpose and need for the proposed action (Section 1.2).
Range and Training Operations – each alternative must:
• Result in no net loss in existing range capabilities • Provide the range and training lands needed to meet existing and proposed mission requirements • Meet Army training and safety requirements • Utilize existing ordnance impact areas where there is capacity
Land Use Compatibility – each alternative must:
• Protect the safety of the public and military personnel • Ensure that land uses do not interfere with the military mission • Prioritize the optimal siting of land use functions most crucial to Fort Benning's mission (per AR 210-20) • Address land use compatibility for mission support and personnel support functions
Sustainability – each alternative must:
• Provide for a sustained natural environment to allow the Army to train and maintain those military readiness functions assigned to Fort Benning in accordance with The Army Strategy for the Environment (U.S. Army 2004c)

The Army has identified Alternative B as their preferred alternative because it best meets the purpose of the Transformation action, better meets the training needs of the Armor School, and would minimize impacts to the Red-cockaded woodpecker; Alternative A would also meet Army Transformation purpose and needs but is not the preferred option due to its magnitude of impacts on the Red-cockaded woodpecker. Section 3.2.2 provides a detailed description of the alternatives carried forward for further analysis.

3.2.1 Alternatives Considered But Not Addressed in Detail

As noted above, the Army considered three options for developing alternatives to the proposed action. These included relocating facilities and activities, phasing of implementation, and modifying personnel realignments.

3.2.1.1 Alternative Locations

One alternative considered was a different location of cantonment area facilities and activities to accommodate the Transformation functions and units at3-2 Fort Benning. While AR 210-20, *Master Planning for Army Installations* (U.S. Army 2005c), establishes Army policy to maximize use of existing facilities, the planning effort determined that realignment would require new construction and development. Such new construction is necessary to meet mission needs and maintain operational efficiency. Furthermore, Fort Benning lacks adequate underutilized facilities to meet mission needs. Similarly, use of

off-Post rented facilities would hinder the synergy needed to incorporate the relocated units and personnel. Indeed, the entire point of the realignment was to establish those units and functions at Fort Benning; placing them off Post would not meet that objective. In addition, the nature and number of facilities needed to support realignment preclude alternative siting of cantonment-area construction. For example, barracks should ideally be located near similar or support functions, generally within the cantonment areas. For these reasons, alternatives that relocated facilities or activities outside cantonment areas, or involved re-siting of construction outside Installation boundaries would not be reasonable and are not analyzed further.

In terms of alternative locations for proposed range facilities, range and training operations were evaluated using the existing Fort Benning capabilities and those required to support the Transformation proposal. Activities associated with the BRAC-directed Armor School and Center realignment would require additional range and training operations because existing Fort Benning assets would not be able to fulfill these new missions. The locations for the various training assets presented in the proposed action were identified through a thorough application of environmental and operational constraints and the sites chosen represent this screening analysis. Alternative locations were identified for the heavy maneuver area, drivers training course, and vehicle recovery area. Siting for the Transformation activities was driven by the Army's overriding priority to protect the safety of the public and military personnel. These locations were also selected as part of the Installation's goal to minimize interference with its military mission, and its need to address compatibility issues with adjacent land uses, missions, and functions. In siting the proposed facilities, the Army wanted to ensure that performing the activities associated with the facilities would be compatible with mission requirements and sustaining the natural environment. Therefore, only the two alternatives are reasonable for range facilities.

3.2.1.2 Implementation Phasing Alternative

Another alternative considered was a different phasing of implementation. Factors influencing alternatives for scheduling of implementing realignment actions include the availability of facilities to house relocated personnel and functions, avoiding disruption of mission activities, and reaping the benefits of the realignment as early as possible. A majority of Transformation activities must be implemented by 2011 to meet BRAC requirements; shifting construction from one year to another would only change the timing of the potential impacts. The schedule for implementation of the proposed action must be aligned with facilities construction timeframes, arrival dates of inbound units, and stand-up dates of newly-established activities. All of these activities for BRAC-directed actions must be completed within the 6-year limitation of the BRAC Law. Due to the required time for facility construction, alternative schedules for realignment earlier than under the proposed action are not feasible. Shifting of schedules to accomplish realignment at a later date would unnecessarily delay accrual of its benefits and potentially affect Army-wide efficiencies. Since earlier implementation is not possible, and since delay is avoidable and unnecessary, alternative schedules are not further evaluated in this EIS.

3.2.1.3 Modifying Personnel Alternative

Yet another alternative considered was to modify personnel relocations. As noted previously, the BRAC Law specified the units and personnel designated for relocation for BRAC-directed actions; so this EIS is limited to analyzing the implementation of those actions at Fort Benning. Changing these relocations would be contrary to the law, and therefore, would not constitute a reasonable alternative. Personnel relocations for BRAC-discretionary, AMF, GDPR, and other Army actions were considered; however, BRAC-directed actions at other installations, overseas troop repositioning to the United States, and the need to support similar missions with the BRAC-directed actions precluded consideration of personnel relocations at other installations as an alternative.

3.2.2 Alternatives Carried Forward for Further Analysis

3.2.2.1 Cantonment Area Transformation Development Common to Both Alternatives A and B

Under both alternatives, cantonment area development would be the same, with the exception of the Harmony Church interchange. For each project, Table 3.2-2 indicates general location, the project type/title, the year in which the project is constructed, and building/facility footprint (total area disturbed, per year of construction is provided in Sections 3.2.2.2 and 3.2.2.3). Figures 3.2-1a and 3.2-1b illustrate the cantonment-area development locations under Alternatives A and B. The table in that the area of disturbance required for construction, landscaping, and infrastructure improvements is provided, as well as the year in which the construction/improvements would take place. These larger-area footprints (or polygons) were used to evaluate the potential impacts within this EIS.

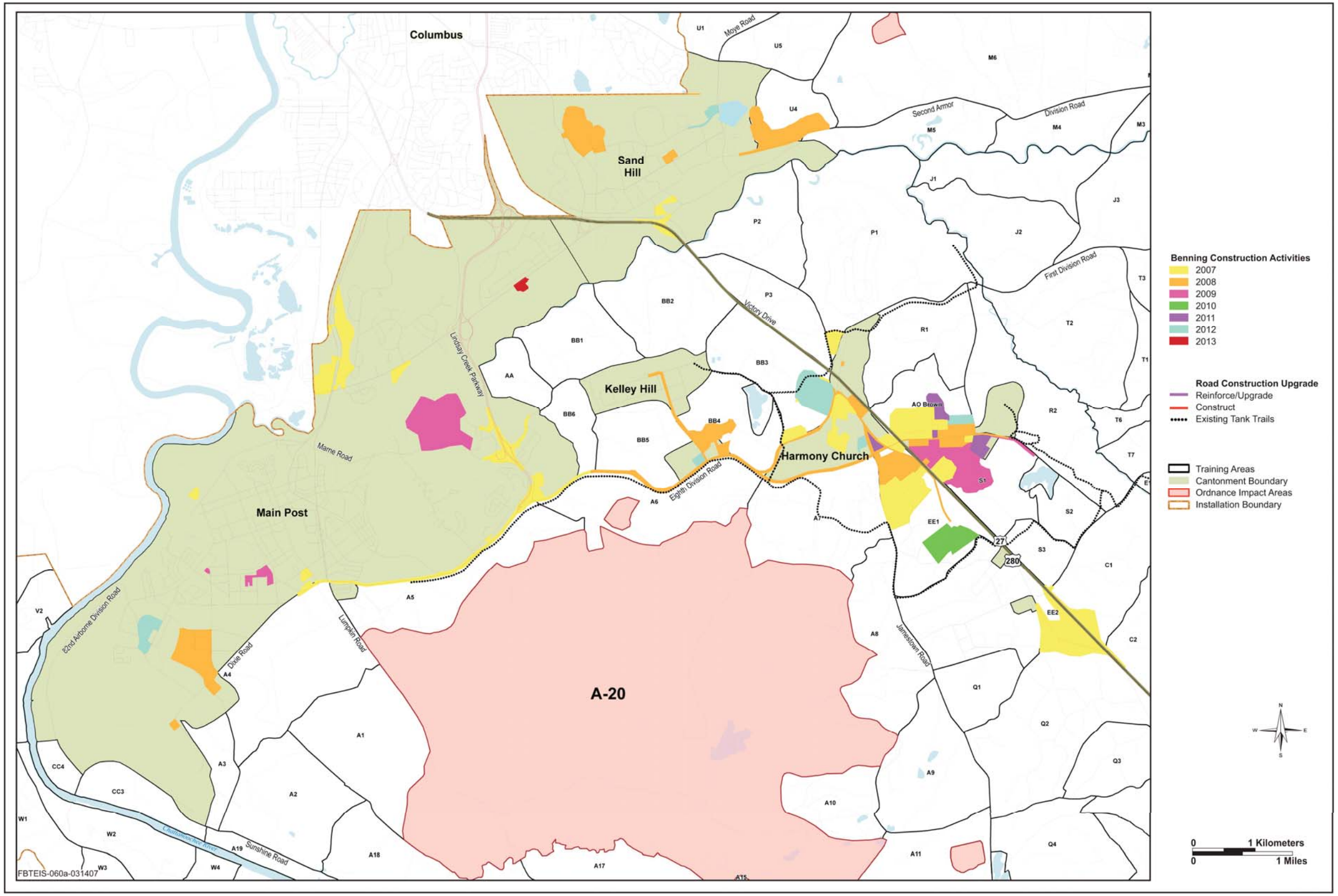

Figure 3.2-1a: Alternative A Cantonment Area Transformation Development

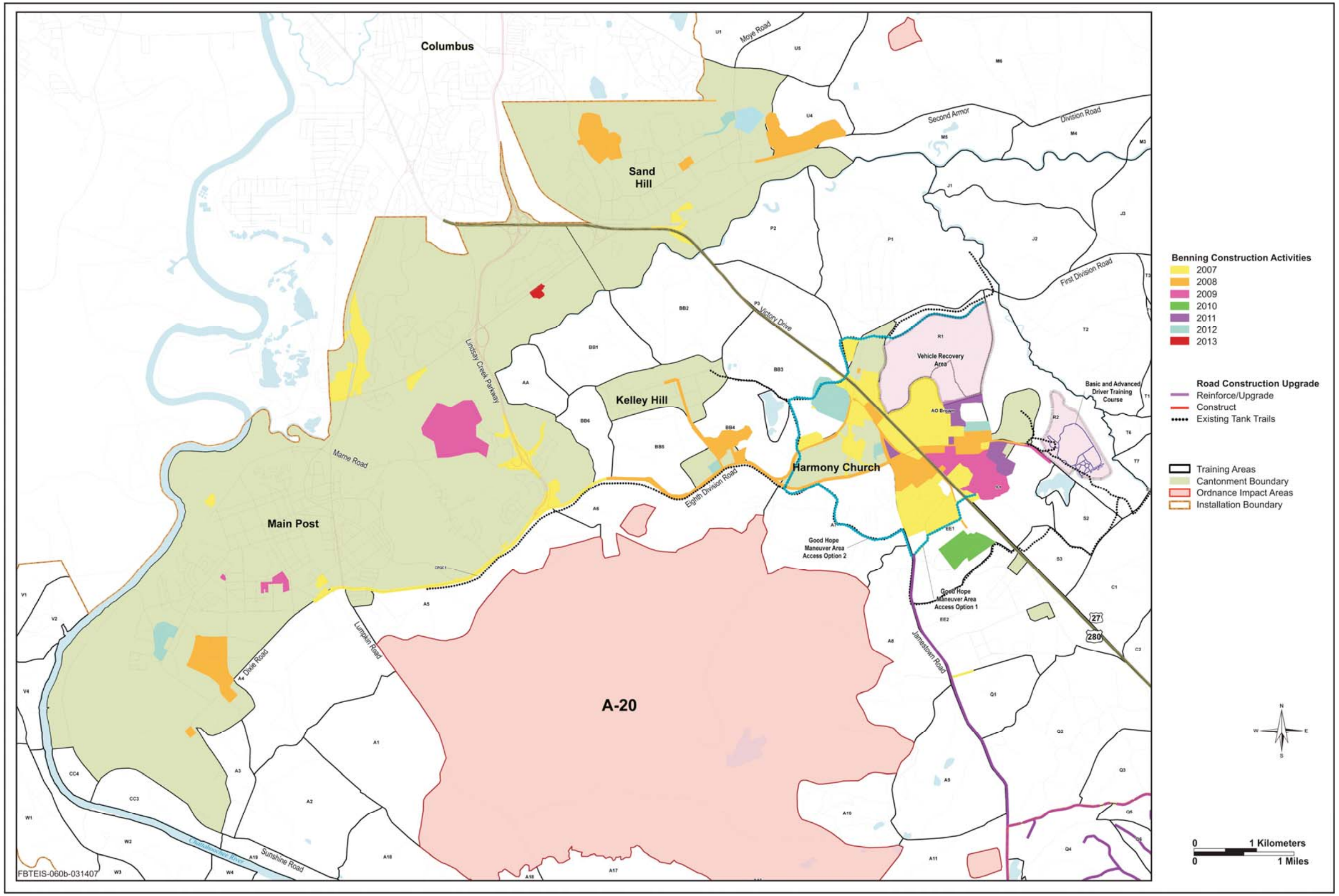

Figure 3.2-1b: Alternative B Cantonment Area Transformation Development

Table 3.2-2: Projected Cantonment Area Development: Transformation Alternatives A and B

Action	Project Title	Year Constructed	Facility Footprint (Acres)
BRAC	Infrastructure Support (includes Fire Station, Ammunition Supply Point, Access Control Points, Marne Rd./ Lindsay Creek Pkwy Intersection Improvements)	2008	21.00
BRAC	Construct Installation-Wide Roads, Paved	2010	94.39
Harmony Church			
BRAC	Initial Entry Training (IET) Brigade Headquarters Building	2007	7.59
BRAC	Trainee Barracks Complex 1	2007	60.00
BRAC	Training Support Brigade Complex (Phase I and 2)	2007-2008	100.00
NON-BRAC	Trainee Barracks Complex 3	2008	60.00
NON-BRAC	Maneuver Center Simulation Facility	2008	8.00
BRAC	Unit Maintenance Activity Facility	2008	20.00
BRAC	Troop Medical Clinic	2008	12.00
BRAC	16th CAV Regt HQ Building Complex (BDE, BN, and Company Operations Facilities (COFs)	2008	16.00
BRAC	Armor Officer Basic Course Headquarters Complex Conversions	2009	1.00
BRAC	Vehicle Maintenance Instruction Facility	2009	20.00
NON-BRAC	Centralized Wash Facility with Soaking Capability	2009	25.00
BRAC	U.S. Army Reserve Center (USARC)	2010	6.20
BRAC	Equipment Concentration Site (ECS)	2010	9.86
NON-BRAC	Recreation Center, Harmony Church	2011	7.00
NON-BRAC	Physical Fitness Center with Pool	2011	20.00
NON-BRAC	3 ID BCT (Heavy) Complex	2011	4.09
NON-BRAC	Battle Command Training Center	2012	7.00
NON-BRAC	Chapel	2012	4.00
Kelley Hill			
BRAC	General Instruction Building Complex (includes Student Dining Facility and Main Post Quartel, Unaccompanied Personnel Housing (UPH) Billeting Space to Transient UPH Advanced Skills Training, Infantry Officer Basic Course Headquarters Complex Building Conversions)	2008-2010	36.00
NON-BRAC	Direct Support/General Support (DS/GS) Vehicle Maintenance Facility	2012	37.00
Main Post			
BRAC	Child Development Center 6-10 Years	2007	9.00
NON-BRAC	Maneuver Center Renovations, Building 4	2008-2010	1.84
NON-BRAC	Special Operations Forces (SOF) Special Troops Battalion HQ Building	2008	2.02
NON-BRAC	SOF Ranger HQ Addition	2008	0.29
NON-BRAC	SOF Vehicle Maintenance Shop	2008	1.23
NON-BRAC	Museum Operations Support Buildings	2009	22.30
NON-BRAC	CIDC Group/BDE Headquarters Building	2009	0.24
BRAC	Consolidated Troop Medical Clinic	2009	1

Table 3.2-2: Projected Cantonment Area Development: Transformation Alternatives A and B

Action	Project Title	Year Constructed	Facility Footprint (Acres)
BRAC	Hospital Replacement	2009-2010	51.00
BRAC	Maneuver Center Headquarters Building Expansion and Capabilities Development and Integration (CDI) Directorate Facility	2010	10.00
NON-BRAC	SOF Ranger Support Company HQ	2011	0.94
NON-BRAC	Barracks Complex	2011	20.00
NON-BRAC	Headquarters Complex, 14th Combat Support Hospital	2012	1.90
NON-BRAC	Child Development Center Under 6 Years	2013	3.00
Sand Hill			
BRAC	Trainee Barracks Complex 2	2007	60.00
BRAC	Health Clinic Expansion - Winder	2008	1.50
BRAC	Solomon Dental Clinic Expansion	2008	1.30
BRAC	Training Aids Center Building Conversions	2008	2.60
NON-BRAC	Reception Station Barracks and Processing Center	2008-2010	20.00
NON-BRAC	Chapel	2012	4.00

In accordance with Army policy, all vertical building construction projects starting in FY 2008 will be Leadership in Energy and Environmental Design (LEED) certified at the Silver Level for new construction. LEED is a rating system for sustainable building design, construction, and maintenance developed and maintained by the U.S. Green Building Council (http://www.usgbc.com). Army uses these measures to meet the requirements set forth in the 2001 Army Technical Letter No. 1110-3-491, *Sustainable Design for Military Facilities*.

The LEED rating system is based on meeting prescribed green building attributes that have a point system associated with these attributes. These attributes include, but are not limited to, building a facility at a sustainable site, have water efficient systems, minimizing energy use for facility operations, using recyclable materials in facility construction, applying innovative designs in the building process, and improving indoor environmental quality. For each attribute there are points awarded: 26 to 32 points is a LEED Certified facility, 33 to 38 points equate to a Silver-level LEED certified facility, 39 to 51 points equate to a Gold-level LEED certified facility, and 52 to 69 points equate to a Platinum level LEED certified facility.

Some common LEED characteristics include:

- construction connected to the energy monitor and control system and Installation of an intrusion detection system and fire protection/alarm system;
- facilities built to comply with requirements under the Americans with Disabilities Act;
- vehicle maintenance facilities with wash racks;
- a wastewater collection system constructed to connect the vehicle maintenance facilities with the existing wastewater treatment plant;

- construction and post-construction stormwater controls designed to prevent offsite impacts from stormwater runoff;
- construction procedures implemented to mitigate potential impacts to migratory birds;
- construction permits (such as a Stormwater General Permit) acquired before construction begins;
- anti-terrorism/force protection system provided by constructing structures to resist progressive collapse, installing special windows and doors, and incorporating site measures (for example, setbacks and landscaping allowing line of sight); and
- heating and air conditioning provided by self-contained units.

Horizontal construction, such as ranges, roads, and airfields, will continue to incorporate sustainable design and development features to the maximum extent possible. Projects constructed prior to the FY 2008 program will continue to use the Army's Sustainable Project Rating Tool and achieve the GOLD level. Such projects may be scored using LEED New Construction if the LEED SILVER rating level can be achieved within the program budget established for the project.

Harmony Church. More than half of the Transformation development would occur by expanding the existing 776-acre Harmony Church cantonment area. This area currently (and historically) supports a diverse assortment of low density facilities including semi-permanent barracks, the infantry fighting vehicle maintenance and gunnery training facility, motor pool facilities, administrative facilities, and various recreational fields. The area south of the cantonment area, in training areas EE1 and EE2, contains various administrative and training facilities that support the Sniper and Ranger schools. The proposed action would provide for continued infill development and expansion of the Harmony Church cantonment area primarily to support troop housing and maintenance facilities, but also other administrative, training, operational, community facilities, and medical dental uses. The proposed action would roughly double developed land within this cantonment area. Training associated with AO Brown and EE1 and EE2 light maneuver areas would be displaced by the development of cantonment facilities; the displaced training would be accommodated throughout the other designated training areas across the Installation.

The proposed action would construct two trainee barracks complexes in Harmony Church, one of which is programmed for FY 2007 and one for FY 2008, southwest of Victory Drive between Fourth Division Road and Axton Road. Each of these barracks is planned in a configuration of five separate wings of 3-story buildings (the first floor of each building is used for operations and training and the second and third floors are used for housing trainees), company operations facilities, classroom space, covered training areas, battalion headquarters, a dining facility, storage, energy plant, and a running track. A Training Support Brigade Complex to include barracks, brigade and battalion headquarters, company operations facilities, dining facilities, and associated facilities is programmed to begin in FY 2007 northeast of the intersection of Fourth Division Road and Victory Drive.

The maintenance facilities to be constructed at Harmony Church would consist of a unit maintenance activity facility (standard vehicle maintenance shop) programmed for FY 2008, a centralized wash facility

with soaking capability programmed for FY 2009, the Army Reserve ECS vehicle maintenance shop programmed for FY 2010, maintenance-related instructional facilities would include a vehicle maintenance instructional building with a concrete apron and tactical vehicle hardstand programmed for FY 2009. These facilities would generally be located along Eighth Division Road, east of Victory Drive. The 3 ID BCT (Heavy) Complex (administrative and maintenance facilities to support the reorganization of the 3 ID BCT) is programmed for FY 2011.

Other training facilities, included in the proposed action for Harmony Church, are the Maneuver Center Simulations facility, programmed for FY 2008, which would support Armor School training in constructive and virtual simulations. A similar facility to support battle staff training and constructive simulations would be provided by the construction of a standard design small Battle Command Training Center programmed for FY 2012. A new USARC and operational maintenance shop, programmed for FY 2010, would be constructed to accommodate the closing of the USARC in Columbus, GA and consolidate it with other Fort Benning Army Reserve units. This facility would be co-located with the ECS in an area southeast of the existing Harmony Church cantonment area.

Administrative facilities to be constructed at Harmony Church would include the Initial Entry Training (IET) Brigade Headquarters, 16th Cavalry Regiment Headquarters Building Complex, and Armor Officer Basic Course Headquarters Complex. The IET Brigade Headquarters, programmed for FY 2007, would provide adequate headquarters facilities to support elements of new Armor IET and include brigade headquarters, company headquarters, general purpose administrative facilities, and associated parade/graduation field with covered bleachers. Existing facilities north of Eighth Division Road would be converted for the 16th Cavalry Regiment Headquarters Building Complex which supports administrative and general instruction functions (programmed for FY 2008) and the Armor Officer Basic Course Headquarters Complex (programmed for FY 2009).

Proposed community facilities are appropriately sited with planned land uses and include a fire station programmed for FY 2007, a troop medical clinic programmed for FY 2008, a recreation center and physical fitness center with a pool programmed for FY 2011, and a chapel programmed for FY 2012.

In addition, the proposed action includes the construction of access control facilities and infrastructure into the Harmony Church cantonment area. This includes a new interchange at U.S. Highway 27/280 to the southeast of the existing cantonment area at Cusseta Road as well as improvements at the existing First Division Road interchange at the northwestern corner of the cantonment area. Improvements would include a visitor control center, entry control points, and traffic control devices. This project, which is currently programmed for FY 2007, may require the movement of the existing material recycling facility to another location. Because the new location of the recycling facility is unknown, future NEPA compliance may be required for this action.

Kelley Hill. Kelley Hill, which is principally accessed by Marne and Ivy roads, currently supports a concentrated area of development for troop housing, community, and maintenance facilities. At approximately 400 acres, this cantonment area is relatively small. As part of the proposed action, various

buildings within Kelley Hill are proposed for conversion (i.e., internal renovations and expansions) to accommodate the 3 ID BCT (programmed between FY 2008 and 2010). In addition, a vehicle maintenance facility is proposed in FY 2012, as well as road and infrastructure improvement projects along the Marne and Ivy road corridors starting in FY 2008.

Main Post. The existing 8,850-acre Main Post cantonment area includes a mix of low- to high-density land use including troop and family housing; administration and community facilities; maintenance, supply and storage; outdoor recreation; training ranges; and medical and industrial facilities. Lawson Army Airfield (AAF) is located on the southwest side of Main Post.

The proposed action includes infill development for various uses, including medical, administrative, troop housing, community facilities, and operational facilities.

A hospital replacement project would be constructed just west of the existing hospital at the northwest intersection of Interstate 185 and Marne Road and is scheduled for FY 2009 through FY 2011. An addition would be made to expand the existing troop medical clinic, located in a central portion of the Main Post, programmed for FY 2009.

To increase needed administrative facilities, Building 4, which currently provides administrative facilities for the Infantry School, would be renovated (starting in FY 2008) and in FY 2010 the building would be expanded to serve as the Maneuver Center Headquarters and include a co-located Capabilities Development and Integration Facility. Additionally, approximately six existing buildings would be converted for administrative use for the Infantry Officer Basic Course Headquarters Complex in FY 2007 through FY 2010. A new headquarters complex would be constructed to support the new mission of the 14th Combat Support Hospital in FY 2012. In the southern portion of the Main Post, several Special Operations Forces (SOF) projects programmed for FY 2008 would be constructed to include administrative headquarters facilities as well as a co-located vehicle maintenance shop.

In the southern portion of the Main Post, existing motor pool facilities would be replaced by additional troop housing for the 75th Ranger Regiment (programmed for FY 2011). Improvements in this portion of the Main Post would be made at the interchange of Marne Road and Lindsay Creek Parkway and at Lindsay Creek Parkway and Eighth Division Road.

Proposed community facilities include two child development centers. One of the proposed child development centers, programmed for FY 2007, would be for 6- to 10-year olds and would be co-located with existing schools north of Dixie Road near the intersection of Ingersoll Street. The second child development center, programmed for FY 2013, would be for children under 6 and would be located in the northeastern section of the Main Post. In the southeastern portion of the Main Post,

Sand Hill. Within the 2,510-acre Sand Hill cantonment area, existing land use consists primarily of reception station and trainee barracks and supporting community facilities (refer to Figure 2.3-6). The proposed action would develop additional acres by providing additional barracks and community facilities (including expansion of the health and dental clinic and a chapel) and would introduce instructional uses through the conversion of an existing building into a training aids center.

A trainee barracks complex (similar to those proposed in Harmony Church) programmed for FY 2008 would be constructed in the eastern portion of Sand Hill cantonment area, necessitating the relocation of training activities associated with the existing Land Mine Training Area. The future location of this training area will be selected using appropriate NEPA documentation and be consistent with adjacent facilities. A reception station barracks and processing center programmed for FY 2008 would be constructed in the western portion of Sand Hill. This phased project would include reception station processing center, barracks, company operations facilities, dining facility, Soldier community building, storage building, central energy plant, and an associated physical fitness training area including a quarter-mile running track.

The existing Winder Health Clinic and existing Soloman Dental Clinic, both centrally located within the Sand Hill cantonment area, would be expanded to accommodate the additional personnel that would require health and dental services under the proposed action. Both of these projects are programmed for FY 2008. An existing facility (Building 3020) would be converted to a training aids center with a project programmed for FY 2008. The facility would provide training aid support for the increased IET that would occur at Fort Benning under the proposed action. Finally, a new chapel would be constructed in the northeastern portion of this cantonment area. This project is programmed for FY 2012.

Infrastructure support projects within Sand Hill include the expansion and paving of additional areas at the transportation motor pool, improvements at the main intersection entering the Sand Hill cantonment area, and utilities infrastructure improvement projects programmed for FY 2007 and FY 2008.

Other Actions across the Installation. Other Transformation actions approved prior to BRAC (e.g., AMF actions) are analyzed under separate NEPA and are included in the cumulative analysis. Other actions that are not essential to implement the BRAC Commission recommendations, have not received funding, and/or might change depending on future mission needs. These projects include all those identified for construction beyond 2013 (the planning horizon for this EIS), both within the cantonment areas and the training areas. These activities are evaluated within the cumulative impacts section, but would require specific NEPA documentation upon funding.

3.2.2.2 Transformation Alternative A

Under this alternative, cantonment area development would occur as presented in Section 3.2.2.1. In order to support the training range requirements, small- and large-caliber weapons ranges, heavy maneuver areas and corridors, a drivers training course, off-road drivers, training area, and vehicle recovery area would need to be constructed. Table 3.2-3 lists these projects and Figure 3.2-2 and 3.2-3 provide their location under Alternative A. Figure 3.2-4 provides the identified area of greatest use anticipated in the heavy maneuver area and corridors, as well as the targets (including the ordnance impact zones and areas that would be impacted from routine maintenance and ordnance cleanup activities associated with these targets—or what is called the range heavy use areas), drivers training, vehicle recovery, and off-road drivers training areas.

Table 3.2-3: Transformation Alternative A – Projected Range Development Projects

North of U.S. Highway 27/280			
Action	**Location**	**Year Constructed**	**Facility Footprint (Acres)**
BRAC	Tank/Fighting Vehicle Stationary Gunnery Range-ST1	2007	741.00
BRAC	Fire and Movement Range-FM1	2007	3.00
BRAC	Modified Record Fire Range-MRF2	2007	24.00
BRAC	Modified Record Fire Range-MRF4	2008	24.00
BRAC	Modified Record Fire Range-MRF6	2008	24.00
BRAC	Modified Record Fire Range-MRF3	2008	24.00
BRAC	Combat Pistol Qualification Complex	2008	2.00
NON-BRAC	Rifle/Machinegun Zero Range-Z1	2008	1.00
NON-BRAC	Rifle/Machinegun Zero Range-Z2	2008	1.00
NON-BRAC	Rifle/Machine Gun Zero Range-Z4	2008	1.00
NON-BRAC	Heavy Maneuver Corridor – South	2009	81.00
NON-BRAC	Basic and Advanced Drivers Training Course, Off-Road Drivers Training, and Vehicle Recovery Area	2009	48.00
Action	**Location**	**Year Constructed**	**Facility Footprint (Acres)**
NON-BRAC	Heavy Maneuver Area – North	2009	16.11
BRAC	Modified Record Fire Range-MRF5	2009	24.00
NON-BRAC	Rifle/Machine Gun Zero Range-Z5	2009	1.00
NON-BRAC	Combined Arms Collective Training Facility, Phase II (CACTF)	2009	9.80
NON-BRAC	Rifle/Machinegun Zero Range-Z3	2009	1.00
BRAC	Tank/Fighting Vehicle Stationary Gunnery Range-ST2	2009	741.00
NON-BRAC	Repair Existing Training Area Roads, Paved	2010	0.00
BRAC	Fire and Movement Range-FM3	2010	3.00
NON-BRAC	Multi-Purpose Machine Gun Range-MPMG3	2011	238.00
NON-BRAC	Rail Car Storage and Tracks for Deployment	2012	22.00
South of U.S. Highway 27/280			
NON-BRAC	Qualification Training Range-QTR	2011	238.00

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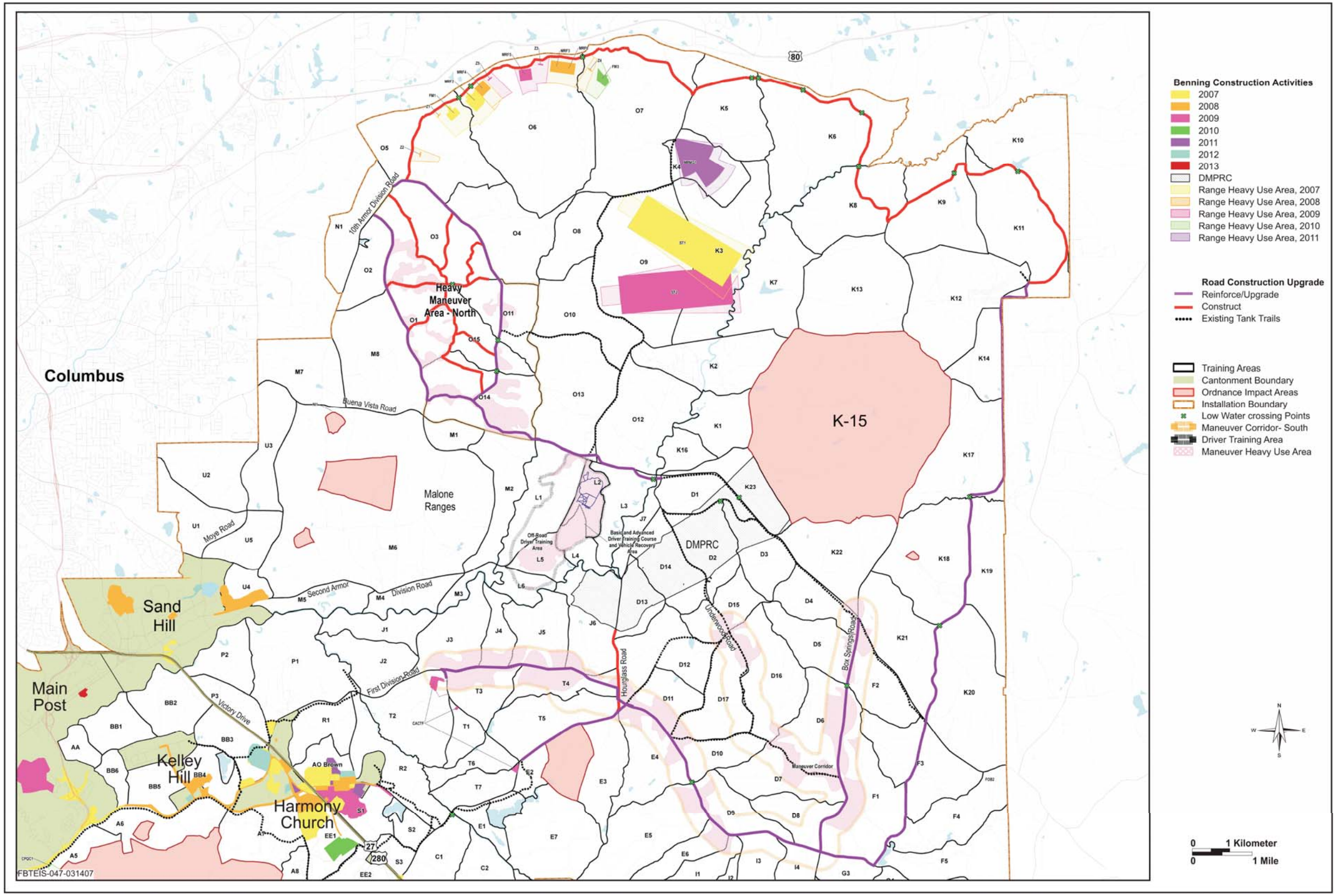


Figure 3.2-2: Transformation Alternative A North of U.S. Highway 27/280 Range Development

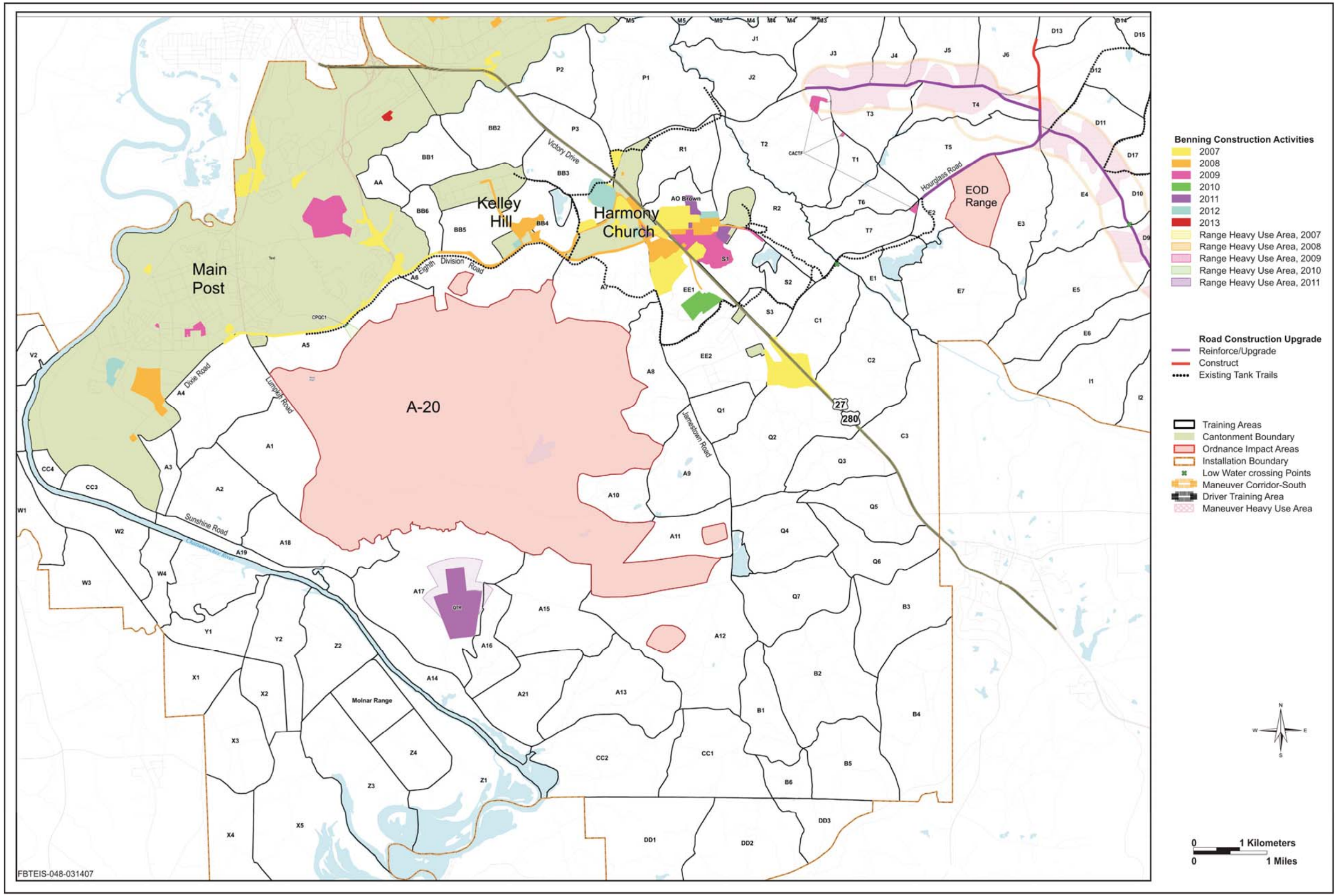


Figure 3.2-3: Transformation Alternative A South of U.S. Highway 27/280 Range Development

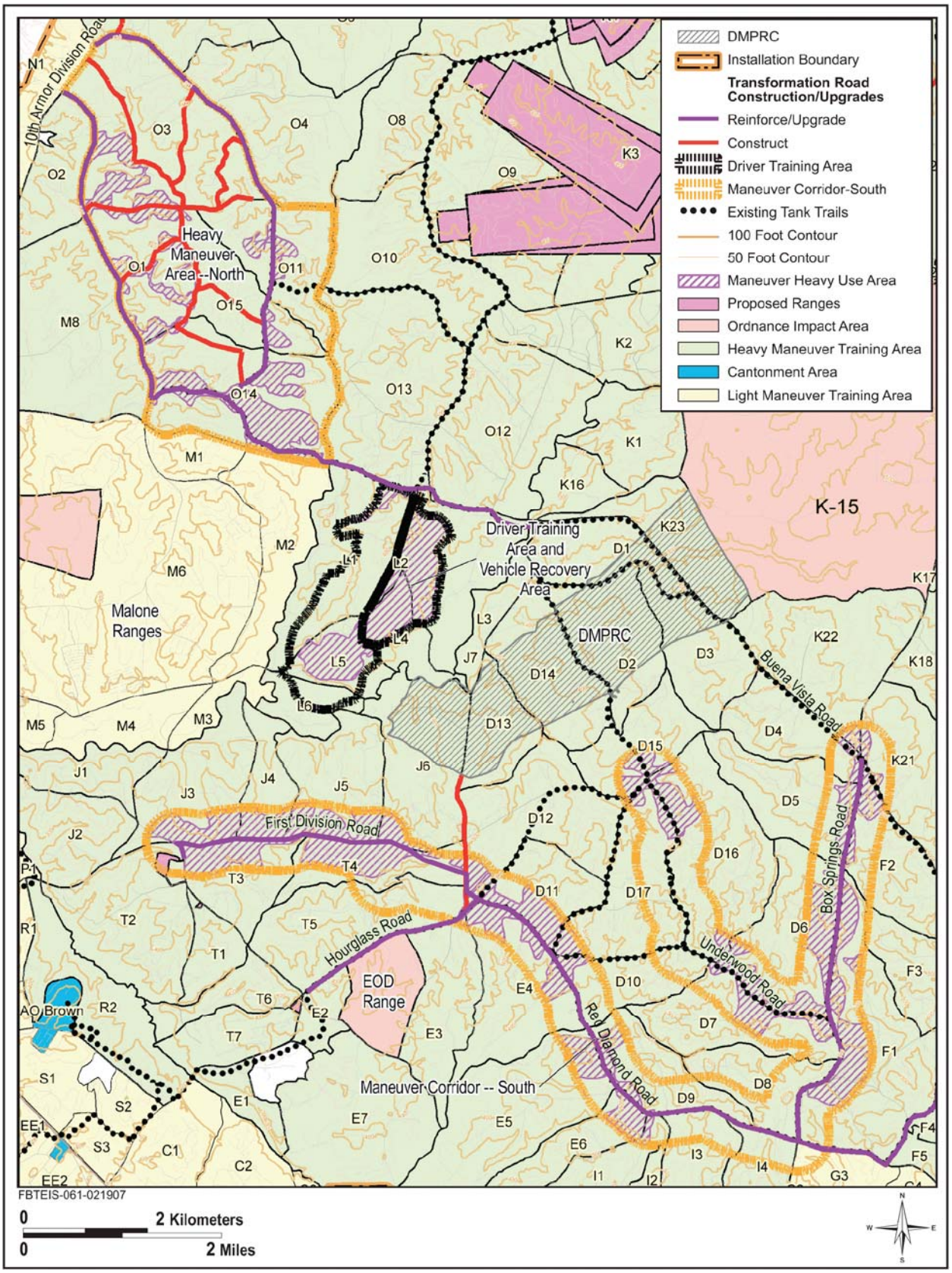


Figure 3.2-4: Transformation Alternative A Heavy Maneuvering Use Area

3.2.3 Transformation Alternative B (Preferred Alternative)

Under preferred alternative, Alternative B, all cantonment area construction would be the same as that described in Alternative A, with the exception of the Harmony Church interchange. Under Alternative B, this interchange would be constructed just south of Eighth Division Rd within an area already experiencing disturbance due to other Transformation actions in Harmony Church. In total, approximately 2,011 acres would be developed within the cantonment areas. Under Transformation Alternative B; however, several training areas would move or change.

- The Heavy Maneuver Area – North, as delineated in Alternative A, would be used for both light and heavy maneuver training for all Fort Benning units, not just for the Armor School. It would be used to support some of the light maneuver training displaced by the establishment of the Good Hope Maneuver Area in the southern portion of the Installation.
- The heavy maneuver area, under B, would be established in existing training areas Q4-7, B1-6, CC1, and DD1-3 and would be called the Good Hope Maneuver Area.
- In order to access the Good Hope Maneuver Area, tracked vehicles stationed in Harmony Church would need to move from one side of U.S. Highway 27/280 to the other. Existing tank trails would need to be upgraded, new ones constructed, and U.S. Highway 27/280 bridged depending on the access option chosen. Option 1 would use an existing tank trail around and to the north of Harmony Church that would require upgrading and/or reinforcement. Option 2 would also bridge U.S. Highway 27/280 but just south of Eighth Division Road. Option 3 would use an existing tank trail and underpass (about a mile south of the existing Harmony Church access point); however, the underpass would need widening since it cannot accommodate the larger tracked vehicles and tanks used by the Armor School. An option will be chosen that provides the safest route for tracked vehicle movement. This will be done in consultation with the Georgia Department of Transportation; the appropriate level of NEPA evaluation will be undertaken once the final option is chosen. Regardless of the option choice, Jamestown Road would need upgrading to the Good Hope Maneuver Area.
- The vehicle recovery area would be established at an area adjacent to Harmony Church in training area R1.
- The basic/advanced driving course would be established at R2, just east of the existing drivers training area in Harmony Church.
- The area identified under Alternative A (L1, L2, and L5 training areas) for basic/advanced and off-road drivers training and the vehicle recovery area would still be used for Armor School training but would support off-road drivers training throughout the entire area.
- The Heavy Maneuver Corridor – South (as delineated in Alternative A and proposed in portions of the D, E, I, F, G, J, and T training areas), would be reconfigured to exclude the use of the corridor that is in the T and J portions, and would begin at Hourglass Road. Tracked vehicles and tanks would use existing tank trails to transit from the Combined Arms Collective Training Facility to the southern maneuver corridor east of Hourglass Road for heavy maneuver training.

Table 3.2-4 lists these range projects under Alternative B and Figures 3.2-5 and 3.2-6 provide the locations of these range assets. Figure 3.2-7 identifies areas of greatest use anticipated in the maneuver corridors and the drivers training area. Heavy use within the Good Hope Maneuver Area would comprise the entire polygon.

Table 3.2-4: Transformation Alternative B – Projected Range Development Projects

North of U.S. Highway 27/280			
Action	**Location**	**Year Constructed**	**Facility Footprint (Acres)**
BRAC	Fire and Movement Range-FM1	2007	3.00
BRAC	Tank/Fighting Vehicle Stationary Gunnery Range-ST1	2007	741.00
BRAC	Modified Record Fire Range-MRF2	2007	24.00
BRAC	Modified Record Fire Range-MRF4	2008	24.00
BRAC	Modified Record Fire Range-MRF6	2008	24.00
BRAC	Modified Record Fire Range-MRF3	2008	24.00
BRAC	Combat Pistol Qualification Complex	2008	2.00
NON-BRAC	Rifle/Machinegun Zero Range-Z1	2008	1.00
NON-BRAC	Rifle/Machinegun Zero Range-Z2	2008	1.00
NON-BRAC	Rifle/Machine Gun Zero Range-Z4	2008	1.00
BRAC	Tank/Fighting Vehicle Stationary Gunnery Range-ST2	2009	741.00
NON-BRAC	Modified Heavy Maneuver Corridor – South	2009	81.00
NON-BRAC	Basic/Advanced Drivers Training Course	2009	48.00
NON-BRAC	Vehicle Recovery Area	2009	NA
NON-BRAC	Off-Road Drivers Training	2009	16.11
NON-BRAC	Modified Record Fire Range-MRF5	2009	24.00
NON-BRAC	Rifle/Machine Gun Zero Range-Z5	2009	1.00
NON-BRAC	Combined Arms Collective Training Facility, Phase II (CACTF)	2009	9.80
NON-BRAC	Rifle/Machinegun Zero Range-Z3	2009	1.00
BRAC	Fire and Movement Range-FM3	2010	3.00
NON-BRAC	Repair Existing Training Area Roads, Paved	2010	0.00
NON-BRAC	Multi-Purpose Machine Gun Range-MPMG3	2011	238.00
NON-BRAC	Rail Car Storage and Tracks for Deployment	2012	22.00
South of U.S. Highway 27/280			
NON-BRAC	Good Hope Maneuver Area	2009	16.11
NON-BRAC	Road access, tank trail upgrades	2009	72 miles
NON-BRAC	Qualification Training Range-QTR	2011	238.00

Table 3.2-5 provides a comparison, of disturbance areas, under Alternatives A and B (i.e., the construction area extent for facilities, infrastructure improvements, road construction/upgrades, range establishment (including ordnance impact zones and heavy use areas where range maintenance would occur), and heavy use within the maneuver corridors and areas). In summary, cantonment area disturbance, would be less in Harmony Church under the preferred Alternative B, to total 1,923 acres;

however, Alternative A construction area would total 10,741 acres, whereas Alternative B would total 19,012, acres. Alternative B includes greater acreage to allow for more training flexibility and avoidance of many sensitive environmental resources.

Table 3.2-5: Summary Area of Potential Effect by Geographic Area in Acres

ALTERNATIVE A								
	2007	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**Total**
Cantonment Areas								
Harmony Church	519	141	136	71	56	195	0	1,118
Kelley Hill	78	0	0	0	0	7	0	85
Main Post	220	119	181	0	0	34	8	562
Sand Hill	27	209	0	0	0	10	0	246
Cantonment Area Subtotals	**844**	**469**	**317**	**71**	**56**	**246**	**8**	**2,011**
Ranges								
Range Facilities North of U.S. Highway 27/280	1,338	736	1,312	95	407	95	0	3,983
Range Facilities South of U.S. Highway 27/280	0	0	0	15	433	0	0	448
Heavy Maneuver Area – North (North of U.S. Highway 27/280)	0	0	943	0	0	0	0	943
Heavy Maneuver Corridor – South (North of U.S. Highway 27/280)	0	0	2,734	0	0	0	0	2,734
Drivers Training Area (includes Basic and Advanced Drivers Training Courses, Vehicle Recovery, and Off-Road Drivers Training) (North of U.S. Highway 27/280)	0	0	622	0	0	0	0	622
Range Area Subtotals	**1,338**	**736**	**5,611**	**110**	**840**	**95**	**0**	**8,730**
ALTERNATIVE A TOTALS	***2,182***	***1,205***	***5,928***	***181***	***896***	***341***	***8***	***10,741***
ALTERNATIVE B								
	2007	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**Total**
Cantonment Areas								
Harmony Church	331	141	136	71	56	195	0	930
Kelley Hill	78	0	0	0	0	7	0	85
Main Post	220	119	181	0	0	34	8	562
Sand Hill	27	209	0	0	0	10	0	246
Cantonment Area Subtotals	**844**	**469**	**317**	**71**	**56**	**246**	**8**	**1,923**
Ranges								
Range Facilities North of U.S. Highway 27/280	1,395	736	1,312	95	419	95	0	4,052
Range Facilities South of U.S. Highway 27/280	22	0	29	15	433	0	0	499
Good Hope Maneuver Area (South of U.S. Highway 27/280)	0	0	9,499	0	0	0	0	9,499
Modified Heavy Maneuver Corridor – South (North of U.S. Highway 27/280)	0	0	1,866	0	0	0	0	1,866
Basic and Advanced Drivers Training Courses (Harmony Church)	0	0	201	0	0	0	0	201
Vehicle Recovery Area (Harmony Church)	0	0	513	0	0	0	0	513
Off-Road Drivers Training Area (North of U.S. Highway 27/280)	0	0	459	0	0	0	0	459
Range Area Subtotals	**1,417**	**736**	**13,879**	**110**	**852**	**95**	**0**	**17,089**
ALTERNATIVE B TOTALS	***2,261***	***1,205***	***14,196***	***181***	***908***	***341***	***8***	***19,012***

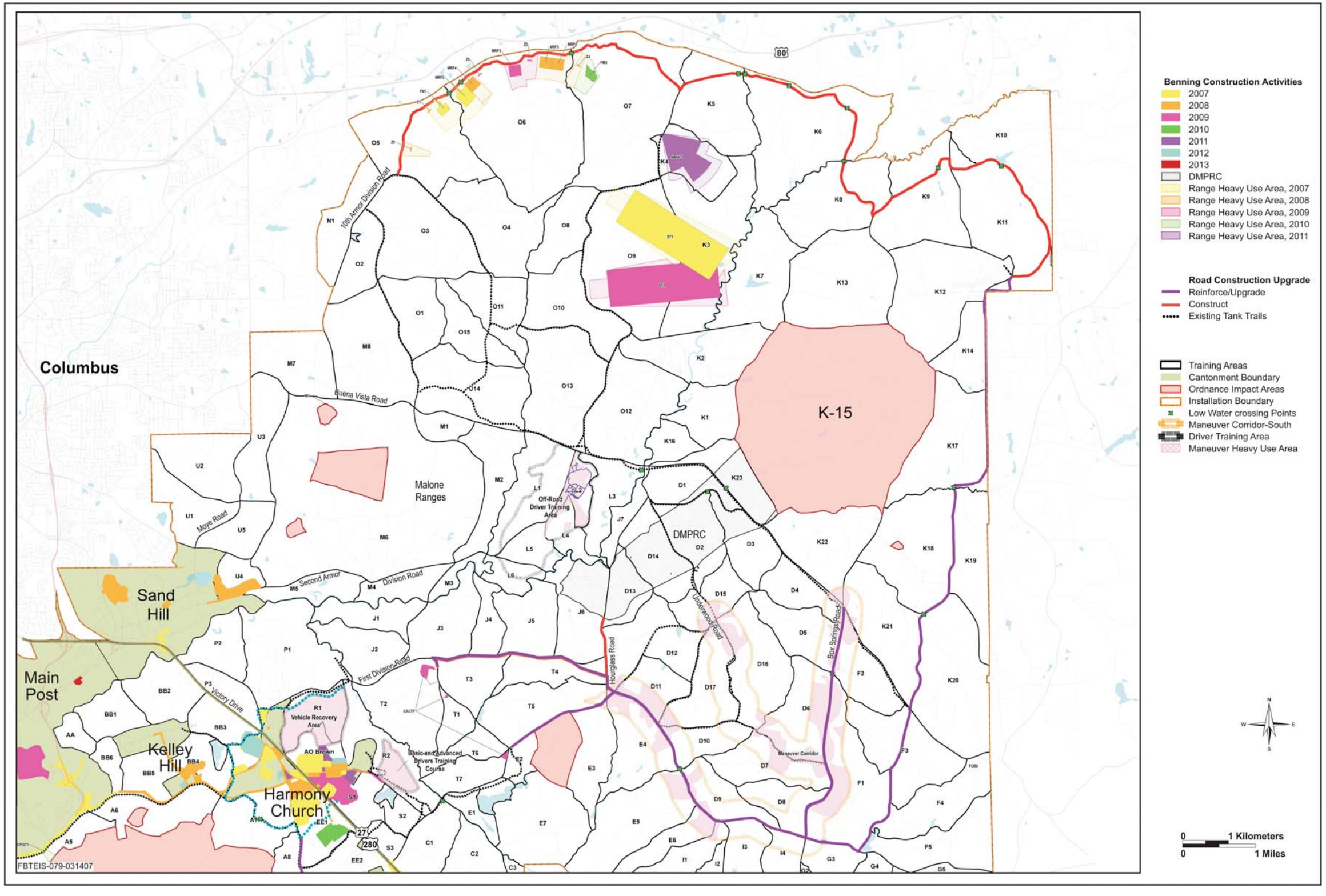


Figure 3.2-5: Transformation Alternative B North of U.S. Highway 27/280 Range Development

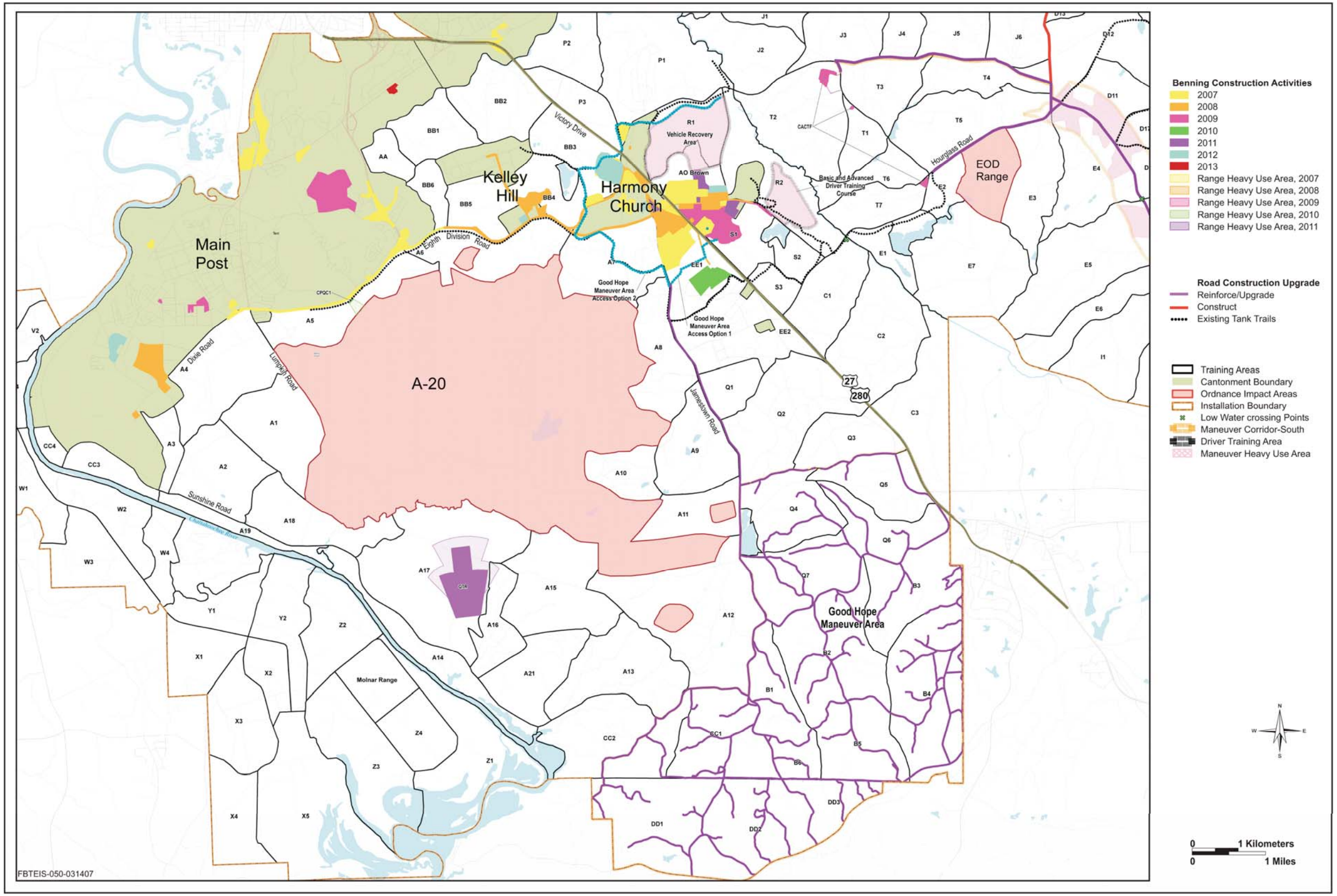


Figure 3.2-6: Transformation Alternative B South of U.S. Highway 27/280 Range Development

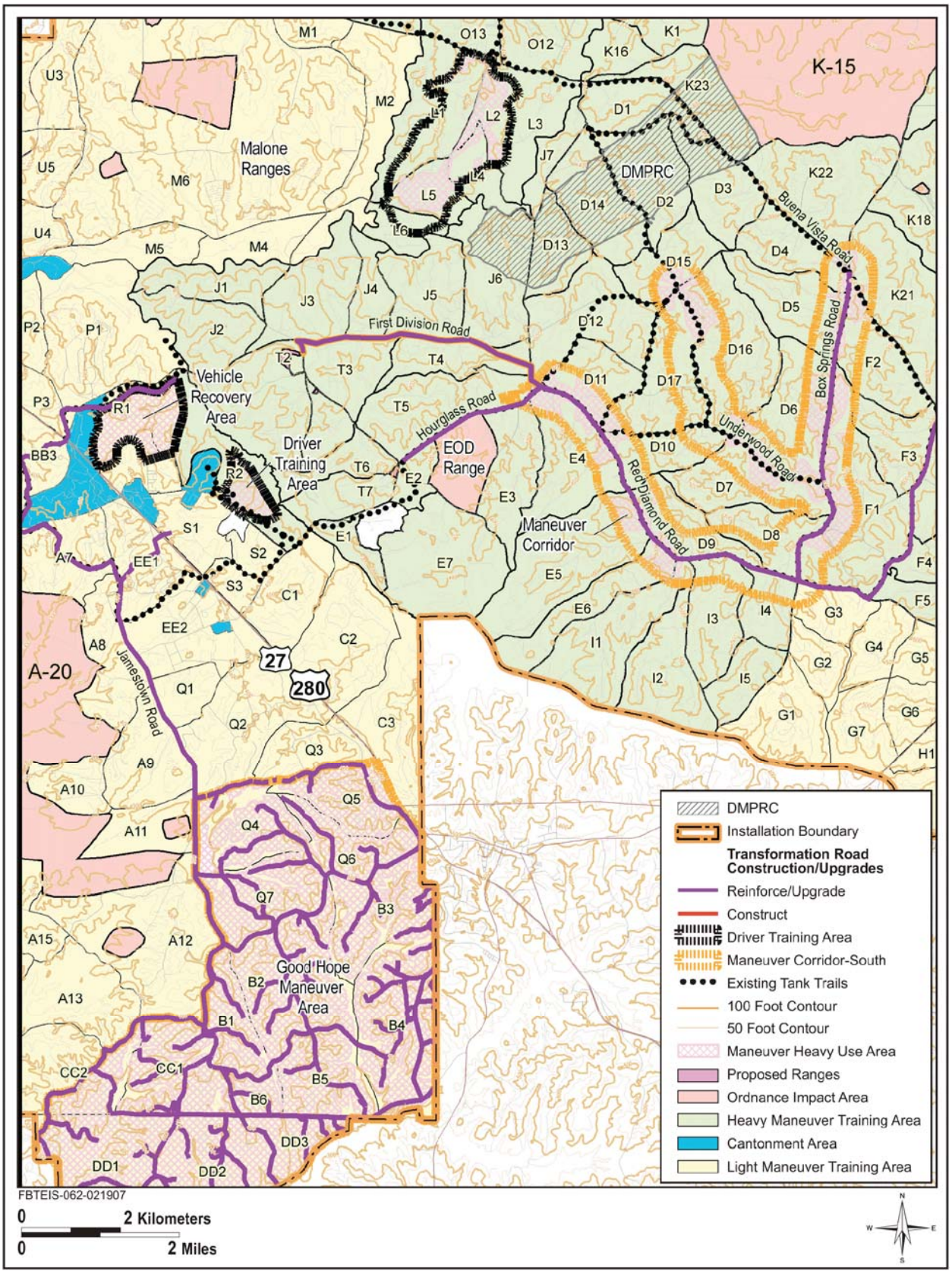


Figure 3.2-7: Transformation Alternative B Heavy Maneuver Use Area

3.3 NO ACTION ALTERNATIVE

The CEQ regulations that implement NEPA require that, for a clear basis for choice among options by the decision maker and the public, a No Action Alternative must be included and analyzed (40 CFR 1502.14[d]). The No Action Alternative would continue the missions at Fort Benning as they were being performed in November 2005, when the BRAC Commission recommendations became law. Because the Digital Multi-Purpose Range Complex (DMPRC) was approved and under construction at that time and a separate EIS and ROD was completed, the baseline also includes the conditions that are expected once the DMPRC becomes operational (scheduled for 2007). Because the BRAC Law mandates closure and realignment of Installations, the No Action Alternative for BRAC-directed actions is not possible. Nevertheless, the No Action Alternative serves as a baseline alternative against which environmental impacts of the two action alternatives are measured. An overview of the operational baseline is provided below. For individual environmental resource areas, baselines conditions that establish the environmental setting against which environmental effects of the alternatives are evaluated are provided in Section 4.0.

3.3.1 Fort Benning Baseline Mission

Fort Benning is the home of the Army Infantry School and Center and is one of the world's premier war fighting schools and deployment centers. The formal baseline mission of Fort Benning is to:

- Provide the nation with the world's best trained Infantry Soldiers and adaptive leaders imbued with the Warrior Ethos;
- Act as a Power Projection Platform capable of deploying and redeploying Soldiers, civilians, and units anywhere in the world on short notice; and
- Define Infantry requirements for material developers to meet the needs of the future force (Fort Benning 2006b).

Since the establishment of the Infantry School at Fort Benning in 1918 (when it was moved to Fort Benning from Fort Sill, OK), it has had a far-reaching impact in training our armed forces. Even Soldiers never stationed or assigned temporary duty at Fort Benning are exposed to the training standards, Field Manuals, and textbooks published by the Infantry School. With the Infantry, the so-called "Queen of Battle," as the Post's nucleus, Fort Benning has added other significant missions over the years, including: Airborne School, where Soldiers learn to engage in battle from the sky; Ranger School, where Soldiers learn advanced warfare tactics and skills; and the 29th Infantry Regiment, where Soldiers learn how to operate and maneuver the BFV in combat. Fort Benning's 36th Engineer Group has been at the forefront of the Army's Post-Cold War mission of providing aid; and Fort Benning future technology in Battlelabs is shaping the way the military of the 21st Century will fight its wars (Fort Benning 2006b).

Fort Benning supports the TRADOC mission to conduct initial entry training for Infantry Soldiers and officers; basic- and advanced-level noncommissioned officer (NCO) and officer training courses; the Army's airborne and Ranger schools; and continued study, testing, and development of future joint and combined infantry doctrine, weapon systems, and tactics, techniques, and procedures. Further, Fort Benning provides the home station training facilities for Forces Command's (FORSCOM's) 3rd Bde, 3rd

ID ; SOCOM's 75th Ranger Regiment; and numerous other active duty deployable units. It also is the home to the Western Hemisphere Institute for Security Cooperation, which has the mission to train cadets, NCOs, and officers from numerous Latin American countries. Current Fort Benning workforce and student levels are shown in Table 3.3-1.

Table 3.3-1: Current Fort Benning Workforce Levels And Student Populations

	Military	Civilian	Students*	Total
Baseline	17,771	8,690	9,386	35,847

*Sources: Fort Benning 2006b and 2006c; *student totals represent the average daily number of students on Fort Benning.*

3.3.2 Fort Benning Baseline Training Assets

To support the numerous training and operational missions at the Post, Fort Benning offers the following training assets:

- 38 basic marksmanship ranges (ranges used to qualify or train on rifles, pistols, sniper rifles, grenade launchers, subcaliber light anti-armor weapons, shotguns, machine guns, and grenade machine guns),
- 9 direct fire gunnery ranges (ranges used to qualify and train tank and Bradley crews, including ranges used to qualify anti-armor weapons systems using service ammunition),
- 19 collective live fire ranges (ranges used for collective training events, such as Infantry Squad Battle Course (ISBCs) and Infantry Platoon Battle Course (IPBCs), multipurpose range complexes, and aerial gunnery ranges),
- 36 indirect firing facilities (ranges or dedicated firing points used for the qualification and training of mortars, field artillery, or air defense artillery and observation Posts),
- 7 special live fire ranges (ranges and training areas used for qualification and training of demolitions, live hand grenades, and claymores),
- 21 other, non-live fire facilities (assets that are used to train Soldiers without the use of weapons such as rappel towers, drop zones, obstacle courses, gas chambers, and other facilities not covered in the previous categories),
- 35 drop/landing zones,
- 83 light maneuver training areas (48,171 designated acres),
- 86 heavy maneuver training areas (62,958 designated acres),
- One 15,554-acre dudded impact area (live ordnance impact area with the potential to produce UXO), and
- One 30,342-acre non-dudded impact area (inert ordnance impact area without potential to produce UXO) that can be used for light maneuver training (Fort Benning 2006a).

The DMPRC will provide a state-of-the-art range facility, meeting the Installation's training needs for conducting effective advanced gunnery exercises in a realistic training environment. Changes in training on other existing ranges (Carmouche and Hastings) will occur to incorporate the new DMPRC. Basic and intermediate Tank and BFV training will now take place at the Carmouche and Hastings ranges will be

dedicated to the training of vehicular mounted weapons systems and dismounted training scenarios utilizing BFVs, Strykers, and developing future technologies.

3.3.3 Fort Benning Baseline Operations

In order to fulfill the variety of Fort Benning missions, more than 200 training ranges and maneuver areas are available for Soldier training. Training operations include a variety of weapons systems from small arms to field artillery. Table 3.3-2 provides an overview of small caliber (i.e., munitions used in rifles, pistols, shotguns, and grenade launchers) and large caliber weapons (i.e., inert and high explosive field artillery and mortar shells from howitzers, tanks, and BFVs) used on the various ranges as of 2004, and prior to the approved DMPRC becoming operational. The baseline operations reflect that tank training will not occur at Hastings Range under normal circumstances after the DMPRC is operational.

Table 3.3-2: Baseline Annual Weapons Use Fort Benning

	Day	Night	Total
Small Caliber	30,120,421	2,978,943	**33,099,363**
Percent Day/Night	91%	9%	
Large Caliber	246,046	40,054	**286,100**
Percent Day/Night	86%	14%	

Source: USACHPPM 2006a and Fort Benning 2004b, includes DMPRC operational data

In addition to small- and large-caliber weapon system training, Soldiers train alongside the M1 Abram tanks, M2s, BFVs, Strykers, HMMWVs, and other tactical vehicles (e.g., tractor-trailer combinations, troop transport vehicles, and a variety of trailers for water and fuel transport) (Fort Benning 2006e). Fort Benning currently supports 2,595 pieces of equipment in its inventory (Personal communication, Bartlett 2006; Fort Benning 2006f); of these, 938 are vehicles (Table 3.3-3).

Table 3.3-3: Fort Benning Vehicle Inventory

Vehicle	Type	Fort Benning Existing
Tracked Armor Equipment	Includes Tanks, Armored Personnel Carriers, BFVs, Recovery Vehicles, Tanks With Assault Bridges, And Mine Clearers	201
Wheeled Heavy Equipment	Stryker, HMMWVS (Carriers, Cargo, Armament, And Heavy Weight Trucks)	328
Wheeled Heavy Trucks	Heavy Cargo Equipment Transport, Fuel Tankers, Wrecker/Recovery Vehicles	141
Wheeled Trailers	Low-Bed Trailers For Armaments, Water, And Utility Towing	216
Wheeled Medium/Light Trucks	Fork Lifts, Cargo, And General Personnel Carriers	193
	Total Vehicles	**938**

Fort Benning is also home to the airborne school and Lawson AAF, which supports both fixed-wing and rotary aircraft. While no additional aircraft would be associated with the Transformation activities, these baseline airfield operations contribute to the Installation mission and consequently to its noise environment.

Baseline training throughput (or the average number of students that are trained throughout the year on any given day) is noted in Table 3.3-4.

Table 3.3-4: Baseline Training Throughput at Fort Benning

Type of Training	Number of Students
Infantry School	
Total Student Input	29,915
Daily Average Load	3,305
Infantry Training Brigade	
Total Student Input	19,256
Daily Average Load	5,008
Basic Combat Training Brigade	
Total Student Input	5,319
Daily Average Load	946
Western Hemisphere Institute for Security Cooperation (WHINSEC)	
Total Student Input	450
Daily Average Load	97
Medical Department Activity (MEDAC)	
Average Load	30

Source: Fort Benning 2006b

CHAPTER 4

AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

4.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

4.1 INTRODUCTION

Potential environmental impacts cannot be determined without first understanding the existing conditions in the affected environment. For this reason, the impact analysis process involves two steps. First, this EIS helps the reader develop an understanding of the existing environmental setting and conditions by identifying the "affected environment" or "region of influence (ROI)." The geographic extent of this area is determined by the potential for impacts, due to construction, operations, and/or maintenance, associated with the various resources. The ROI can change depending on the resource category. For instance soils may be impacted within Fort Benning so the ROI for soils would be Fort Benning; however, the air quality ROI would be the geographic extent that emissions could possibly impact the regional air quality. Second, the EIS uses details of the alternatives (see Chapter 3) to assess their impacts on the existing environment, or the "environmental consequences." As required by NEPA and Army implementing regulations, this EIS addresses impacts associated with the No Action Alternative, as well as the two action alternatives—A and B. To better evaluate existing conditions, numerous studies and/or surveys were undertaken. A summary follows:

- Socioeconomics Assessment – Impacts to the local community were assessed using the U.S. Army Economic Impact Forecast System (EIFS) modeling program. The results were integrated into the Section 4.4 Socioeconomics, and presented in Appendix C.
- Transportation Survey – Installation cantonment-area roads were evaluated to establish their ability to support the influx of personnel and families associated with the Transformation action. The results are presented in Section 4.5, Transportation and in Appendix D.
- Noise – The Fort Benning Range Division submitted small arms and large caliber operational data information to U.S. Army Center for Health Promotion and Preventive Medicine (USACHPPM) detailing current and future rounds fired on Fort Benning; this information was used to generate noise contours which are presented in Section 4.7 Noise.
- Air Quality – Emissions generated as a result of Transformation construction activities, as well as those associated with operations and maintenance were examined. Results are summarized in Section 4.8, Air Quality and criteria used to reach these results are found in Appendix E.
- Wetlands Assessment – Wetlands delineation was (or will be) conducted on all of the proposed constructions sites where wetlands were found. This delineation report will be forwarded to the Albany Field Office of the USACE Regulatory Branch, for delineation verification. Results are presented in Section 4.12, Biological Resources.
- Special Status Species Surveys – These included surveys of the Federally-protected Red-cockaded woodpecker (RCW) and Relict trillium and the state-protected Gopher tortoise. Results of these surveys are summarized in the Section 4.12, Biological Resources.

- Biological Assessment (BA) – Fort Benning has submitted a BA to the USFWS for formal consultation and development of their BO. The BA is attached at Appendix F, without appendices; the BA and appendices are available for review at the following websites: http://www.hqda.army.mil/acsim/brac/nepa_eis_docs.htm).
- Cultural Resources Surveys – Cultural resources surveys (Phase I and/or II) have been conducted for all areas proposed for construction. Results are presented in Section 4.13, Cultural Resources. Formal consultation with both the GA SHPO and the Tribes has been requested regarding the potential impacts to and protection of these sites (Appendix G). Appendix G also contains the Executive Summary of a document to be used for Section 106 consultation. The complete document contains sensitive information on archaeological sites and is, therefore, not distributed to the public in accordance with Section 9 of the Archaeological Resource Protection Act (ARPA) and Section 304 of the NHPA.

The potential environmental consequences of the alternatives to 13 resources is presented and followed by an examination of cumulative impacts.

4.1.1 METHODOLOGY

The impact analysis process requires collecting scientifically valid and up-to-date information. Data collection involves:

- Reviewing previous studies, such as technical publications, agency databases, management plans, and other NEPA documents
- Talking to agencies and others with information on specific resources, such as the U.S. Fish and Wildlife Service, U.S. Army Corps of Engineers, Georgia Department of Environmental Quality, Georgia State Historic Preservation Officer, American Indian Tribal representatives, and community planners.
- Reviewing public input during the scoping process, and
- Conducting field studies.

The resources analyzed in this EIS are interdependent. For example, a change in soils might affect local vegetation, which in turn could affect wildlife that depend on the plants for food. The increase in range operation might affect noise conditions around the Installation and changes in noise could affect adjacent neighbors and wildlife. These types of interrelationships are why the EIS is prepared by an interdisciplinary team.

Assessment of environmental consequences is also based on an understanding that different resources are not equally sensitive to all elements of an action. For example, cultural resources—especially archaeological sites—are most likely affected by activities that disturb the ground (such as facility and range construction) and are usually not affected by noise. On the other hand, certain animal species may be more sensitive to short-term construction activities than long-term exposure to noise increases.

The environmental impact analysis process is designed to focus analysis on those environmental resources that could potentially be affected by the Transformation proposal. Potential effects may result from different aspects of an alternative—construction, operations, or maintenance. For this EIS, resources have been either grouped or analyzed individually according to resource categories. Thirteen resource categories, listed below, are analyzed for each alternative:

- Land use (Section 4.2) includes discussion of potential impacts of the alternatives to on Post and off-Post land use and management.
- Aesthetics and Visual Resources (Section 4.3) evaluate the visual character, visual compatibility, and viewer sensitivity to the landscape that could occur under the alternatives.
- Socioeconomics (Section 4.4) analyzes potential impacts as a result of the alternatives to economic development, demographics, housing, quality of life, environmental justice, and protection of children.
- Transportation (Section 4.5) presents the existing transportation network (both on Post and off Post) and analyzes the potential impacts the Transformation alternatives would have if any one of them were implemented.
- Utilities (Section 4.6) discusses the potential impacts of the alternatives to water use, wastewater, and storm water systems, energy/power sources, communications, and solid waste.
- Noise (Section 4.7) analyzes the existing noise environment and the potential increases in noise under the action alternatives. These increases are then evaluated in terms of how they might affect land use and adjacent communities.
- Air Quality (Section 4.8) presents the potential increase in criteria pollutants and fugitive dust emissions that could occur under the Transformation alternatives and the affect these emissions could have on regional air quality.
- Hazardous and Toxic Materials and Waste (Section 4.9) evaluates the materials and waste generated by the alternatives and whether these present potential impacts to the environment.
- Water Resources (Section 4.10) analyzes the potential affects to surface water, wetlands, hydrology, groundwater, floodplains, stormwater management, and sedimentation.
- Geology and Soils (Section 4.11) evaluates the potential affect of the Transformation alternatives on local geology and soil erosion potential.
- Biological Resources (Section 4.12) includes discussion of potential affects from the alternatives on vegetation, aquatic habitats, special status species, and unique ecological areas.
- Cultural Resources (Section 4.13) addresses potential affects to pre-historic, historic, and Native American resources.
- Safety (Section 4.14) considers the safety aspects associated with training and operational activities proposed under the Transformation alternatives.

Existing plans and procedures (even when they go above the regulated or permitted requirements) as well as local, state, and federal regulations and permitting requirements are not considered specific mitigation measures because they are already included as part of the existing management regime, and will be

undertaken regardless of the level of impacts. These ongoing management regimes are part of the proposed action and described under the affected environment and/or environmental consequences for the specific resources. Mitigation for potential adverse impacts, when applicable, is also discussed. Mitigation measures, per the Army NEPA Regulation, may include avoidance of effect; minimization of effect; repair, rehabilitation, or restoration of effect; reduction of effect; and/or compensation for effect.

Cumulative impacts are presented in Chapter 4 as well. The alternatives are evaluated for incremental impacts when considering the past, present, and reasonably foreseeable actions within Fort Benning and the adjacent communities.

4.1.2 FORT BENNING ONGOING ENVIRONMENTAL PROTECTION PROCESS FOR TRAINING ACTIVITIES

To ensure that ongoing training activities do not adversely affect the natural and cultural resources on Fort Benning, an environmental review must occur of the training plan prior to any on-the-ground activities. In accordance with Army NEPA Regulation, Headquarters U.S. Army Infantry Center Regulation 210-4, and Fort Benning Installations Range and Terrain Regulation (U.S. Army 2005b), all training activities must be preceded by the timely submission of the Fort Benning Range Division of a completed Fort Benning Form 144-R to the Environmental Management Division (EMD), Directorate of Public Works (DPW). The Form must include a training plan and provide sufficient detail of the training scenario to allow for a comprehensive analysis of the potential impact on the environment, including impacts to vegetation, threatened and endangered species, historical/archeological sites, soil erosion, wetland protection, hazardous materials spill prevention and/or control, noise management, etc. When existing NEPA documentation adequately covers a proposed training action, submission of the Form is still required. Repetitive actions scheduled for the same sites by the same units, using the same training scenarios, involving the same amount of troops, equipment, supply, ammunition, etc. are required to be submitted for environmental review and concurrence on a periodic basis (not to exceed 12 months). EMD reviews these submittals and renders concurrence/nonconcurrence with the proposed training activities. The concurrence may include conditions such as avoidance of sensitive areas, spill protocols, etc. A nonconcurrence is accompanied by reasons and conditions under which alternatives can be favorably considered before the training can take place. In cases where restrictions identified by EMD may adversely impact training, Fort Benning EMD, training, and range personnel explore options to modify the exercise to meet mission needs and environmental requirements (U.S. Army 2005b). Following training activities, the area is surveyed by the Range Safety Officer to ensure safety and environmental compliance. If noncompliance is identified, the impact is reported via the Environmental Incident Report Form and mitigated per EMD direction. These processes and all other existing regulations (e.g., special status species protection, spill prevention, sedimentation controls) will remain in place and will be used to evaluate the training exercises both before and after they take place at Fort Benning under the proposed Transformation action.

4.1.3 ROLE OF INTEGRATED TRAINING AREA MANAGEMENT PROGRAM

Another tool used to manage resources and to minimize impacts to the environment (associated with training and operations), is the Integrated Training Area Management (ITAM) program. ITAM provides the Army with the capabilities to manage and maintain training and testing lands by integrating mission requirements with environmental and land management practices. The objectives of the Army's ITAM program are to:

- Achieve optimal sustained use of lands for the execution of realistic training and testing by providing a sustainable core capability that balances usage, condition, and level of maintenance.
- Implement a management and decision-making process that integrates Army training and other mission requirements for land use with sound natural resources management.
- Advocate proactive conservation and land management practices by aligning Army training land management priorities with the Army training and readiness priorities.

The ITAM program is formalized in Army Regulation 350-19, the Army Sustainable Range Program, which lays the groundwork and established responsibilities and procedures for the Sustainable Range Program (U.S. Army 2005a).

4.2 LAND USE

Land use often refers to human modification of land for residential or economic purposes. The attributes of land use include general land use and ownership, special use land areas, and land management plans. Land uses are frequently regulated by management plans, policies, ordinances, and regulations that determine the types of uses that are allowable or to protect specially designated or environmentally sensitive uses.

Both in terms of the affected environment and potential environmental consequences, this assessment first focuses on land use and management within the boundaries of Fort Benning. A discussion of land use, ownership, and special use land areas for lands on the perimeter of Fort Benning follows. The geographic setting and location of Fort Benning provides the context for this land use assessment. Fort Benning covers 181,275 acres in portions of Muscogee, Chattahoochee, and Russell counties. Approximately 80 percent of Chattahoochee County is within the boundaries of Fort Benning. The largest population center is the City of Columbus. The central business district of Columbus, GA lies approximately 8 miles north of the Main Post of the Installation. Columbus, GA is the third largest city in Georgia in terms of population and the largest city in Georgia in terms of land area (Columbus Consolidated Government 2006a). The City of Columbus and Muscogee County have a consolidated government (Columbus Consolidated Government, formed in 1971) and share the same jurisdictional boundaries (Columbus Consolidated Government 2006b). Phenix City, AL, the next largest incorporated city in the region, is located 9 miles southwest and across the Chattahoochee River from the Main Post area of Fort Benning. Phenix City shares close ties with the neighboring City of Columbus in terms of land use, as it is just west of the Chattahoochee River. The City of Cusseta, GA, the county seat of Chattahoochee County, is a small, incorporated city located south of Fort Benning. In 2003, the City of Cusseta and Chattahoochee County became the Unified Government of Cusseta-Chattahoochee County (Lower Chattahoochee Regional Development Center 2006). The remainder of the region is characterized by a few additional small, unincorporated communities and rural residences and predominantly agricultural and undeveloped vacant land used for farming and forestry. Other major urban areas within a 100 mile radius of Fort Benning include Albany and Macon, GA, and Montgomery and Dothan, AL.

The ROI for detailed analysis for perimeter land use is within a 3 mile zone of Fort Benning. This is consistent with the Army Compatible Use Buffer (ACUB) program, an Army program that identifies buffer planning zones around Army installations to limit effects of encroachment and maximize land inside the installation that can be used to support the installation's mission) which focuses analysis on land use impacts, such as military activities and community development, which are potentially incompatible along the northeastern and western sides of Fort Benning. Because the Transformation actions occur within the Georgia portion of Fort Benning, the Alabama/Russell County land use is not analyzed in as much detail as are other areas adjacent to Fort Benning.

Airspace use is described as part of the training land use environment, but is not analyzed in detail because the proposed Transformation actions would not affect the use, delegation, scheduling, or configuration of this airspace.

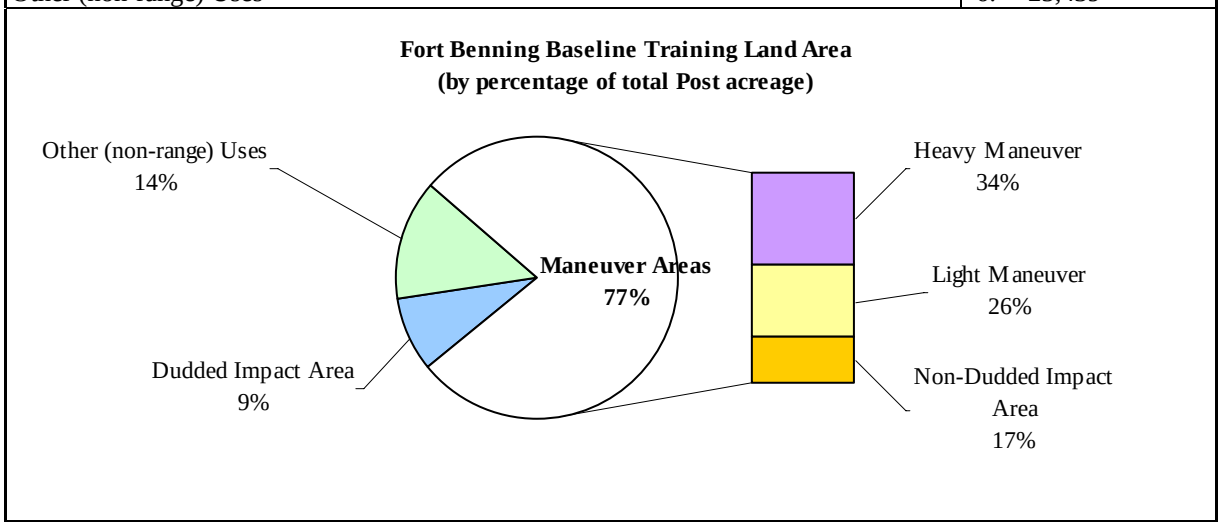
4.2.1 Affected Environment

4.2.1.1 Fort Benning Land Use

Ranges and Training Areas. The majority of training lands at Fort Benning are usable year-round. The primary land use document guiding military training is the Fort Benning RTLP Development Plan (Fort Benning 2006a). The RTLP Development Plan is prepared using the RTLP planning process as defined in AR 210-21, *Army Ranges and Training Land Program*, dated 1 May 1997 and AR 350-19, *The Army Sustainable Range Program*, dated 30 August 2005. The RTLP Development Plan provides a view of the available assets, identifies the users, and establishes their training needs based on Army training and resource doctrine. The RTLP process addresses managing range facilities and training areas by establishing current requirements and utilization levels for available training assets and providing a near- and long-term project plan for training, public works, and environmental planners. Table 4.2-1 provides a breakdown of the baseline land use designations at Fort Benning.

Table 4.2-1: Fort Benning Training Lands

Training Land Use Designation	Total Acres
Restricted Dudded Impact Area	1. 15,554
Maneuver Training	2. 141,471
Heavy Maneuver Areas	*3. (62,958)*
Light Maneuver Areas	*4. (48,171)*
Non-Dudded Impact Areas (can be used for light maneuver)	*5. (30,342)*
Other (non-range) Uses	6. 25,439



Source: Fort Benning 2006a

The majority of training land use is dedicated to maneuver training. Figure 4.2-1 depicts the operational land use at Fort Benning. Training compartments are identified for the heavy maneuver training areas and the light maneuver training areas. Maneuver area lands are used for conducting force-on-force maneuver training associated with FTXs and STXs in the Army Training and Evaluation Programs (ARTEPs). Combined arms maneuvering integrates field artillery fire support, close air support, and Army aviation with the infantry and armor to attack or defend an objective. Light maneuver training

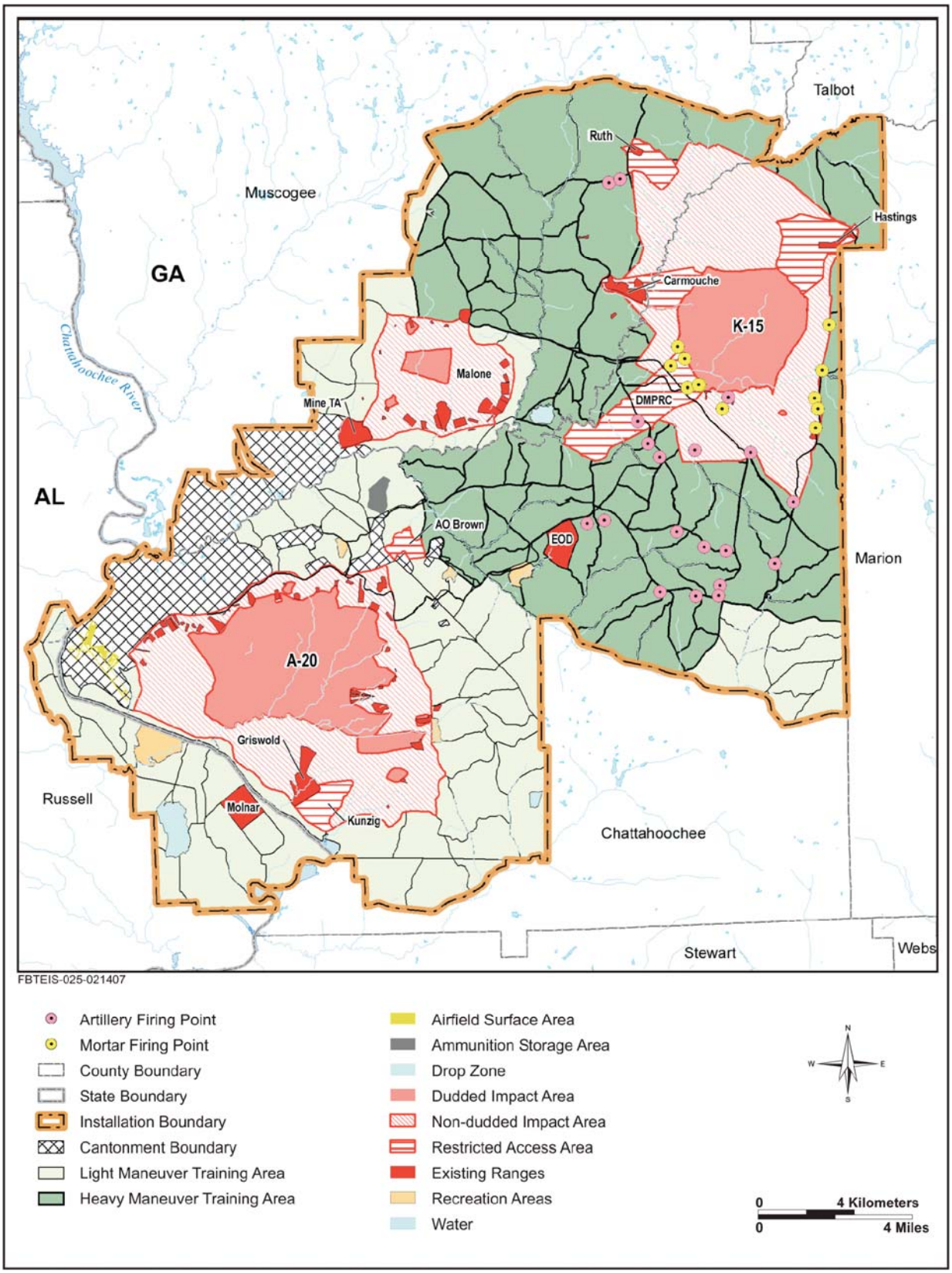


Figure 4.2-1: Fort Benning Operational Land Use

areas are used for dismounted foot traffic infantry, wheeled vehicles, and towed artillery training. Heavy maneuver training areas are used for training with both tracked and heavy wheeled vehicles and equipment, primarily on established trails, but also some free maneuvering (cross-country travel) of heavy equipment across appropriate terrain. All maneuver training areas are available for light forces. Heavy maneuver areas occupy 62,958 acres primarily in the northeastern portion of the Installation. Light maneuver lands occupy 48,171 acres primarily in the southwestern portion of the Installation (Fort Benning 2006a).

The Army identifies land use areas that receive live-fire ordnance as dudded and non-dudded impact areas. A dudded impact area is an area that is known to contain unexploded live ammunition or a dud (an explosive ammunition that has been fired, has failed to function as designed, and as a result is of a hazardous or unpredictable condition). Access to dudded impact areas is restricted to mission essential activities and coordinated with the controlling range office prior to entry. Non-dudded impact areas are those that receive munitions that do not include high explosive or dud-producing ordnance (such as training rounds). Non-dudded impact areas can be used for maneuver training at the expense of ceasing live-fire training when the associated SDZs overlap with the training area. At Fort Benning, dudded and non-dudded impact areas are concentrated in three locations on the Installation: the Oscar-Kilo Range Complex in the northeast corner of the Installation in the vicinity of the K15 impact area, the Alpha Range Complex in the southern portion of the Installation in the vicinity of the A20 impact area, and a smaller area in the Malone Range Complex on the western boundary of the Installation (see Figure 4.2-1).

Range areas include the 38 basic marksmanship ranges, 9 direct fire gunnery ranges, 19 collective live fire ranges, 36 indirect firing facilities, and 7 special live fire ranges listed individually in Section 3.2.2. It also includes the EOD Range. Indirect live fire ranges support field artillery and mortar whose training requirements call for an approved firing point and an appropriate impact area. The basic weapons ranges support the training requirements for pistols, rifles, machine guns (including submachine guns and grenades), shotguns, AT4s (light anti-armor weapon), and M203 grenade launchers. The direct fire gunnery ranges are designed for the M1 series tank, M2 BFVs, M114 HMMWVs, and associated ordnance. The collective live fire ranges provide squad-level and higher units the opportunity to conduct maneuver operations using live ammunition with M1 series tanks, M2 BFVs, and M114 HMMWVs. Special live fire ranges support live hand grenades and non-live fire facilities for bayonet training; hand-to-hand combat; mine warfare; confidence, obstacle, rappelling, land navigation, and tracked vehicle drivers courses; combat trail; and medium/heavy equipment training areas. Armor, artillery, and mortar firing occur from three established firing areas on the Installation. Ordnance firing is directed toward controlled dudded impact areas (K15, A20, etc.). Other military training activities include the operation and maintenance of vehicles, academic military training, and physical training. Various support units, such as transport units and signal units, also participate in training activities.

The inventory of existing ranges is provided in Table 4.2-2 along with the average days used (computed on the basis of average use in the 3 previous fiscal years) and days required (days exceed 365 when multiple missions require use of the targets). The ranges used most heavily were the Urban Assault

Course (UAC), small Military Operations Urban Terrain (MOUT), and non-automated IPBC. Per the RTLP, overall utilization of range facilities was relatively steady for FY 2004 and FY 2005, but increased in FY 2006 based on utilization data for the first half of FY 2006 and projected utilization for the remainder of the year. These utilization rates were greatly affected by wartime deployments during these years. Projections of future requirements more accurately reflect baseline demand, but also include projected Armor School requirements. When this information is analyzed in context of projected range throughputs and range capacities, shortfalls are identified. Many of these shortfalls are because Fort Benning requires standard, modernized ranges for improved training in order to meet their mission requirements (Fort Benning 2006a).

Table 4.2-2: Range Training Inventory and Utilization

Range Title	Number of Facilities	Average Days Used	Days Required
Basic Weapons Marksmanship Ranges			
Basic 10/25 m Firing Range (M16 zero)	7	124	301
Automated Field Fire Range	1	118	295
Automated Record Fire Range Remote Target System	3	162	398
Modified Record Fire Range Remote Target System	2	118	179
Known Distance Range	4	120	371
Sniper Range	1	185	110
Nonstandard Small Arms Range	9	101	468
Combat Pistol Qualification Course/Military Police Firearms Qualification Course	1	75	182
Multipurpose Machine Gun	1	82	NA
Multipurpose Machine Gun Automated	2	70	303
M203 Grenade Launcher Range	2	47	140
Direct Fire Gunnery Ranges			
Antiarmor Tracking and Live Fire Range	3	104	14
Field Artillery Direct Fire Range	1	30	11
Stationary Gunnery Range	1	46	287
Multipurpose Training Range (Non-Automated)	2	59	NR
Multipurpose Training Range (Automated) Camouche	1	80	491
Aerial Gunnery Range	1	1	NR
Collective Live Fire Ranges			
Tank Platoon Battle Run (Cactus/Whitson)	1	36	NR
UAC	2	287	464
Shoot House	4[a]	10	232
Infiltration Course	1	76	299
Fire and Movement	4[b]	115	126
Squad Defense Range	1	19	269
ISBC (Non-Automated)	1	124	NR
IPBC (Non-Automated)	2	232	216
MOUT Small	2	258	NR
Convoy Live Fire	1	NR	170
Indirect Fire Facilities			
Mortar Scaled Range	1	49	NA
Mortar Range/Firing Points	19	123	46
Field Artillery Indirect Fire Range	22	101	18
Observation bunker	1	238	NA

Table 4.2-2: Range Training Inventory and Utilization

Range Title	Number of Facilities	Average Days Used	Days Required
Special Live Fire Ranges			
Hand Grenade Familiarization Range	1	49	306
Light Demolition Range	4	35	180
Other, Non-Live Fire Facilities			
Rotary Wing Runway Unsurfaced	31	53	NA
Nuclear, Biological, Chemical Chamber	2	91	259
Bayonet Assault Course	1	NA	270
Target Detection Range	3	73	NA
Hand-to-Hand Combat Pit	3	NA	348
Confidence Course	3 [c]	37	179
Leadership Reaction Course	1	70	19
Tracked Vehicle Drivers Course	1	NA	275
Tracked Vehicle Recovery Specialist	1	NA	225
Amphibious Vehicle Training Area	1	53	NA
Combat Trail	1	98	42
Rappelling Training Area	1	53	86
Obstacle Course	1	NA	384
Land Navigation Course	4	53	314
Maneuver Training Areas			
Maneuver/Training Area Light Forces	83	54	NA
Maneuver/Training Area Heavy Forces	86	84	NA

Notes: a. Construction on two of the four shoot houses was recently completed; utilization data are not available for inclusion.
b. One of the Fire and Movement Ranges is inactive
c. Utilization data were unavailable for two of the three confidence courses.
d. Maneuver/training area requirements are calculated based on km^2 days required. For light forces, 141,581 km^2 are required. For heavy forces, 155,909 km^2 are required.
NA = not available NR = not requirement
Source: Fort Benning 2006a

Restricted areas represent areas that are used for training activities that are incompatible with maneuver training activities and include Ruth, Hastings, Carmouche, Cactus, Concord, DMPRC, Camp Darby, Malone MOUT, Railroad Head, McKenna MOUT, and AO Brown in the northern range area and the Kunzig Range Complex and portions of the Dixie Road Range Complex in the southern range area.

As further discussed in Section 4.14.1, areas within SDZs are closed to all personnel not directly using the range complex during ongoing exercises. SDZs are activated when range complexes are in use. When they are not in active use, areas within SDZs are accessible for other compatible land uses such as training, maintenance, and land management activities.

There are four personnel/equipment drop zones, which are large, flat, cleared areas used for personnel and equipment to land following a parachute jump. These are: Lee Field (located in the northern range area between the Malone Range Complex and DMPRC), McKenna (located in the northern range east of Harmony Church cantonment area), Arkman (located in the southern range on the eastern boundary of the Installation), and Fryar (located in Alabama in the southern range on the western boundary of the Installation).

Other, non-live fire facilities such as rappel towers, obstacle courses, gas chambers, and helicopter landing pads are dispersed through the Installation. The Ammunition Storage Area, used to accommodate ammunition storage requirements in magazines of varying size and capacity, is located north of the Harmony Church cantonment area and south of the Ochillee Rail Head. The Ochillee Rail Head is capable of staging up to 72 rail cars and deploying 144 rail cars per day (Fort Benning 2006a).

Lawson AAF is a fully instrumented airfield located within the southern portion of the Main Post Cantonment Area. To protect airspace in the vicinity of Lawson AAF, the groups of training compartments identified by V, W, X, Y, and Z and specific training areas A1, A2, A3, A4, A14, A18, A19, CC3, and CC4 are designated as controlled and limited training areas, refer to Figures 3.2-1 through 3.2-7 (Fort Benning 2006a).

Overflight of the Fort Benning Installation is restricted and is controlled by Notice to Airmen, issued by the Federal Aviation Administration (FAA). The designated areas specific to Fort Benning are Restricted Areas R-3002A through 3002F. Airspace restrictions are based on training activity scheduled by ground forces, the weapon systems being used, and the location of the training facility on the particular day the restriction is in effect. Range Division will only hold on to the necessary airspace needed to accommodate the scheduled training. Normal flight procedures require all aircraft to use a designated frequency (SKYWATCH) for advisories when operating within the boundaries of Fort Benning. For flights over areas not included within R3002, but overlying Fort Benning, coordination with Lawson AAF is required 24 hours in advance. Range Division monitors the SKYWATCH frequency to advise aircraft within the Fort Benning airspace, logging aircraft in and clear. Lawson AAF is responsible for coordinating Airletters, Notices to Airman, etc. (Fort Benning 2006a).

Cantonment Areas. Land use and management within the cantonment areas of Fort Benning is primarily in accordance with *AR 210-20, Real Property Master Planning for Army Installations*, dated 16 May 2005. The Real Property Master Plan for Fort Benning dates from 1994 (Harland Bartholomew and Associates 1994) and, while it provides a basis for orderly development of the Installation, the planning therein has largely been overcome by the events surrounding the unforeseen scale of development associated with the proposed Transformation. The major emphasis of the Real Property Master Plan includes: (1) eliminating or minimizing conflicts among incompatible functions, (2) improving the function efficiency of operations on the Installation, (3) improving the appearance of the Installation by buffering or relocating unattractive industrial, utility, or maintenance functions, and (4) improving the Installation environment by reducing motor vehicle use. Much of the planning in recent years has been charrette-style planning that draws from this foundation and is conducted in accordance with the guidelines of AR 210-20 and guiding the development associated with various proposals. Fort Benning's annual planning board addresses ongoing Real Property Management Planning by considering and prioritizing projects for future years. Other management guidance is included the Installation Design Guide, Integrated Cultural Resource Management Plan (ICRMP) (in preparation), Integrated Natural Resources Management Plan (INRMP), and aforementioned RTLP Development Plan.

The Fort Benning Installation Design Guide (U.S. Army undated) provides basic standards for the appearance of elements to be built or installed at Fort Benning within administration, community facilities, housing, industrial, open space, and mission support land use zones (see Section 4.3 for more detail on application of the Installation design guidelines at Fort Benning). The INRMP (Fort Benning 2001) is a component of the Real Property Master Plan and serves as the decision document for natural resources management actions and compliance procedures. When finalized, the ICRMP will serve as the decision document for cultural resources management actions and compliance procedures. These documents guide land use by identifying potential conflicts between the Installation's mission and cultural and natural resources management, recommending compliance actions necessary to maintain the availability of mission-essential properties and acreage, and developing a comprehensive plan for deliberately managing cultural and natural resources to attain and sustain stewardship requirements while optimizing primary activities on mission land and, where compatible, conducting secondary activities. Cultural resources management is discussed in more detail in Section 4.13. Land use components principally guided by the INRMP include timber management, outdoor recreation, habitat management, and management for the 15 Unique Ecological Areas (UEAs) identified in the INRMP. The biological resources management components of the INRMP, including the UEAs, are addressed in more detail in Section 4.12.

Tables 4.2-3, 4.2-4, and 4.2-5 provide a breakdown of baseline community support facilities, improvements, and housing at Fort Benning. The Army has transferred ownership and responsibility of family housing to a private entity and issued a land lease on underlying Army land. This initiative is discussed in further detail in Section 4.15.2. Fort Benning's water, wastewater, gas, and electrical distribution systems have been privatized as part of the Army's initiative to obtain safe, technologically current, and environmentally sound utility systems from private entities at a relatively lower cost than they would under continued government ownership. In the privatization process, military installations shift from the role of owner-operators to that of utility service customers.

Table 4.2-3: Baseline Community Support Facilities at Fort Benning

Type/Facility	Number	Type/Facility	Number
Morale, Welfare, and Recreation (MWR) Facilities		***Army and Air Force Exchange Service (AAFES) Facilities***	
After hours Community Activity Center	1	Main Post Exchange	1
Officers' Club	1	Barber Shops	7
Golf Course *(36 Holes)*	1	Beauty Shop – Main Post Exchange	1
Auto Skills Center	1	Shoppettes/5 with gas stations	12
Libraries (1 MWR; 2 Technical)	3	Theater (10-Plex)	1
Recreation Areas		Military Clothing Sales	2
(Destin, Florida and Uchee Creek, AL)	2	Troop Stores	2
Video Arcade	1	Mini Mall	1
Laundromat	1	Class 6 Package Beverage Store	1
Gym/Fitness Centers	6	Car Wash	1
Recreation Centers	3	AAFES Food Establishments	15
Outdoor Equip Checkout/Storage Units	1		
Car Washes	2	***Commissary***	1
Bowling Centers	2		
Bingo Facility	1	***Medical Facilities:***	
School Age Services		Hospital	1
Youth Services Center	3	Emergency Room	1
Child Care Centers	1	Troop Medical Clinics	7
Museum Gift Shops	4	Primary Care Clinics	5
MWR Food/Beverage Outlets	7	Pharmacies	2
Lodging Hotel	1	Optical Fabrication Lab	1
		Dental Clinic	5
Other Facilities/Services		Veterinary Clinic	1
Dependent Schools	7		
Army Community Service Center	1		
Chapels	7		

Source: Fort Benning May 2006c

Table 4.2-4: Baseline Assets

Improvement	Measurement
Buildings	
Number	2,981
Square Feet	21,013,625
Grounds	
Total Acres	181,386
Improved	11,035
Other	170,351
Roads (Miles)	
Paved	494
Gravel	696
Dirt	1,228
Tank Trails	40
Railroad Track	5
Utilities (not Army owned; privatized)	
Electrical Distribution (Miles)	590
Water	201
Gas	111
Sewer	167

Source: Fort Benning May 2006c

Table 4.2-5: Military Housing Baseline

Type of Housing	Quantity
For Married Personnel	
Available for Officers	685
Available for Enlisted	3,361
For Bachelor Personnel	
Officer Quarters (in adequate condition)	108
Senior Enlisted Quarters(in adequate condition)	26
Enlisted Barracks	
Space Available	25,190
Temporary Lodging Facilities	1,157

Source: Fort Benning May 2006c

Land use categories, defined in Army Technical Manual 5-803-1, *Installation Master Planning* (U.S. Army 1986), are summarized in Table 4.2-6. The distribution of these land use types is discussed for each of the four cantonment areas (refer to Figure in 2.3-1.

Table 4.2-6: Land Use Categories

Land Use	Definition
Administration	Headquarters and office buildings to accommodate offices, professional and technical activities, records, files and administrative supplies
Airfield	Includes landing and takeoff areas, aircraft maintenance areas, airfield operations and training facilities, and navigational and traffic aids
Community Facilities	Commercial and service facilities, the same as are associated with towns in the civilian community
Family Housing	Facilities to house military families, along with support and recreational facilities
Industrial	Includes activities for manufacturing Army equipment and material, utility plants, and waste disposal facilities
Maintenance	Facilities and shops for maintenance and repair of all types of Army equipment found at the depot, Installation, and manning and equipment levels
Medical	Facilities providing for both inpatient and outpatient medical and dental care for active duty and retired personnel
Open Space	Safety clearances, security areas, utility easements, water areas, wetlands, conservation areas, forest stands, and grazing areas
Outdoor Recreation	Outdoor athletic and recreational facilities of all types and intensities of use
Supply/Storage	Depot, terminal, and bulk-type storage for all classes of Army supply
Training/Ranges	Academic training areas required to support entry level and continuing education, and fire and movement/maneuver areas
Unaccompanied Personnel Housing	Unaccompanied enlisted and officer personnel barracks, including dining, administration, supply, outdoor recreation, and community retail and service facilities

Source: U.S. Army 1986

Main Post: At a current 8,850 acres, Main Post is the largest and most developed of the cantonment areas. It includes the Post Headquarters, Infantry School, Cuartels barracks complex, Martin Army Community Hospital, Post Exchange, Commissary, and various family housing areas. Lawson AAF is located in the southernmost portion of the Main Post. The areas of the Main Post adjacent to the Chattahoochee River and Upatoi Creek are largely green space. Family housing and outdoor recreation dominate the northern portion of the Main Post. The densely developed core of the Main Post includes unaccompanied personnel housing, community facilities, training facilities, supply and storage, maintenance, industrial, and medical land uses.

Harmony Church: The Harmony Church cantonment area lies 5 miles southeast of Main Post and south of U.S. Highway 27. The existing 775-acre Harmony Church cantonment area supports a diverse assortment of low density facilities including unaccompanied housing, maintenance, training, administration, and outdoor recreation land uses.

Kelley Hill: The 400-acre Kelley Hill cantonment area is located 3 miles east of Main Post. Current land use, which is fairly concentrated, includes unaccompanied personnel housing, community, and maintenance facilities.

Sand Hill: The 2,510-acre Sand Hill cantonment area is located 4 miles northeast of Main Post. Land use in this cantonment area includes family housing, unaccompanied personnel housing, training, and community facilities.

***Recreation Areas*.** On-Post recreation areas are dispersed throughout the Installation. Most recreation and leisure programs on Fort Benning are managed and administered by the Directorate of Morale, Welfare, and Recreation (MWR). The operation and maintenance of those facilities and areas are the responsibility of MWR and the DPW. Fort Benning's undeveloped lands used for recreation, commonly called open space, may include golf courses, ball fields, or other similar recreation areas. Recreation areas adjacent to training areas include Uchee Creek Recreation Area, located off 101st Airborne Division Road at the junction of Uchee Creek and the Chattahoochee River in Alabama; Kings Pond recreation area, located off Hourglass Road; Twilight Pond, located off First Division Road at Dickman Field in Harmony Church area; and Weems Pond, located at Jamestown Road across from Warner Range. Use of these areas must be scheduled through Community Recreation Division, Directorate of Community Activities in accordance with USAIC Regulation 210-4. Other recreational opportunities, such as a pistol club range, bird-watching, fishing, hunting, and hiking, also occur on the Installation. Recreation within developed lands includes recreational and physical fitness facilities, child care programs, libraries, club activities, bowling, and other similar opportunities.

Fishing and recreational boating is permitted at largely undeveloped lands along the Chattahoochee River. There are fishing ponds throughout the Post that authorized personnel may use after acquiring a permit from Fort Benning and a fishing license from either Georgia Department of Natural Resources or Alabama Department of Conservation and Natural Resources (depending on which area of the Installation they fish). Issuance of the Fort Benning permit includes the acceptance by the permittee that ponds within training areas may be closed when the training areas are active. Before visiting any ponds, permittees must check if they are open for access.

Hunting on Fort Benning is regulated and coordinated with the schedule of field training exercise in the training compartments. As with fishing, a hunting license must be obtained from the state and a permit from Fort Benning. Permittees must check if access is allowed to any training range on any day before visiting. The areas open for hunting on a given day are determined by the amount of military training, range maintenance, and land management activities occurring in the training compartments.

The Uchee Creek Recreation Area, located on the southwestern side of Fort Benning, is the most developed recreation site at the Post. The Uchee Creek Army Campground and Marina provide active duty and retired military personnel, DoD civilians, their families, and other eligible personnel with various recreational opportunities. Facilities include recreational vehicle (RV) sites, log cabins, boat launching ramp, boat slips, docking facilities (with gas, water, and electrical hookups), boat rentals, RV Rally site and Activity Center, archery range, basketball and volleyball courts, a softball field, picnic pavilions, playground equipment, and shuffleboard courts (Fort Benning MWR 2006).

4.2.1.2 Off-Post Land Use and Management

Georgia Planning Requirements

Comprehensive planning is primarily conducted at the regional and local level, with the Georgia Department of Community Affairs monitoring State agencies and supervising local governments to ensure they conform to the State's long-term goals and objectives. In 1989, the Georgia General Assembly passed the Georgia Planning Act that established a coordinated planning program for the State of Georgia. This program provides local governments with opportunities to plan for their future and to improve communication with their neighboring governments. In addition, the Planning Act assigns local governments certain minimum responsibilities to maintain "Qualified Local Government" status and, thus, be eligible to receive certain state funding.

The cornerstone of the coordinated planning program is the preparation of a long-range comprehensive plan by each local government in the state. This plan is intended to highlight community goals and objectives as well as determine how the government proposes to achieve those goals and objectives. It is intended that the comprehensive plan be used to guide local government decision-making on a daily basis. "Qualified Local Governments" are required to have a comprehensive plan in conformity with the minimum standards and procedures; establish regulations consistent with its comprehensive plan and with the minimum standards and procedures; and participate in the Department of Community Affairs mediation process in a good faith effort to resolve any conflict. The Georgia Department of Community Affairs designates levels of analysis appropriate for the county comprehensive plans. For those within the ROI, the department requires an advanced level comprehensive plan for Muscogee County only; Harris County is required to prepare an intermediate level comprehensive plan; and the remainder of the counties in the ROI is required to complete a basic level comprehensive plan (Georgia Department of Community Affairs undated).

The State Advisory Committee on Rural Development advises the Board of Community Affairs on matters related to rural development and prepares a biennial rural economic development plan. Regional Development Centers are boards established by the Board of Community Affairs and can prepare studies of the region's resources as they affect existing and emerging problems of industry, commerce, transportation, population, housing, agriculture, public services, local governments, and any other matters relating to planning and development. They are also authorized to cooperate with local governments and planning agencies, required to develop a regional plan, and empowered to develop plans for counties and

municipalities that request it. However, it is specifically provided that the provisions creating the Regional Development Centers do not impinge upon the zoning power of counties and municipalities.

In 2003, Title 36 of the Official Code of Georgia, relating to local government, was amended to require planning entities to investigate and make recommendations on proposed zoning decisions on land that is "adjacent to or within 3,000 ft of any military base or military Installation or within the 3,000-ft Clear Zone and Accident Prevention [*sic*] Zones Numbers I and II as prescribed in the definition of an Air Installation Compatible Use Zone of a military airport." Specifically, given the proposed land use's proximity to the military facility, planning entities are to determine the following:

- If the proposal will permit a suitable use;
- If the proposal will adversely affect the existing use or usability of nearby property;
- If the affected property has a reasonable economic use as currently zoned;
- If the proposed use could cause safety issues to such items as streets, transportation facilities, utilities or schools;
- If a land use plan has been adopted and, if so, if the proposed change conforms with the policy and intent of the land use plan; and
- If there are existing or changing conditions that would affect the use of nearby property.

At least 30 days prior to the zoning hearing, the planning entity must request that the military commander provide "written recommendation and supporting facts relating to the proposed land use change." If the military commander does not submit a response by the date of the public hearing, then the proposed zoning change is presumed to not have an adverse effect. Any information received shall become part of the public record (Georgia Code 36-66-6).

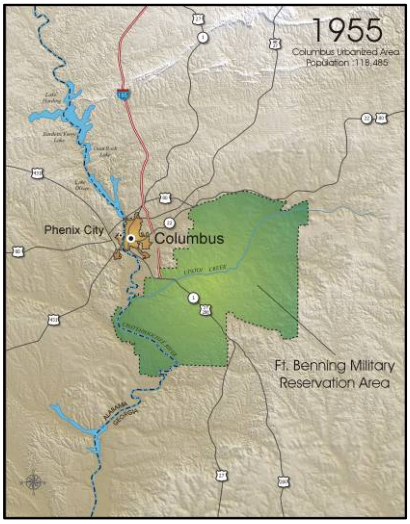
Alabama Planning Requirements

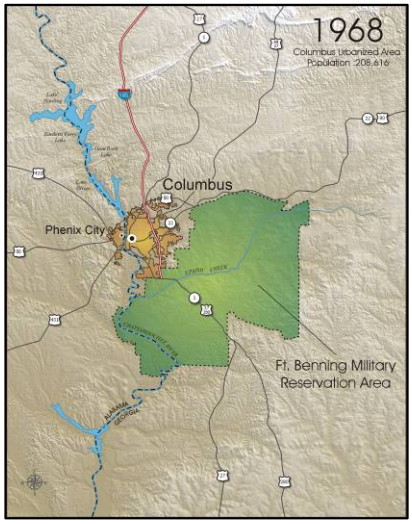
Under Alabama state law, regional councils are mandated to "prepare a regional plan consistent with state comprehensive planning." In the mid-1960s, local governments were either required to have community and "area wide plans" to qualify for grants-in-aid; or were provided increased federal assistance if projects conformed to existing plans. This direct incentive for planning; however, no longer exists in Alabama (Alabama Association of Regional Councils 2002). Lee-Russell Council of Governments (LRCOG) serves as the regional planning and development organization that serves member governments by managing programs, promoting collaborative efforts, and serving as a clearinghouse for federal, state, and local funds (LRCOG 2006).

Increasing Urbanization within the ROI

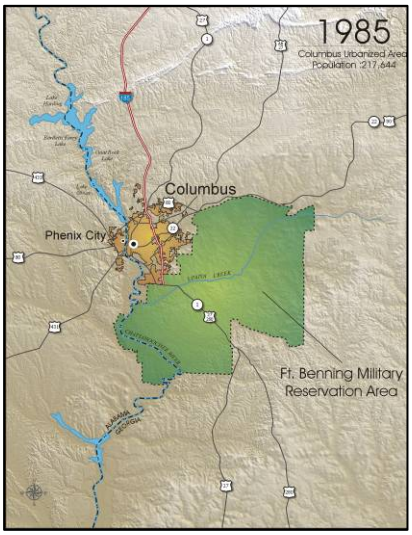
In recent decades, there has been increasing urbanization of the Phenix City/Columbus area located to the northwest of Fort Benning. Whereas, in 1955, there was geographic separation between the urban landscape and the Post, urbanization expanded to along the northwestern borders of the Post by the mid-1990s. Increasing urbanization adjacent to the north of the Post and southwestern portion of the Post is projected. This following series of graphics represent the historic urban growth of the Phenix

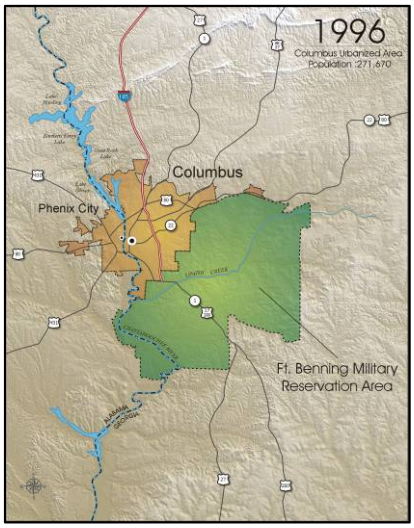
City/Columbus area northwest of Fort Benning from 1955 through 1996 and projected growth through 2008. In 1955, the urbanized population was estimated at 118,485; by 2008, it is projected to be 338,750.

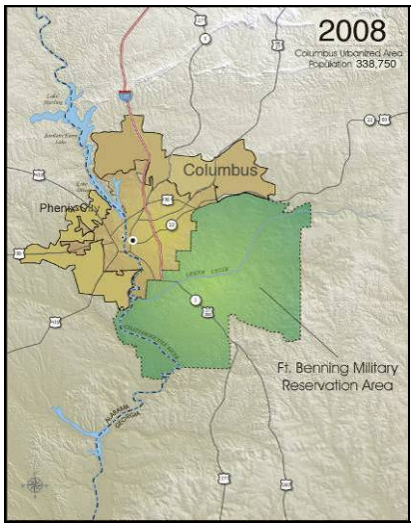




Note: Depicts the Fort Benning boundary prior to the land exchange.







Sources: GAO 2003 and TNC 2006

Columbus Consolidated Government (Muscogee County and City of Columbus), GA

The City of Columbus and Muscogee County Planning Department is responsible for the following:

- Preparing and updating the Comprehensive Plan;
- Administering the subdivision regulations and reviewing site plans;
- Preparing and recommending zoning ordinances to the City Council

- Administering the Georgia Greenspace Program for the City (to promote the permanent protection of at least 20 percent of the county's geographic area as greenspace);
- Maintaining land use database; and
- Providing technical support for city departments and agencies.

The *Muscogee County Comprehensive Plan, 1993-2013* (Columbus Consolidated Government 1993) as updated in 2003 (Columbus Consolidated Government 2003) is the current comprehensive plan for the Columbus Consolidated Government. The general land use and community development objectives are to guide future growth consistent with community objectives, encourage redevelopment of substandard and underutilized areas, and improve and protect existing development. The next update to the comprehensive plan is due to the Georgia Department of Community Affairs in October 2008 (Personal communication, Woodruff 2006). Figure 4.2-2 depicts the existing land use for Muscogee County per the Land Use Portion of the 2003 Comprehensive Plan. A total of 13 planning districts have been established, five of which border Fort Benning (from southwest to northeast): Districts 12, 13, 11, 3, and 4. Although Planning District 10, located between Districts 13 and 11, does not border Fort Benning it is within the 3-mile adjacency planning area. Land use within each of these districts is discussed in more detail below.

Planning District 12 is located along the Chattahoochee River and abuts the southwestern corner of the Installation with Victory Drive serving as its northeastern boundary. It is characterized by the predominance of public facilities associated with disposal of solid waste and wastewater. The city's former sanitary landfill is located in this area. Sand, gravel, and clay mining also occur in this area. Most of this planning district is dedicated to open space associated with the Chattahoochee River. The northern portion of the planning district includes some low-density residential land use west of Lumpkin Road. East of Lumpkin Road and along Victory Drive, land use is mixed and includes medium-density residential, high-density residential, commercial, and some industrial and public facilities (see Figure 4.2-2). Plans for future development include encouragement for development of public institutions, such as the National Infantry Museum and the new marina, on South Lumpkin Road to tie in with the Oxbow Meadows Water Treatment site, the Oxbow Meadows Learning Center, and the Oxbow Meadows Golf Course. Like Planning Districts 10 and 13, this planning district is part of the Columbus South Redevelopment Area. The consolidated government has prepared more detailed planning for various redevelopment areas throughout the county. A primary objective in establishing this urban renewal area is to re-establish Columbus South as a viable commercial and residential area (Columbus Consolidated Government 2003).

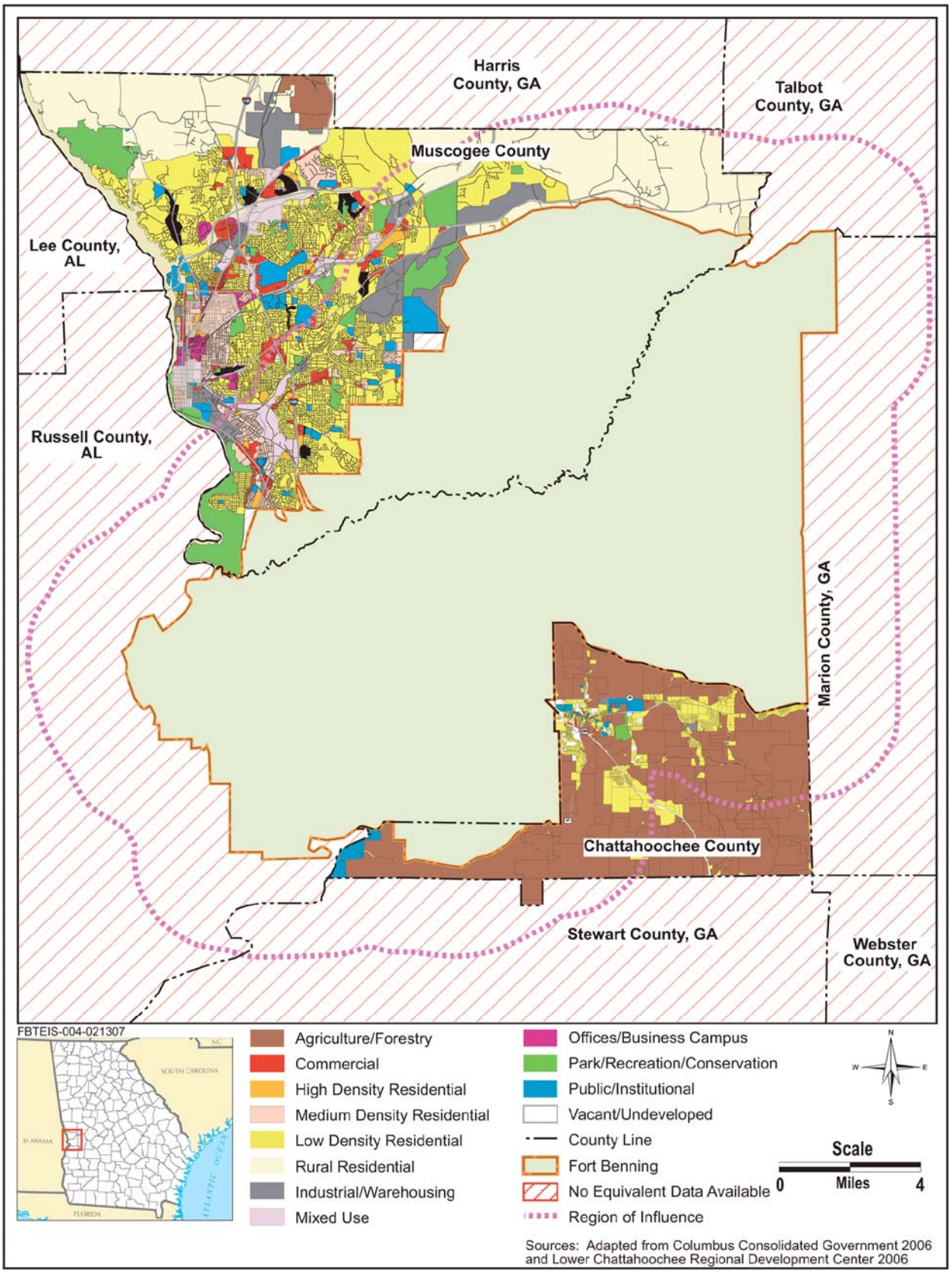


Figure 4.2-2: Region of Influence for Land Use in Muscogee and Chattahoochee Counties

Planning District 13 is a small district that extends eastward from Victory Drive to Cusseta Road. Land use in this area is primarily low-density residential, with some commercial development along Victory Drive (see Figure 4.2-2). Commercial development in this area is attributed to services to the Fort Benning population. Parks include Lindsay Creek, Benning Hills, Calhoun Tract, and South Columbus. Future plans for this area call for City review of all proposed development, rezoning, etc. for potential encroachment into the 3,000-ft area designated as an informal planning zone around the Installation. Like Planning Districts 10 and 12, Planning District 13 is part of the Columbus South Redevelopment Area.

Planning District 11 is a larger district that shares much of its southern boundary with Fort Benning. The predominant land use in this area is low-density residential. Residential land use is separated from other land uses that support major state and city public facilities by Schatulga Road (see Figure 4.2-2). These include the Jack Rutledge Correctional Institute, the Columbus Diversion Center, West Georgia Regional Hospital, offices and storage facilities of the Georgia Department of Transportation, Columbus Correctional Camp, the Metro Animal Shelter, and the city's sanitary landfill. East Columbus (Corporate Ridge) Industrial Park, with tenants that include the expanding Aflac insurance company, is located in the northeastern portion of this district. A segment of I-185 forms the western boundary of this district. The interchanges at Buena Vista and St. Mary's Roads provide east-west access to Fort Benning and other major employment centers and commercial land uses are located along these routes (see Figure 4.2-2). Bull Creek forms the northern boundary of this area. Parks include Shirley Winston, Carver, Belvedere, and Primus King. As is the case with Planning Districts 4 and 13, future planning for this area includes review of all proposed development, rezoning, etc. for potential encroachment into the 3,000-ft planning zone and discourages residential development from the zone if the developments are deemed too close to the firing ranges. A portion of Planning District 12 was part of a land exchange with Fort Benning, wherein the Army transferred land in this "North Tract" to the consolidated government of Columbus/Muscogee County for the "South Tract" located in Chattahoochee County. The North Tract now supports economic and development uses for Columbus/Muscogee County and the South Tract now supports military training uses (U.S. Army 1999).

Planning District 3 is a larger planning district that extends to the northward extent of the County, but shares only a portion of its southern boundary with Fort Benning. Garrett Road forms the eastern boundary of the district and Macon and/or Chattsworth roads form the southern boundary of the district. Existing land use includes low-density residential, rural residential, industrial, and park/open space associated with Flat Rock Park, John Rigdon Park, and Bull Creek Golf Course (see Figure 4.2-2). The land use plan for this area includes providing for long-range industrial, commercial, and various types of residential uses and support for light or heavy industrial development in the areas between Macon Road and the Fort Benning boundary.

Planning District 4 is a large planning district that includes lands north of Fort Benning to the Harris County line. This area, commonly referred to as the panhandle, remains largely undeveloped. Garrett Road serves as the western boundary of this planning zone and the Talbot County line serves as its eastern boundary. Land use in this planning district is rural residential with the exception of the western portion,

which includes some industrial (Pratt and Whitney), low-density residential, and a small park located north of U.S. Highway 80/Macon Road (see Figure 4.2-2). Growth in this area is expected along this highway as a result of increasing urbanization associated with Columbus. The Miller Tract, east of Pratt-Whitney, has been identified as a potential area for expansion of industrial land uses. The Land Use Plan recommends that the city review all proposed development, rezoning, etc. in this district for potential encroachment into the 3,000-ft planning zone. Proposed residential development should be discouraged from the zone if the developments are deemed too close to the firing ranges.

Planning District 10 is a relatively small, wedge-shaped planning district that is bound by the Central Railroad, Bull Creek, and Cusseta Road on the west and I-185 on the east. Land use is a mix between low, medium and high-density residential and mixed commercial-industrial. Industrial development along the railroad lines is the predominant land use factor. The Columbus South Redevelopment Area is located in this planning zone. A primary objective in establishing this urban renewal area was to re-establish Columbus South as a viable commercial and residential area.

Chattahoochee County, GA

This county is dominated by Fort Benning lands; the approximately 20 percent of the county that is not included within the Installation is located southeast of Fort Benning. Chattahoochee County does not have a comprehensive land use plan, but under the Georgia Planning Act, the County is scheduled to complete a comprehensive plan by February 2007 (Personal communication, Woodruff 2006). A July 2006 draft community assessment for the unified government of Cusseta and Chattahoochee County included existing land use classifications for the county, which is depicted in Figure 4.2-2. The vast majority (84 percent) of the land use in the county and most lands adjacent to Fort Benning are characterized as agriculture/forestry. Approximately 12 percent of the county land use is low-density and rural residential land use occurs primarily within the City of Cusseta and along State Route 26 and U.S. Highway 27/280. Single-family detached housing is the predominant residential land use and manufactured housing is the second most frequently used housing type. Public/institutional land uses account for about 2 percent of all land uses and are located in close proximity to the Cusseta Town Center. Commercial and industrial land uses occur in association with the Cusseta Town Center (Lower Chattahoochee Regional Development Center 2006).

Marion County, GA

The County is located on the eastern boundary of Fort Benning. No major communities are located in this county adjacent to the Installation. The land uses adjacent to the Installation are primarily rural agricultural areas. Marion County does not have a comprehensive land use plan that meets the Georgia Department of Community Affairs planning standards. The county is scheduled to complete a partial update to their comprehensive plan this year and to complete a new comprehensive plan under Georgia Planning Act standards by October 2010 (Personal communication, Woodruff 2006). Detailed land use mapping data are not available for this county at a level applicable to provide data for analyses in this EIS; however, Figure 4.2-3 provides a general overview of the land use cover.

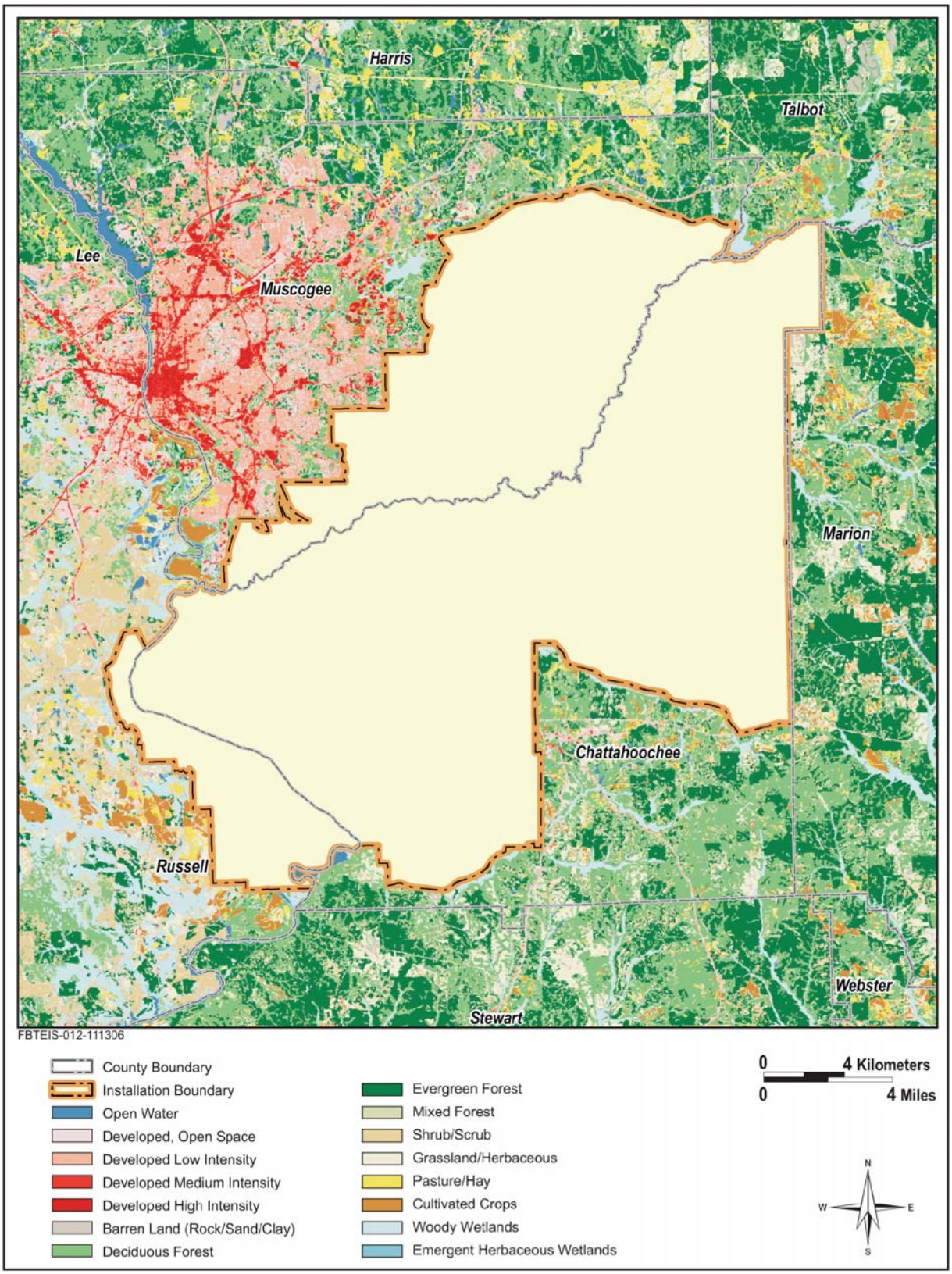


Figure 4.2-3: Existing Land Use Cover Data for Counties in the Vicinity of Fort Benning

Talbot County, GA

Talbot County is located on the northeastern boundary of Fort Benning and does not include any major communities in the area adjacent to the Post. The land uses adjacent to the Installation are primarily rural agricultural areas. Talbot County prepared a comprehensive plan in 2005, prior to the Department of Community Affairs adoption of new local planning requirements. The next plan update is due in 2015 and a partial update is required in 2010 to address the updates to the local planning requirements (Personal communication, Woodruff 2006). Detailed land use mapping data are not available for this county at a level applicable to provide data for analyses in this EIS.

Harris County, GA

This county is located to the north of Fort Benning and north of Muscogee County/City of Columbus. The county boundary is 2 miles north of the Installation boundary at its closest proximity. Land use in the southern portion of this county is primarily undeveloped with some rural residential and agriculture and forestry uses. Areas of concentrated and diversified land use are associated with the communities of Hamilton, Pine Mountain, Waverly Hall, Fortson, and West Point (Joint Harris County, City of Pine Mountain, City of Shiloh, City of Waverly Hall Comprehensive Planning Commission 1992). Detailed land use mapping data are not available for this county at a level applicable to provide data for analyses in this EIS.

Russell County, AL

There is no comprehensive plan for Russell County, AL. Land use zoning has only been established for the Phenix City area of this county. Land uses adjacent to Fort Benning are characterized as rural agricultural. Detailed land use mapping data are not available for this county at a level applicable to provide data for analyses in this EIS.

4.2.2 Environmental Consequences

Impacts on land use would be considered adverse if one or more of the following occurs within the ROI for any of the action alternatives:

- The action is incompatible with surrounding land use; or
- The action changes land use in such a way that mission-essential training is degraded; or
- The action is inconsistent or in conflict with the environmental goals, objectives, or guidelines of a community or county comprehensive plan for the affected area.

4.2.2.1 No Action Alternative

Under the No Action Alternative, there would be no on-Post development associated with the Transformation actions outlined in the description of the proposed action and alternatives. Land use patterns both within and outside of the Installation would remain unchanged. The benefits of increased efficiency of land and facilities use that would be realized by the cantonment-area development, infrastructure improvements, and land use conversions that are incorporated into Transformation action alternatives would not occur.

Land use compatibility adjacent to the Installation would continue to be a factor potentially impacting existing military training. Completion and adoption of recommendations provided in the Installation Operational Noise Management Plan, Joint Land Use Study (JLUS), and ACUB, including working with local jurisdictions to implement land use controls, would continue to minimize inconsistencies and/or conflicts with adjacent land uses. The secondary impacts of induced growth and land use changes in the communities surrounding Fort Benning predicted in association with the Transformation action alternatives would not occur. Development of the communities surrounding Fort Benning, however, would be expected to continue at levels supported by other development opportunities in the region. Such opportunities have spurred growth in the Columbus-Phenix City and Cusseta areas in recent years. Increasing urbanization would be expected; however, the rate of change in land use patterns would be reduced from that which is predicted under the Transformation action alternatives.

4.2.2.2 Transformation Alternative A

Fort Benning Land Use and Management

Cantonment Areas. The planning process that was used to select sites of proposed facilities and associated land uses as proposed under the Transformation alternative was consistent with AR 210-20, *Real Property Master Planning for Army Installations*, and Technical Manual, TM 5-803-1, *Installation Master Planning*. GIS and charrette-style planning was used extensively in this process. Multi-disciplinary input was obtained from the ultimate users of proposed facilities, DPW, EMD, range management, and Garrison command staff. Among the factors considered when siting proposed facilities were compatibility with existing and proposed adjacent land uses, natural resource constraints and compatibility with the INRMP, cultural resource constraints, transportation and circulation, compliance with regulated environmental requirements (e.g., air quality, hazardous materials, water resources), and architectural/aesthetic compatibility. Therefore, cantonment area development associated with implementation of Alternative A would be compatible with surrounding land use and would enhance rather than degrade mission-essential training. Other changes to land use within the cantonment area would occur and are described below.

The greatest change in land use for the cantonment areas under Alternative A is the expansion of the Harmony Church cantonment area to almost double its current size (from approximately 775 acres to approximately 1,400 acres). The types of land uses proposed for the Harmony Church cantonment area would be consistent with the existing use of this area, predominantly expansion of the maintenance, unaccompanied personnel housing, training, administrative, and community facilities. Approximately 25 percent of the proposed development would be done using areas that are currently developed (or infill development). In addition, Alternative A includes the construction of access control facilities and infrastructure into the Harmony Church cantonment area that would be required for orderly vehicular access and circulation throughout the expanded cantonment area. Approximately half of the proposed construction in Harmony Church affecting land use would occur with FY 2007 funding. The remainder is proposed in relatively even amounts for FY 2008 through 2012.

Overall, the changes to land use in the Kelley Hill cantonment area are of the least magnitude. The Kelley Hill cantonment area would be expanded by 35 acres, primarily in the redevelopment of existing administrative and training facilities to accommodate the 3ID BCT and associated road and infrastructure improvement projects. Nearly all of the development affecting land use in the Kelley Hill area would occur with FY 2007 funding.

Within the Main Post cantonment area, Alternative A includes development for various uses, including medical, administrative, unaccompanied personnel housing, community facilities, and operational facilities. Major projects would include a hospital replacement project, various administrative headquarters facilities, conversion of historic supply and maintenance land uses to instructional training land uses, two child development centers, student dining facility, support facilities for the Armor Museum, and associated infrastructure improvements that would be required for adequate service to the cantonment area. The land use configuration at the Main Post with the development included under Alternative A would be more concentrated, but would provide for overall improvements in land use compatibility, circulation, and efficiencies that would be expected to result in an improved land use configuration. In terms of acreage, nearly 40 percent of the proposed development affecting land use at Main Post is slated for FY 2007 funding; approximately 20 percent is slated for FY 2008 and approximately 30 percent is slated for FY 2009. The remaining less than 10 percent of proposed development is slated for FY 2012 and FY 2013.

The proposed development within the Sand Hill cantonment area would provide for additional unaccompanied personnel housing and community facilities consistent with existing land uses. Instructional training land uses would be added and associated infrastructure support projects would address transportation utilities infrastructure requirements. Nearly all of this development is proposed for FY 2008 funding.

Recreation Areas. An increase in recreation demand is anticipated with the arrival of additional personnel at Fort Benning. Alternative A incorporates recreational considerations into the land use development plans for the cantonment areas. Much of the existing recreational facilities and open space would not be affected by the proposed action. Access to lands for hunting and fishing, which is always subject to availability, would be expected to become more limited as range land use and operational use expands under Alternative A. In addition to the on-Post recreation opportunities, ample opportunities for recreation lie beyond the boundaries of the Post within the area immediately surrounding Fort Benning and the region.

Ranges and Training Areas. Implementation of Alternative A would result in the development of additional range facilities and intensification of heavy maneuver use within the proposed Maneuver Area – North, Heavy Maneuver Corridor – South, and Drivers Training Area. These developments would meet the projected requirements for training in a manner that meets and does not degrade mission-essential training. There would be increased lands dedicated to range and training land uses throughout the Installation. The proposed development of these range and training areas is consistent with existing training land uses. In some cases, existing ranges or previously disturbed areas were selected for the

development of range facilities. In all cases, compatibilities with other operational land uses, including safety, scheduling, and SDZs, were incorporated into the planned development of these facilities. Furthermore, the RTLP Development Plan provides the justifications for the range requirements identified for the proposed action.

With Alternative A, it is anticipated that training throughput would be increased to such a level that operational training land uses on Fort Benning would become more widely dispersed throughout the Installation. The development of the heavy maneuver area and corridor would direct much of the heavy free maneuver land use to these designated corridors; however, increased use of the heavy maneuver training areas is expected throughout the Installation. As a result of the increased use of training range lands, scheduling conflicts between various range users and land managers may occur more frequently but are not expected to degrade mission-essential training. There would potentially be less access and/or increased scheduling difficulties for management activities, such as implementation of ITAM projects (e.g., land rehabilitation), INRMP projects (e.g., prescribed burns), and natural and cultural resources surveys.

Off-Post Land Use and Management

Under Alternative A, changes in land use adjacent to Fort Benning would occur as a result of the secondary impacts of induced growth. Such growth, however, would not be inconsistent or in conflict with the environmental goals, objectives, or guidelines of the existing comprehensive plans. To the contrary, the communities surrounding Fort Benning have been planning for the anticipated growth that would be driven by the proposed Transformation. Fort Benning is working closely with these communities in the planning processes. In terms of land use, it is anticipated that primary changes would result from increased demand for residential land use and commercial and public services.

Under Alternative A, there could be the potential for increased incompatibility with existing rural residential land use along Chattsworth Road associated with proposed development in the Oscar Range Complex. Incompatibility issues include air quality (dust and smoke) and safety issues associated with range operations. The Columbus-Muscogee comprehensive plan addresses the potential conflict and includes provisions for review of all proposed development, rezoning, etc. for potential encroachment into the state-mandated 3,000-ft planning zone and states that proposed residential development should be discouraged from the planning zone if the developments are deemed too close to the firing ranges (Columbus Consolidated Government 2003). Therefore, this impact is not in conflict with the goals, objectives, or guidelines of the comprehensive plan.

Increasing urbanization surrounding Fort Benning may increase encroachment pressures on the Installation. The ACUB initiatives, noise management planning, and cooperative efforts with the community could reduce the likelihood that encroachment would occur if the recommendations provided in these plans are adopted by the adjacent communities. If these recommendations were adopted, there would be less opportunity that mission-essential training would be degraded. Whether or not the proposed Transformation occurs, Fort Benning will continue to work with the counties and communities

surrounding the Installation as they plan for future growth and in the development and implementation of a JLUS and ACUB.

4.2.2.3 Transformation Alternative B (Preferred Alternative)

The potential land use impacts associated with implementation of Alternative B are the same as those described for Alternative A, with the following exceptions.

Fort Benning Land Use and Management

Ranges and Training Areas. Alternative B includes the establishment of the 11,260-acre Good Hope Maneuver Area to include the transition of 11,107 acres of land from light maneuver training area to heavy maneuver training area. The existing 74-acre Arkman Drop Zone would continue to serve its current function but would be surrounded by the Good Hope Maneuver Area. Proposed use of the Good Hope Maneuver Area would be compatible with ongoing use of the Arkman Drop Zone and associated overlying airspace, including the overlying "Purple" helicopter route. Mission effectiveness would not be compromised. Cole Range, which was formerly used as a scaled mortar range and is currently used to support light infantry training, is located in the northwest corner of the proposed Good Hope Maneuver Area. Use of this area in support of off-road heavy maneuver training requirements associated with the Alternative B would be consistent with existing land use.

Under Alternative B, there would not be a specified heavy maneuver training in the northern range as described for Alternative A (i.e., Heavy Maneuver Area – North). Land use in this area would be similar to existing heavy maneuvering with one exception, light maneuver training that is currently conducted within the Good Hope Maneuver Area could be displaced to some degree to the Oscar and Malone heavy maneuver training area compartments. Currently, the light maneuver requirements for the Ranger Battalion are met in the vicinity of the proposed Good Hope Maneuver Area. The Ranger light maneuver training attack, defend, and raid training requirements could be met within the Oscar and Malone heavy maneuver training area compartments. The Ranger training; however, currently occurs in close proximity to the Ranger facilities located between Harmony Church and the proposed Good Hope Maneuver Area. There would be some decreased efficiencies associated with the relocation of this training activity, but not to a degree where mission effectiveness would be compromised.

Cantonment Areas. Range support and driver training functions would result in some additional changes to land use in the Harmony Church cantonment area. The siting of the basic and advanced drivers training course and vehicle recovery training areas adjacent to planned vehicle maintenance functions would provide for increased efficiencies in maintenance and operational functions as compared to action Alternative A. Compared to Alternative A, however, there is an increased potential for incompatibilities between these uses and adjacent existing and proposed troop housing, administrative, personnel support, and recreation functions as a result of noise and dust from driver training activities. Such incompatibilities would not be expected to rise to a level where mission effectiveness would be diminished. Furthermore, they would not be unlike other training that occurs within the cantonment area

such as the use of Victory Pond for BFV water operations and Rangers-in-action demonstration training area. This area has two land demolition pits and one underwater demolition area (Fort Benning 2006a).

Recreation Areas. The 79-acre Weems Pond is located within the area that would become the Good Hope Maneuver Area. Due to its proximity to Warner Range, Weems Pond is currently among those recreation sites on the Installation that require scheduled use through Community Recreation Division, Directorate of Community Activities. Recreational use of this area would be allowed to continue, subject to compatibility with the military activities. Given the anticipated increased use in the area, there would potentially be decreased availability for recreation at the Weems Pond area. There are ample opportunities, however, for similar recreational experiences within Fort Benning and the larger region and should not conflict with or minimize recreational pursuits across the Installation.

Off-Post Land Use and Management

Potential impacts to off-Post land use under Alternative B would be as described for Alternative A with the exception of the area in the vicinity of the proposed Good Hope Maneuver Area. Chattahoochee County abuts the southern and eastern edges of the proposed Good Hope Maneuver Area. In the comprehensive plan under development for Cusseta-Chattahoochee County, lands within 3,000 feet of Fort Benning are identified by the county as an area requiring special attention to address encroachment on the Post by non-compatible land uses. Existing issues of concern include the impact of smoke and noise from Fort Benning on neighboring properties and the impact of light from surrounding development on Fort Benning operations. In addition, recommended areas have been developed as part of the process to define future development activities. Those areas identified along the southern boundary of the proposed Good Hope Maneuver Area support are a combination of agriculture and conservation activities. In the southeastern corner of the Good Hope Maneuver Area (abutting training compartments B3 and B4), some rural residential and scenic highway corridors have been identified. Along the eastern boundary of the proposed Good Hope Maneuver Area, there is a combination of major highway corridor and suburban area (developing and built out) (Lower Chattahoochee Regional Development Center 2006).

Implementation of Alternative B would be expected to increase the potential for incompatibility from the impact of smoke and noise from increased training activities to these adjacent residential areas. Lights from night training, including vehicle use along the road that forms the western boundary of Fort Benning, and use of pyrotechnics could potentially be incompatible with residential land uses and create adverse effects; however, lights from all types of land use developments can impair the effectiveness of night training missions. Further development of Cusseta could increase these incompatibilities.

In summary, overall impacts to land use under either action alternative would present minor impacts within the ROI. Neither alternative would:

- change land uses in such a way that mission-essential training is degraded;
- be inconsistent or in conflict with the environmental goals, objectives, or guidelines of a community or county comprehensive plan for the ROI under either action alternative;

- introduce adverse land uses that are incompatible with surrounding land uses under Alternative A; however,
- adverse impacts would be expected with increased training activity in the Good Hope Maneuver Area (under Alternative B) and the potential for incompatibility for the adjacent residential community.

4.2.3 Mitigation Measures

No mitigation measures are needed under Alternative A because no adverse significant impacts are anticipated if this alternative were implemented. Under Alternative B, mitigation measures to minimize incompatibility with adjacent communities would include limiting nighttime training in the Good Hope Maneuver Area in sites immediately adjacent to these communities and notification of training schedule to provide the community with what they may expect from training in this area.

4.3 AESTHETICS AND VISUAL RESOURCES

4.3.1 Affected Environment

Studies of visual perception have shown that factors such as visual character, visual compatibility, and viewer sensitivity can be used as measures to determine impact significance. Visual character can be defined as landscapes composed with a distinctive variety of form, line, color, and /or texture. Visual compatibility (or incompatibility) is determined by the degree to which the introduction of an anomalous structure or element into the visual landscape blends in or is compatible with the existing landscape. Proximity and relative scale are factors used in defining compatibility.

The level of significance of modification to a viewshed is further defined by viewer sensitivity. Viewer sensitivity is a non-economic measure of public concern for scenic quality. It is a measure of the changes in the expectation of viewers and the relative importance of viewsheds to those who have views of a particular site. Examples would include those living in an area with a view of a project, persons traveling through an area that includes views of a project, and/or recreational or other use areas that may provide views of a project. The level of sensitivity is determined by the number of viewers of a particular viewpoint, the length of time the viewer may see the viewshed, and the proximity of relative scale of predominance of project elements within that viewshed. For purposes of this analysis the ROI would consist of the entire Installation.

The Main Post cantonment area is Fort Benning's largest and oldest community. Land use in this area is primarily residential and of varying styles and functionality. The Main Post Visual District also includes outlying areas such as Camp Darby, Camp Merrill, and Lawson AAF. The residential communities within this district include McGraw Manor, Custer Terrace, Upatoi Terrace, Battle Park Homes, and Bouton Heights and are characterized by a distinct identity, consistent building materials, and uniform setbacks. Kelley Hill and Harmony Church exhibit more diverse characteristics and a range of building materials and styles. The former is characterized by a series of masonry barracks while the latter is characterized by pre-fabricated wood frame buildings. Lawson AAF is characterized by a series of pre-fabricated hangar structures, storage, and maintenance facilities.

The Sand Hill Visual District is the basic training area that houses the Infantry Training Brigade and Basic Combat Training Brigade. This area is characterized by the most consistent architectural characteristics. The barracks buildings are almost identical three-story concrete structures with red brick columns and detailing with low sloped roofs. The other facilities in the Sand Hill District are one to two story red brick structures.

Main Post Cantonment Area

The selected sites for facilities and infrastructure improvements to implement the proposed action occur at dispersed locations throughout the Main Post Cantonment Area, including the following.

Museum Operations Support Buildings. This site is located along the western boundary of the cantonment area just west and south of the approved site for the new Infantry Museum (under development). The site is currently undeveloped forested land and is traversed by Benning Boulevard. The visual district does not extend to the west and east of this site. To the east of the site there is existing housing associated with Custer Road Terrace family housing area. Off Post, to the west of the site, there is some development associated with utility services for Columbus, GA.

Conversion of Unaccompanied Personnel Housing (UPH) Billeting Space to Transient UPH Advanced Skills Training, General Instruction Building Complex, and Student Dining Facility. The proposed sites for these projects are along Vibbert Avenue in the northwest corner of the cantonment in the Main Post Historic Visual District. The proposed site for these facilities is generally bounded by Mitchell Avenue to the north, Ingersoll Street to the east, Anderson Street to the west, and Marchant Street to the south (see picture below). The proposed action would convert the warehouse and maintenance functions presently conducted in the area between Vibbert and Mitchell Avenues into a general instruction complex. Cuartel buildings 73, 75, and 83 would be converted to serve as transient unaccompanied personnel housing. The site for a new student dining facility would be in this vicinity as well, north of the center Cuartel between Vibbert Avenue and Uptown Street.

Infantry Officer Basic Course Headquarters Complex and General Instruction Building Complex. These proposed project sites are located adjacent to each other in the northeastern portion of the Main Post cantonment area. The first site is bordered by Marchant Street to the north, Ingersoll Road to the east, and Gaudette Street to the south. The second site, located northeast of the 1st site, is in an area occupied by Spanish eclectic style buildings with stucco exterior and red clay tiles roofs (see picture to the right). This site is bordered by Morrison Road to the north, Ingersoll Road to the west, and Lincoln Street to the east. Both sites are currently surrounded by developed areas.

Maneuver Center Headquarters Building Expansion and CDI Facility. This proposed project would expand the existing Maneuver Center Headquarters Building to the south and will require new construction of a CDI Facility to the west. The Maneuver Center Headquarters is located between Karker Street and Burr Street with Holtz Street to the East. The existing building is a painted masonry exterior with irregular asphalt roofline (see photo to the right). The CDI facility would be located along Edwards Road between Burr Street and Eckel Street. To the south, west, and east of the project site are developed lands and open space.

Health Clinic Expansion, Main Post. The site is located at the northwest corner of Lundsford Street and Endl Street across from the small single family Indianhead Village apartment houses off Mehan Road to the west. Indianhead Village apartment house is located to the north and northwest and Barracks to the southeast.

Child Development Center 6-10 Years. The site is located to the southwest of Yeager Avenue and Ingersoll Road. The proposed facility would be located to the east of the existing Child Development Center on the Main Post off Yeager Avenue, between Jinks Street and Ingersoll Street. The proposed site is bordered to the south and west by small barracks structures and parking lots to the northeast.

Marne Road/Lindsay Creek Parkway Intersection Improvements and Infrastructure Support. This proposed project site is located at the east edge of the cantonment in the Main Post Cantonment Area. The site is located at the interchange between Marne Road and Lindsay Creek Parkway (Route 411). The development that surrounds the project site consists of large commercial and industrial buildings to the northwest and southeast of the interchange. There are low residential buildings along the southeastern edge of the site. The remaining area around the intersection is surrounded by heavily forested area.

Hospital Replacement. The proposed site is located north of Marne Road at the terminus of 1st Cavalry Division Road and is occupied by a complex of numerous small buildings, but is surrounded on all sides by densely forested area and a creek to the north.

SOF Complex. The proposed site for the four projects for SOF facilities in the Main Post is located to the west of Dixie Road and the east of Lawson AAF. The proposed site is bounded to the north and west by heavily forested area, to the south by Lawson AAF, and to the east by the Indianhead Terrace family housing area.

Harmony Church Cantonment Area

The majority of the project sites in the Harmony Church cantonment area are located near the intersection of U.S. Highway 27/280 and 8th Division Road. The existing facilities in this area include semi-permanent barracks, vehicle maintenance/motor pool facilities, administrative facilities, and various recreational fields. Much of the area is currently undeveloped and supports dense forest lands. The area south of the cantonment area contains various administrative and training facilities that support the Sniper and Ranger schools.

The existing visual environment for other areas of development within this cantonment area is as follows.

- The proposed site for the new USARC and ECS at Fort Benning is west of Old Cusseta Highway, south of Elcaney Road, east of Hershey Road and north of Longstreet Road. The proposed sites have seen some development and most of the area has sparse tree cover. The sites have approximately five buildings and two large parking lots located between them.
- The proposed Battle Command Training Center is located west of the existing cantonment area boundary with Cusseta Road to the north, First Division Road to the south, and the intersection of U.S. Highway 27/280 to the east. The proposed site is currently undeveloped and is heavily forested.
- The proposed project site for the new AT/FP access control point is located where Crossie Road meets Columbus Cusseta Road. There is currently no road development where the interchange is planned. The proposed site is covered with dense forest.

Two range logistics projects, the Ammunition Storage Igloos and the Rail Car Storage Trackage for Deployment, are located to the north of the Harmony Church Cantonment Area. The ammunition storage igloo project site is located north of Ochillee Cutoff where it breaks into two different sections that connect to First Division Road in two different places. Several unidentified roads, which connect to Ochillee Cutoff, lie within the proposed site with a parking lot near the northeast quadrant of the intersection of Ochillee Cutoff and First Division Road and three to five buildings located adjacent to the parking lot. The surrounding area is occupied by dense forest. The rail car storage site is located in a currently undeveloped area adjacent to Ochillee Creek.

Kelley Hill Cantonment Area

Building conversions for the 3 ID BCT would affect existing facilities, which are densely developed with facilities supporting the 3rd brigade of the 3rd infantry battalion. Facilities associated with the General Instruction Building Complex and DS/GS Maintenance facility would be located adjacent to existing facilities located north of 8th Division Road at the intersection of Wood Road. The area is surrounded by heavily forested areas.

The sites for road and infrastructure improvement projects are located with Cusseta Road to the west, First Division Road to the east, and the intersection of U.S. Highway 27/280 to the south. To the east,

past First Division Road, is a large clearing with sparse development on the periphery. The proposed site is partially cleared, but is mostly heavily forested.

Sand Hill Cantonment Area

- The proposed project site for the Child Development Center (Under 6 Years), is bordered by Custer Road directly to the north and Magrath Street and Brostrom Street indirectly to the north. The proposed project site and surrounding areas to the south, east, and west are densely forested.
- The two largest projects in the Sand Hill Cantonment Area are the Trainee Barracks Complex for the BCT, which is located on the eastern edge of the cantonment area and the Maneuver Center Reception Station Barracks, located in the northwestern portion of the cantonment area. The proposed site for the Trainee Barracks Complex for the BCT is bounded by the 2nd Armored Division Street to the south and Moye Road to the west. The proposed site has been cleared of trees, but is surrounded by heavily forested area and Steam Mill Creek to the south. The proposed site for the Maneuver Center Reception Station Barracks is located west of Custer Road and north of 2nd Infantry Division Road. To the west is the complex including Johnston Drive. The proposed site is covered with grass, shrubbery, and trees. South of the proposed site along 2nd Infantry Division Road, there are existing barracks facilities that are accessed via Johnston Drive.

The proposed project site for the Chapel and associated infrastructure support is located northwest of the intersection of the 2nd Infantry Division Road and Moye Road. The proposed project site is densely forested and undeveloped.

The proposed sites for the Winder Health Clinic Expansion and Solomon Dental Clinic Expansion are at existing facilities in a developed area located in the central portion of the cantonment area at the intersection of Dean Avenue and Corney Street.

There are various sites for infrastructure improvement within this cantonment area, including along the northern boundary of the cantonment area, at the existing intersection of Victory Drive and Wildcat Road, and north of Wildcat Road in support of expansion of the existing motor pool facilities. The proposed motor pool expansion site is currently developed with several structures on large parking lots surrounded on all sides by densely forested area.

Range Areas

The existing visual environment of proposed range areas can be generalized as undeveloped/forested areas interspersed with roadways and previously disturbed active and inactive training areas. Many of the proposed range facilities, the Drivers Training Area, and portions of the southern maneuver corridor are within or near previously disturbed areas. With the exception of existing roadways, the northern maneuver area consists of relatively undisturbed mature forest stands.

Transformation Alternative B. The affected environment for visual resources for Alternative B differs from Alternative A with respect to the location of proposed driver training and heavy maneuver training areas and their proximity to the cantonment area land uses.

The affected visual environment for the following training areas would be reduced as compared to the area affected by Alternative A.

- The western portion of the southernmost maneuver corridor (located north of U.S. Highway 27/280) would be narrowed to a single roadway west of Hourglass Road. The visual environment of this road segment is dominated by existing mature and relatively undisturbed forested areas and military vehicle use of the existing roadway.

The affected visual environment for the following training areas would be in addition to those described for Alternative A.

- The Vehicle Recovery Area would be located northeast of the existing Harmony Church Cantonment Area within the Main Post Visual District. The visual character of this area currently is undeveloped and densely forested area.
- The Basic/Advanced Drivers Training Course would be located to the east of the existing TA R2 portion of the Harmony Church cantonment area within the Main Post Visual District. The site is currently undeveloped and occupied by dense forest.
- The Good Hope Maneuver Area would be established in existing training areas Q4-7, B1-6, CC1, and DD1-3. The existing visual environment in this area is characterized as a contiguous block of forested/undeveloped area interspersed with existing roads and training areas used for light infantry training.
- Developments associated with the establishment of the Good Hope Maneuver Area would potentially affect the visual environment along Jamestown Road and the U.S. Highway 27/280 corridor through portions of Harmony Church. The visual environment in these areas is characterized as primarily forested/undeveloped, interspersed with some existing roadways.

4.3.2 Environmental Consequences

Impacts for visual assessments are considered to be significant if one or more of the following criteria is met.

- Changes at the site, including changes to form, line, color, and/or texture substantially degrade an existing viewshed or alter the character of a viewshed by the introduction of anomalous structures or elements.
- Changes at the site would result in changes in the expectations of viewers (measured against the relative importance of those views) and result in a negative impression of the viewshed. The emphasis of this criterion is on views from public view areas.

4.3.2.1 No Action Alternative

Under the No Action Alternative, no construction would occur within the proposed project sites. Consequently, there would be no adverse impacts to the viewsheds encompassing these areas. There would be no large scale renovations and realignments to change the overall architectural character and site planning of the Installation.

4.3.2.2 Transformation Alternative A

Main Post Cantonment Area

The selected sites for facilities and infrastructure improvements to implement the proposed action occur at dispersed locations throughout the Main Post.

Museum Operations Support Buildings. Construction of the proposed Museum Operations Support Buildings would change the visual character of the site from a forested setting to a more urbanized setting with new structures and elements that would have long-term impacts to the existing viewsheds. The viewers' sensitivity to this visual change would be likely, especially for those who reside or work in the vicinity of the project. Traffic volumes in the near vicinity of the proposed buildings would not be notably changed from existing conditions.

Conversion of UPH Billeting Space to Transient UPH Advanced Skills Training, General Instruction Building Complex and Student Dining Facility. Conversion of the Cuartels Buildings would not be anticipated to notably change the aesthetic viewshed. The functionality of the buildings would be changed, but the landscape would remain largely unaltered. Aesthetic changes to the buildings themselves would be minimized by adhering to the Installation Design Guide and any cultural resource management requirements that mandate new construction maintain the consistency of materials, colors, and styles of adjacent buildings. An increase in vehicle traffic accessing these facilities would be likely to occur.

Maneuver Center Headquarters Building Expansion and CDI Facility. The expansion and new construction of the Maneuver Center Headquarters Buildings would change the viewshed in that the existing CDI Facility would appear more voluminous and additional buildings constructed near existing buildings would give the site a more urbanized landscape. Aesthetic changes to the CDI Facility would be minimized by adhering to the Installation Design Guide and any cultural resource management requirements that mandate new construction maintain the consistency of materials, colors, and styles of adjacent buildings. Increased volumes of traffic would be anticipated on transportation routes used to access and egress these facilities.

Health Clinic Expansion. Expansion of the Health Clinic would not be anticipated to notably change the aesthetic viewshed. The functionality of the buildings would remain the same. Aesthetic changes to the buildings themselves would be minimized by adhering to the Installation Design Guide and any cultural resource management requirements that mandate new construction maintain the consistency of materials,

colors, and styles of adjacent buildings. An increase in vehicle traffic accessing these facilities would be likely to occur.

Child Development Center 6-10 Years. The construction of the Child Development Center would be expected to be visually compatible with existing structures in close proximity. The visual character of the site is expected to be improved and may provide a greater sense of community. Increased volumes of traffic would be anticipated on transportation routes used to access and egress these facilities.

Marne Road/Lindsay Creek Parkway Intersection and Infrastructure Support. The construction of the intersection would be anticipated to have notable long-term aesthetic impacts. Improving the intersection would be anticipated to increase the prominence of the existing transportation elements within the project area.

Hospital Replacement. Construction of the hospital would be anticipated to notably change the aesthetic viewshed. Although it is proposed to be built among similar structure and elements, it is likely to be the most prominent structure in the vicinity. Aesthetic changes to the buildings themselves would be minimized by adhering to the Installation Design Guide and any cultural resource management requirements that mandate new construction maintain the consistency of materials, colors, and styles of adjacent buildings. An increase in vehicle traffic accessing these facilities would be likely to occur.

SOF Complex. Construction of the proposed SOF complex would change the visual character of the site from a forested setting to the north and west and residential setting to the east to a more urbanized setting with new structures and elements that would have long-term impacts to the existing viewsheds. The viewers' sensitivity to this visual change would be notable, especially for those who reside or work in the vicinity of the project. Traffic volumes in the near vicinity of the proposed buildings would not be notably changed from existing conditions.

Alternative A construction within the Main Post Cantonment area occurs across this large area. As a result, each project varies in the degree of anticipated aesthetic impacts. The conversion or expansion of an existing facility will likely have no effect on visual resources. However, aesthetic impacts are likely to result from the following proposed actions: Museum Operations Support Building, Marne Road/Lindsay Creek Parkway Intersection and Infrastructure Support, and Hospital Replacement. The long term aesthetic impacts are not anticipated to be adverse, as long as they are visually compatible with existing structures in close proximity.

Harmony Church Cantonment Area

USARC and ECS, Battle Command Training Center, and Access Control Point. Construction of the proposed projects would change the visual character of the site from a forested setting with sparse development to a more urbanized setting with new structures and elements that would have long-term impacts to the existing viewsheds. The proposed development would transform the visual corridor along that portion of U.S. Highway 27/280 that would cross the expanded cantonment area to include a new access control point to the south of the existing cantonment area. The viewers' sensitivity to this visual change would be notable, especially for those who reside, travel, or work in the vicinity.

Alternative A would introduce aesthetic impacts on Harmony Church cantonment area. The current area is sparsely developed and the introduction of any dense development will likely change the expectations of viewers. However, it is not anticipated that the new viewshed will leave a negative impression. Although the character of a viewshed will be altered by the introduction of new structures, they will not necessarily be anomalous, since the current site lacks a density of structures with which to conflict. In addition, this area has historically been developed and would introduce no new aesthetic values that have not been apparent in the past. Alternative A development is not anticipated to have any adverse impacts because it will help to establish a visual presence and consistency to a currently semi-developed area.

Kelley Hill Cantonment Area

Building Conversion for 3 ID BCT. Conversion for 3 ID BCT would not be anticipated to cause a notable change to the aesthetic viewshed. The functionality of the buildings would be changed, but the landscape would remain largely unaltered. Aesthetic changes to the buildings themselves would be minimized by adhering to the Installation Design Guide and any cultural resource management requirements that mandate new construction maintain the consistency of materials, colors, and styles of adjacent buildings. An increase in vehicle traffic accessing these facilities would be likely to occur. Aesthetic impacts associated with this development are not likely.

Various Road and Infrastructure Improvements. Improvements to infrastructure including roadway improvements would be anticipated to have notable aesthetic impacts. Improvements to existing infrastructure would be anticipated to increase the prominence of the existing elements within an area that is partially cleared but mostly densely forested. The current area is semi-developed and the introduction of any dense development will likely change the expectations of viewers. However, it is not anticipated that the new viewshed will leave a negative impression since it will maintain its military mission and be compatible with adjacent development and visual aspects.

Sand Hill Cantonment Area

Trainee Barracks Complex for the BCT. Construction of the proposed Barracks would change the visual character of the site from a forested setting to a more urbanized setting with new structures and elements that would have long-term impacts to the existing viewsheds. The viewers' sensitivity to this visual change would be notable, especially for those who reside or work in the vicinity of the project. Traffic

volumes in the near vicinity of the proposed buildings would not be notably changed from existing conditions.

Maneuver Center Reception Station Barracks. Construction of the proposed Barracks would change the visual character of the site from an undeveloped vegetated area to a more urbanized setting with new structures and elements that would have impacts to the existing viewsheds. The viewers' sensitivity to this visual change would be notable, especially for those who reside or work in the vicinity of the project. Traffic volumes in the near vicinity of the proposed buildings would not be notably changed from existing conditions.

Chapel. Construction of the proposed Chapel and infrastructure support would change the visual character of the site from a forested setting to a more urbanized setting with new structures and elements that would have long-term impacts to the existing viewsheds. The viewers' sensitivity to this visual change would be notable, especially for those who reside or work in the vicinity of the project. Traffic volumes in the near vicinity of the proposed buildings would not be notably changed from existing conditions.

Winder Health Clinic Expansion and Solomon Dental Clinic Expansion. Expansion of the health clinic and dental clinic would not be anticipated to create a notable change to the aesthetic viewshed. The functionality of the buildings would remain the same. Aesthetic changes to the buildings themselves would be minimized by adhering to the Installation Design Guide and any cultural resource management requirements that mandate new construction maintain the consistency of materials, colors, and styles of adjacent buildings. An increase in vehicle traffic accessing these facilities would be likely to occur.

Child Development Center. Construction of this project would change the visual character of the presently undeveloped site along Custer Road. Aesthetic impacts from the proposed project are likely due to the currently undeveloped state of this location. No visual impacts are anticipated since this site has been cleared and is in close proximity to adjacent facilities with similar functions such as an elementary school.

Various Road and Infrastructure Improvements. Improvements to infrastructure including roadway improvements are anticipated to have notable long-term aesthetic impacts. Improvements to existing infrastructure would be anticipated to increase the prominence of the existing elements within an area that is dense forest. Traffic would increase and these impacts are discussed in Section 4.5.

Table 4.3-1 provides a qualitative measurement of the likelihood of aesthetic impacts associated with the implementation of Alternative A in the cantonment areas. It is assumed that new construction associated with the proposed Transformation action would be subject to short-term aesthetic impacts.

Moderate aesthetic impacts are likely from the construction of projects in this cantonment area, with the exception of the Winder Health Clinic Expansion, Solomon Dental Clinic Expansion, and the CDC. However, the aesthetic impacts are not anticipated to be adverse, because they would not degrade existing viewsheds by introducing anomalous structures or change viewers expectations.

Range Areas

The proposed development of range facilities, driver training areas, and heavy maneuver areas under Alternative A would change the visual character of some training areas by increasing land disturbance and introducing range facilities. Viewers' sensitivities to changes in form, line, color, and/or texture are not a consideration within a training range area. Such sensitivities also are not a concern with regard to adjacent cantonment areas because such changes would not be inconsistent with viewer expectations. Views from north of the Oscar Ranges would be buffered from public view areas by enough distance that there would not be a negative impression created of the existing viewshed.

4.3.2.3 Transformation Alternative B (Preferred Alternative)

The environmental consequences for proposed actions in Alternative B would be anticipated to match those of Alternative A, with the following exceptions.

- The changes to the visual environment that would result from the development of the vehicle recovery area, basic/advanced drivers training course, and development of the Good Hope Maneuver Area may affect adjacent views in the Harmony Church cantonment area. This would not be an adverse impact because viewers' expectations of the viewshed (i.e., training ranges) would not change.
- The proposed development of a bridge or underpass along the U.S. Highway 27/280 would be in addition to the impacts to this visual corridor as described for Alternative A. No adverse impacts are anticipated because the construction would be consistent with existing viewshed.
- Training in the Good Hope Maneuver Area would include night training involving illumination of field areas. Although night training associated with existing Ranger light infantry training currently occurs in this area, there would potentially be additional light from use of vehicles for heavy maneuver training at night or a change in the types, location, and amount of pyrotechnics used in night training. Impacts are considered moderate but not adverse since it is consistent with existing viewshed expectations as a military training range.

4.3.3 Mitigation Measures

No mitigation measures are identified for aesthetics and visual resources. Visual compatibility of new structures would be maintained through design, by maintaining the consistency of form, line, color, and texture of adjacent manmade and natural features. Viewsheds pertaining to training would remain consistent with the historic training that has occurred at Fort Benning for over 40 years.

4.4 SOCIOECONOMICS

4.4.1 Affected Environment

The economic ROI, for Fort Benning consists of Muscogee, Chattahoochee, Harris and Marion Counties, Georgia, and Russell County, Alabama. The ROI constitutes the area where the predominant socioeconomic effects of the proposed action and alternatives would take place. The geographical extent of the ROI is based on residential distribution of the Installation's military, civilian, and contracting personnel and the location of businesses that provide goods and services to the Installation and its employees. The baseline year for the socioeconomic analysis is 2006, although much of the economic and demographic data for the ROI are available only through the year 2005. Wherever possible, the most recent data available is presented so that the affected environment descriptions are reflective of current conditions in the ROI.

4.4.1.1 Economic Development

Regional Economic Activity. The ROI labor force in 2005 totaled 127,901, with 120,568 employed (USBLS 2005). In 2005, the unemployment rate for the ROI averaged 6.2 percent, compared to 5.3 percent for the state of Georgia, 4 percent for the state of Alabama, and the national unemployment rate of 5.1 percent. During the last 5 years, the ROI unemployment rate has increased from a low of 4.7 percent in 2000.

Retail trade, manufacturing, and private business sectors are the major sources of employment in the ROI. Together, these three sectors generated approximately 73 percent of the ROI's jobs in 2005. In Muscogee County, the largest of the five ROI counties, private sector employment accounted for 82.3 percent of the total jobs. The Bureau of Labor Statistics states that in Muscogee County, health care and social assistance is the largest of the 20 major sectors. Information and management of companies sectors only constitute a small percentage of the total sectors in the ROI. In the State of Georgia, retail trade is the largest of the 20 major sectors.

The ROI per capita personal income (PCPI) for Chattahoochee County was $18,492 in 2004, 56 percent of the national PCPI and lower than the state of Georgia's PCPI of $29,782. Muscogee County's 2004 PCPI ($33,050) was $29,460 and Marion County's was $23,696. Russell County, Alabama had a PCPI of $22,611 (USBEA 2004). The highest per capita personal income in the ROI was in Harris County ($33,498) at 101.4 percent of the nation's.

Installation Contribution to the Local Economy. Fort Benning employs a total of 32,772 active duty military personnel; 3,307 civilian DoD employees; and 5,383 contractor workers for a total of 41,462 active duty personnel and civilians. The Installation workforce accounts for about 34 percent of all ROI employment which presents a substantial economic contribution to the local economy. Installation expenditures in the ROI totaled $2,266,490,543 during 2005 (Directorate of Resource Management 2005). Payroll expenditures, which reached $1,054,214,521 in 2005, have increased by almost 29 percent since 2000. The average annual salary for civilian workers at Fort Benning is $29,377 and salaries for permanent military personnel at Fort Benning averaged $24,378 in 2005.

4.4.1.2 Demographics

The five counties comprising the economic ROI are primarily rural in character. Demographic and economic trends over the last three decades have contributed to a growing disparity in population and income levels among the five counties. With a population of 185,271, Muscogee County is the most heavily populated county in the ROI. Growth rates for the five counties have diverged greatly over the past three decades. The population of Chattahoochee County has actually decreased by 32.5 percent since 1980, falling from 21,732 to 14,679. In stark contrast, Harris County has experienced 79.6 percent population growth over this period, far above the national growth rate of 19.1 percent. The smallest of the counties, Marion County, has grown 36.8 percent during that time. Muscogee and Russell counties have experienced modest growth at 8.9 percent and 4.2 percent respectively. Population data for ROI counties and the United States are also provided in Table 4.4-1 for comparison purposes.

Table 4.4-1: ROI Population Growth 1980 -2005

Location	1980	1990	2000	2005
Chattahoochee	21,732	16,934	14,882	14,679
Muscogee	170,108	179,280	186,291	185,271
Russell	47,356	46,860	49,756	49,326
Harris	15,464	17,788	23,695	27,779
Marion	5,297	5,590	7,144	7,244
ROI	259,957	266,452	281,768	284,299
United States	226,545,805	248,709,873	281,421,906	296,410,404

Source: Stats Indiana 2006a, U.S. Census Bureau 1995

4.4.1.3 Housing

The ROI housing stock is summarized in Table 4.4-2, which identifies both owner-occupied and renter-occupied homes, along with median home values, for each county in the ROI. The housing units identified in Table 4.4-3 include all structure types (e.g., single-family homes, apartments, and mobile homes).

Table 4.4-2: Housing Characteristics for the ROI (2000 Census)

	Chattahoochee County	Muscogee County	Russell County	Harris County	Marion County
Total Housing Units	3,316	76,182	22,831	10,288	3,130
Occupied Housing Units	2,932	69,819	19,741	8,822	2,668
Owner-occupied	793	39,350	12,341	7,600	2,084
Renter-occupied	2,139	30,469	7,400	1,222	584
Vacant Housing Units	384	6,363	3,090	1,466	462
Vacant for Seasonal, Recreational, or Occasional Use	6	362	295	907	145
Median Home Value (Owner-occupied)	107,855	280,799	77,105	254,783	151,250

Source: Stats Indiana 2006a Trulia 2007.

As with other economic indicators, the five counties have very different housing markets. The estimated median values of owner-occupied units in Chattahoochee, Marion, and Russell counties are substantially lower than the current estimated nationwide median home value of $222,000. Muscogee and Harris Counties, however, support home values of more than 25 percent above the national median (Trulia 2007). In 2005, it was estimated that the total number of housing units in Chattahoochee and Marion counties barely increased. However, Muscogee increased its housing units from 76,182 to 81,008. Russell and Harris County housing markets are estimated to have risen approximately 2,000 units each. Within the ROI, there are many programs to aid the homeless including approximately nine shelters (Homeless Resource Network 2006). Military housing is addressed in the Quality of Life Section.

4.4.1.4 Quality of Life

Quality of Life refers to those amenities which are available to the Installation's military personnel, their family members, and civilian employees and which contribute to their well being. The relative importance of these amenities to a person's well-being is subjective (e.g., some individuals consider educational opportunities essential to their well-being, others may place a high value on the availability of health care services, and still others may hold public safety as their primary quality-of-life concern). BRAC quality-of-life analyses typically address issues relating to potential impacts of the proposed action and alternatives on the availability of public services and leisure activities that contribute to quality of life of the affected Installation's workforce and their family members. For purposes of this study, the affected environment for quality of life includes military housing, schools for DoD family members, family support services, medical facilities, shops and services, and recreational opportunities.

Installation Housing. Approximately 76 percent of military personnel reside on Fort Benning. In 2005, there were more than 30,000 housing units on Fort Benning. Table 4.4-3 shows the break down of military housing at Fort Benning.

Table 4.4-3: Distribution of Fort Benning Housing Units by Type

Housing Unit Type	Number of Units
Officer (married) Family Units	685
Enlisted (married) Units	3,361
Officer (bachelor) quarters	108
Senior Enlisted (bachelor) quarters	26
Enlisted Barracks	25,190
Temporary Lodging	1,157

Source: (DPW 2005).

Health Care Facilities. The U.S. Army Medical Department Activity provides medical care to an eligible patient population in excess of 72,000 beneficiaries out of the 103-bed Martin Army Community Hospital (MACH). The facility is served by approximately 792 civilian and 546 military staff members. On average, the hospital provides inpatient care to more than 30 patients daily, and averages nearly 1,500 outpatient visits a day. In addition, there is an outpatient Pharmacy that processes more than 2,200 prescriptions per day. Additional medical facilities are located in Soldiers' Plaza including the Community Mental Health Service, the Social Work Service, and the Preventive Medicine Service. Marion Memorial Hospital (Marion County), Stewart Webster Hospital, Columbus Doctors Hospital, The Medical Center (Chattahoochee-Cusseta), Cobb Memorial Hospital (Russell County), Bush Hospital, Doctors Hospital, Muscogee County Health Center, Saint Francis Hospital, and West Central Georgia Regional Hospital (Muscogee County) all provide medical services within the ROI.

Educational Services for DoD Dependents. The U.S. Department of Education provides federal impact aid to school districts that have federal lands within their jurisdiction. This federal impact aid is authorized under Public Law 103-282 as payment in lieu of taxes that would have been paid if the land were not held by the federal government. School districts receive federal impact aid for each federally connected student whose parent or parents live on or work on federal property. The amount of federal impact aid a school receives is based on the number of “federal” students the district supports in relation to the total district student population. Schools receive more federal impact aid for those students whose parents both live and work on federal property. Total federal impact aid varies year by year according to congressional appropriations for the program, but in general federal impact aid has ranged from $250 to $2,000 per student.

Fort Benning has two schools on the Installation, a primary school and a high school. Both schools are operating at full capacity. ROI schools are highlighted in Table 4.4-4 below.

Table 4.4-4: 2003-2004 School Year Public Education Statistics

School District or County	School Type	Enrollment	Total District Enrollment
Chattahoochee	Elementary ()	N/A	533
Chattahoochee	Middle (1)	199	
Chattahoochee	High (1)	N/A	
Chattahoochee	Other (3)	334	
Harris	Elementary (4)	2,077	4,521
Harris	Middle (1)	1,135	
Harris	High (1)	1,309	
Harris	Private/Other (2)	N/A	
Marion	Elementary (4)	1,720	4,933
Marion	Middle (2)	903	
Marion	High (4)	1,744	
Marion	Private/Other (1)	566	
Muscogee	Elementary (32)	15,557	30,476
Muscogee	Middle (11)	8,008	
Muscogee	High (6)	6,911	
Muscogee	Private/Other (10)	N/A	
Russell	Elementary (11)	3,814	8,900
Russell	Middle (3)	2,621	
Russell	High (2)	2,465	
Russell	Private/Other (2)	N/A	
TOTAL			**49,363**

Family Support Services. Fort Benning has several family support service facilities on Post. The Installation has a day care center that operates 5 days a week and can provide care for up to 140 children between the ages of 2 and 5. Family counseling services are also available to active military personnel and their family members.

Shops and Services. AAFES operates a Post Exchange with a movie theater and a variety of stores. The newly renovated commissary, one of the largest facilities on Fort Benning, sells a variety of goods for employees, and contains a bank, fresh produce, a bakery, a sushi bar, and a hot foods section. Fort Benning mall also serves the area and its employees. In May 2005, there was a groundbreaking ceremony for a new mall in Fort Benning that is scheduled to open in December 2007. The Installation also has several gasoline stations including one located at the Post Exchange. Outside the Installation and within the ROI, there are numerous gas stations as well as shopping malls, including an outlet mall.

Recreation. Fort Benning offers numerous recreational opportunities both on Post and in the surrounding area. The Installation has a bowling alley and a golf course. It also has a recreational shooting range where military personnel can practice targeting which simulates real-life action cases. Outdoor activities are numerous. There are swimming pools, natural ponds, biking trails, and designated hunter and fishing areas as well as facilities to rent equipment for outdoor sports. Off Post the usual recreational opportunities for military trainees, fast food places, convenience stores, and assorted entertainment

venues are available. In Columbus, for example, the Historic District has a number of activities and attractions of cultural interest like the Springer Opera House and the Columbus Museum.

Public Services

Law Enforcement. There are numerous law enforcement services throughout the ROI. The Muscogee County Sheriff's Department provides law enforcement services in the immediate Fort Benning area. The service area covers the county of Muscogee and is assisted by the Columbus City Police Department and the Bibb City Police Department. The Muscogee County Sheriff's office and the Columbus Police Department provide law enforcement in Muscogee County. The Muscogee County Sheriff's office supports 350 law enforcement and support personnel while more than 220 officers serve within the Columbus Police Department (Muscogee Sheriff's Office 2007, Columbus Police Department 2007). The unified government of Cusseta-Chattahoochee once operated the Sheriff's office, however, this unification has recently disbanded. Meanwhile, Harris County's police offices operate in five districts.

Fire Protection. In Georgia, 16 fire districts serve the ROI, including 7 volunteer fire departments (protection outside city limits provided by county volunteers) in Harris County and 13 volunteer fire departments (13 fully equipped stations) in Muscogee County. With 15 volunteer fire personnel, the Cusseta County Fire Department serves all of Chattahoochee County. the Cusseta County Fire Department serves all of Chattahoochee County. There are 9 fire departments in Marion County with 205 volunteer firefighters. In Alabama, Russell County's 7 fire departments are served by nearly 130 volunteer firefighters. Each fire or rescue district recruits its own volunteers from community members surrounding a particular station. As the demographics of the population have changed over time, it has become increasingly difficult to attract community members to serve as volunteers.

4.4.1.5 Environmental Justice

On February 11, 1994, President Clinton issued EO 12898, *Federal Actions to Address Environmental Justice in Minority and Low-Income Populations*. The EO is designed to focus the attention of federal agencies on the human health and environmental conditions in minority communities and low-income communities. Environmental justice analyses are performed to identify potential disproportionately high and adverse impacts from proposed actions on minority and low income communities, and to identify alternatives that might mitigate these impacts. Data from the U.S Department of Commerce 2000 Census of Population and Housing were used for this environmental justice analysis. Minority populations included in the census 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. Poverty status, used in this EIS to define low-income status, is reported as the number of persons with income below poverty level. The 2000 Census defines the poverty level as annual income of $8,794, or less an individual, and annual income of $17,603, or less, for a family of four.

The ROI has a higher percentage of minority residents than both the state of Georgia and the state of Alabama. In 2005, 55 percent of the ROI population was white and 42 percent was black (U.S. Census 2005). All other racial groups combined totaled approximately 7.6 percent of the population, while 4

percent were of Hispanic origin. In Georgia, 66.1 percent of the population was white, 29.8 percent was black, 11.1 percent was of another minority racial group, and 7.1 percent was of Hispanic origin. In Alabama, 71.4 percent of the population was white, 26.4 percent was black, 2.3 percent were Hispanic, and approximately 3.7 percent were of another racial minority. For the United States, 80.2 percent of the population was white, 12.8 percent was black, and approximately 14.4 percent of the U.S. population was Hispanic (Stats Indiana 2006b).

The Census Bureau bases the poverty status of families and individuals on 48 threshold variables, including income, family size, number of family members under the age of 18 and over the age of 65, and amount spent on food. In 2005, approximately 15.7 percent of the ROI residents were classified as living in poverty, higher than both the poverty rate of Georgia and for the United States as a whole. Table 4.4-5 below details the demographic and poverty rates for the ROI.

Table 4.4-5: Race, Ethnicity, and Poverty Status

	ROI	Georgia	Alabama	United States
White	55%	66.1%	71.4%	80.2%
Black or African American	42%	29.8%	26.4%	12.8%
American Indian and Alaskan Native	0.38%	0.3%	0%	1.0%
Asian	1.6%	2.7%	0.8%	4.3%
Native Hawaiian and Other Pacific Islander	0.2%	0.1%	0%	0.2%
Two or more Races	1.5%	1%	0.9%	1.5%
Hispanic or Latino	4%	7.1%	2.3%	14.4%
Median Household Income (2003.	$35,676	$42,421	$36,131	43,318
Percent Living Below Poverty.	15.7%	13.3%	15.2%	12.5%

Source: *U.S. Census Bureau 2005, Stats Indiana 2006b.*

4.4.1.6 Protection of Children

On April 21, 1997, EO 13045 for the Protection of Children from Environmental Health Risks and Safety Risks was issued. This EO directs each federal agency to ensure that its policies, programs, activities, and standards address disproportionate risks to children that result from environmental health risks or safety risks. EO 13045 recognizes that a growing body of scientific knowledge demonstrates that children may suffer disproportionately from environmental health risks and safety risks. These risks arise because children's neurological, immunological, digestive, and other bodily systems are still developing; children eat more food, drink more fluids, and breathe more air in proportion to their body weight than adults; children's size and weight may diminish their protection from standard safety features; and children's behavior patterns make them more susceptible to accidents because they are less able to protect themselves. For example, elevated blood lead levels in children are associated with development impairments, including reductions in IQ. Young children in particular are at higher risks for exposure to lead based paint and lead contaminated soils because of their behavioral traits. Therefore, to the extent permitted by law and regulations, and consistent with the agency's mission, President Clinton has directed each federal agency to (1) make it a high priority to identify and assess environmental health

risks and safety risks that may disproportionately affect children, and (2) ensure that the agency's policies, programs, and standards address disproportionate health risks to children that result from environmental health risks or safety risks. Examples of risks to children include increased traffic volumes and industrial or production-oriented activities that would generate substances or pollutants children may come into contact with or ingest. Actions or alternatives indicating potential disproportionate risks to children will be identified and addressed in the Environmental Consequences Section of this EIS.

4.4.2 Environmental Consequences

Economic Impact Forecast System (EIFS) Model Methodology and Threshold. The economic effects of implementing the proposed action are estimated using the EIFS model, a computer-based economic tool that calculates multipliers to estimate the direct and indirect effects resulting from a given action. Changes in spending and employment associated with the renovation of housing represent the direct effects of the action. Based on the input data and calculated multipliers, the model estimates changes in sales volume, income, employment, and population in the ROI, accounting for the direct and indirect effects of the Transformation action.

For purposes of this analysis, a change is considered significant if it falls outside the historical range of ROI economic variation. To determine the historical range of economic variation, the EIFS model calculates a rational threshold value (RTV) profile for the ROI. This analytical process uses historical data and calculates fluctuations in sales volume, income, employment, and population patterns within the ROI. The historical extremes (i.e., the RTVs) are the thresholds for social and economic change. If the estimated effect of an action falls above the positive RTV or below the negative RTV, the effect is considered to be significant. Appendix C discusses this methodology in more detail and presents the model input and output tables developed for this analysis.

4.4.2.1 No Action Alternative

Based on the EIFS methodology and threshold, no adverse impacts would be expected under the No Action Alternative.

Economic Development. No direct or indirect effects would be expected. Under the No Action Alternative, the Installation working population and Installation expenditures would remain unchanged from baseline levels. No new construction would take place. Therefore, economic activity levels would be the same as under the baseline conditions.

Demographics. No direct or indirect effects would be expected. Under the No Action Alternative, the Installation working population would remain unchanged from baseline levels and no new construction would take place. Therefore, the ROI population growth would be the same as under baseline conditions.

Housing. No direct or indirect effects would be expected. Under the No Action Alternative, the Installation working population would remain unchanged from baseline levels. Therefore, the demand for housing units would be the same as under baseline conditions.

Quality of Life. No direct or indirect effects would be expected. Under the No Action Alternative, the Installation working population would remain unchanged from baseline levels. Therefore, the demand for public services would be the same as under baseline conditions.

Environmental Justice. No effects would be expected. The No Action Alternative would not result in significant adverse impacts to any demographic group residing or working in the economic ROI. Therefore, there would be no disproportionately high and adverse impacts to minority populations or low income populations. Hence, the No Action Alternative would not result in any environmental justice impacts.

Protection of Children. No effects would be expected.

4.4.2.2 Transformation Alternative A

Based on the EIFS methodology and threshold, no adverse impacts would be expected in Alternative A.

Economic Development. Minor direct and indirect beneficial effects would be expected**.** Under Alternative A, a total of 4,486 military personnel (2,442 in the peak year of 2009) and 1,226 total civilian employees would be added to Fort Benning (626 in the peak year 2011).[1] Students were not included in the EIFS analysis for incoming personnel; however, their housing needs as a result of Transformation actions are addressed below.[2] The total number of incoming personnel due to Transformation actions at Fort Benning is 14,469 (Fort Benning 2006b). Alternative A would generate a total net gain of 7,472 jobs in the Fort Benning economic ROI, including 2,670 induced jobs. This increase in employment would represent a 4.17 percent increase in the region's employment levels and would fall slightly short of the maximum RTV value of 5.1 percent. Alternative A would also generate positive changes in the other economic indicators estimated by the EIFs model, including a 9.41 percent increase in sales volume, and a 4.17 percent increase in regional personal income. All categories of economic effects fall below the maximum historical RTV values.

The EIFS inputs and outputs for Alternative A, as well as the positive and negative historical RTV values for the ROI and this analysis are presented below in Table 4.4-6.

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[1] For purposes of running the EIFS model, a peak year for incoming personnel was selected (since historical data used to determine economic impact thresholds are presented on a year by year basis), and for construction spending to determine the maximum impact that Transformation actions could have on any given year. It was also assumed that all of the construction spending was expended within the ROI. This approach was selected to determine whether the ROI could accommodate projected growth from the most intense spending scenario based on the region's RTV. The peak year for incoming personnel was determined by calculating the change in force structure as indicated by the Fort Benning FY2007-2011 personnel change chart (Personal communication, J.W. Brown III December 2006). For incoming military personnel, the peak year was determined to be 2009 with 2,442 incoming military personnel. The incoming civilian numbers were determined to be 1,226 with 600 arriving in 2010 and 626 arriving in 2011 (Personal communication, J.W. Brown III December 2006).

[2] Students were not counted in the EIFS analysis for incoming personnel. Given their economic status, they are not likely to contribute to any significant economic impacts. For the purposes of this analysis, students are discussed in the context of on-Post housing availability.

4.4-6: Alternative A EIFS Inputs And Outputs

Forecast Input Category	Forecast Input Data	Forecast Output Category	Result	RTV*
Change In Local Expenditures	$583,992,800	Sales Volume – Direct	$388,333,800	
Change In Civilian Employment	626	Sales Volume – Induced	$598,033,900	
Average Income Of Affected Civilian	$29,377	Sales Volume – Total	$986,367,700	9.41%
Percent Expected To Relocate	100%	Income – Direct	$140,537,400	
Change In Military Employment	2,442	Income – (Induced)	$105,759,400	
Average Income Of Affected Military	$24,378	Income – Total (Place Of Work)	$246,296,800	4.17%
Percent Of Military Living On Post	76%	Employment – Direct-	4,802	
Employment Multiplier	2.54	Employment – Induced	2,670	
Income Multiplier	2.54	Employment – Total	7,472	4.69%
		Local Population	7,639	
		Local Off-Base Population	**3,018**	2.72%

	Sales Volume	Income	Employment	Population
Positive	10.86%	10.16%	5.1%	3.06%
Negative	-8.27%	-6.15%	-9.54%	-2.17%

Of the economic impacts created by Transformation actions, a substantial portion would be generated by construction activities.[3] For example, over 90 percent of the sales volume total would be caused by construction spending (assuming that no portion of construction spending will be outside the ROI). In addition, 65 percent of the income and 54 percent of employment effects would be created by construction spending during the peak year.

Demographics. Minor direct and indirect effects would be expected. Under Alternative A, incoming military and civilian personnel and their family members would increase the ROI population by 7,639, or by about 2.72 percent. This increase is slightly below historical RTV values.

Housing. Minor direct and indirect effects would be expected. Under Alternative A, there would be a minor increase in the demand for housing. The level of the demand for housing created by Transformation actions compared to the existing supply in the ROI as reported by U.S. Census Bureau data determine the threshold of significance. For purposes of this analysis, if the demand created by Transformation actions exceeds 95 percent of the available supply, the significance threshold would be exceeded.

[3] For construction activities, a peak year was determined by analyzing construction spending across all the years of proposed Transformation actions, and the total for each year was calculated. It was determined from this analysis that 2009 was the peak year for construction spending ($583,992,800).

The EIFS model assumes that there are 2.49 people per household. Families accompanying military personnel do not increase the overall demand for housing because the incoming new employees are counted as one family unit. It should also be noted that not all of the new military personnel would require off-post housing. Based on data provided by the Installation, it is estimated that approximately 24 percent of incoming military personnel would reside off post in the ROI, with the rest living on the Installation. Therefore, incoming personnel would demand approximately 1,212 housing units. The calculation for total housing demand is as follows: 626 civilians + 24 percent x 2,442 military personnel = 1,212, or 3,018 / 2.49 = 1,212. This demand represents approximately 10 percent of available housing supply as indicated by the latest Census data. As indicated previously in Table 4.4-2, there are more than 11,000 housing units available within the ROI. The increase in demand could potentially result in minor increases in housing costs.

As noted previously, there are 25,190 barracks units available for unaccompanied enlisted personnel. The incoming 8,757 students would have to be accommodated by existing barracks housing that is not currently occupied, by new housing facilities proposed in the Transformation action, or by off-Post housing availability or construction. This increased demand for barracks should be met by the numerous proposed housing projects and training center projects. Additional demand for on-Post housing for officers and married personnel would also have to be met either by available on-Post housing as indicated by baseline levels, or by additional housing construction and cumulative housing-related projects.

Quality of Life. *Schools.* Minor negative direct effects would be expected within schools if the number of incoming school age children surpasses the physical capacity of the affected local school districts to accommodate them. Increases in these student populations, therefore, could increase student-teacher ratios at affected schools.

Up to approximately 1,500 school age children could accompany the incoming military and civilian personal during the peak year (the EIFS model assumes that there are 2.49 family members per incoming personnel, one spouse and 1/2 a child). Under the BRAC-directed action, the assumption is that there will be 3,068 new incoming civilian and military personnel, multiplying this number by 0.49 will give an estimate of the number of school age children expected to accompany new incoming personnel (in this case, 3,068 x 0.49= 1,503). Since there will be 5,712 new military and civilian personnel added to Fort Benning throughout the life of the Transformation, an additional 1,300 students may be added to the ROI staggered year by year (5,712 - 3,068 = 2,644 x 0.49 = 1,295). Any school age children accompanying the incoming military and civilian personal would have to be accommodated by the existing ROI schools. In addition, the proposed 195-child-capacity Child Development Center should be able to accommodate up to 135 additional school age children. The current facility accommodates 90 children, but current needs are for 150 children. An additional 60 children of existing demand and up to 135 children related to incoming personnel will be able to be accommodated by the proposed new facility. School districts within the ROI have been planning for increases in enrollment related to growth at Fort Benning. Muscogee County Schools estimates nearly 30 percent increase in the district school system and estimates as much as 50 percent growth in the other counties in the ROI. Muscogee County Schools has begun

recruiting for an estimated 200 to 250 teachers at regional colleges and universities. The ROI school districts estimate the costs of the new school and classroom construction at nearly $350 million. To plan for, fund, and develop new schools, Muscogee County Schools is considering placing a referendum on the ballot to authorize a special tax increase over a limited period of time. In addition, the county schools are pursuing state funds and resources available through the DoD Office of Economic Adjustment, which makes federal resources available to communities affected by BRAC (American Planning Association 2006 and Phillips 2006).

Services. No effects would be expected for other public services including health, fire, and law enforcement. The increase in population would increase the ratio of ROI residents to public employees for each of the public services unless additional workers were hired. The additional tax revenues generated by the increased economic activity in the ROI could be used to pay for the additional workers needed to maintain current resident employee ratios. Even in the absence of additional hiring, there would unlikely be any perceptible reduction in the level of services provided to the ROI population.

Minor indirect beneficial effects would be expected for shops and other services. The incoming population would likely increase consumer activities within the ROI. As indicated by the results of the EIFs Model, presented in the economic development section, there would be minor increases in regional sales volumes and personnel income but do not exceed historical RTVs.

Recreational facilities. No effects on recreational facilities would be expected. The Transformation action would not have an effect on the operation of recreational facilities in the ROI.

Environmental Justice. No effects would be expected. Environmental justice effects are identified when a proposed action results in "disproportionately high and adverse human health or environmental effects to minority or low income populations" (EO 12898). Under Alternative A, no disproportionately adverse impacts are expected to affect any population group. Economic effects, which are a subset of environmental effects, are primarily beneficial because Alternative A would stimulate the regional economy and create new employment and increase personal income for all population groups. In addition, Alternative A would not result in any adverse health effects nor impact any other natural (air, biological, water, soils, etc.) or human (land use, visual, and noise) resources disproportionately to low income or minority populations. Hence, Alternative A would not meet the criteria for generating environmental justice effects.

Protection of Children. No effects would be expected. Alternative A would not result in any adverse environmental or health effects to children. The primary effects of the project are beneficial to the economy and would confer commensurate benefits on the child population. Health and safety concerns would be primarily related to future construction activities. However, construction of most new facilities would occur in areas where no children reside or would be present. Furthermore, appropriate barriers would be constructed and signage installed to prevent accidental incursion of children onto dangerous work sites.

4.4.2.3 Transformation Alternative B (Preferred Alternative)

The potential socioeconomic consequences of implementing Alternative B would be the same as those described for Alternative A.

4.4.3 Mitigation Measures

No mitigation measures are identified for socioeconomic impacts because no adverse impacts are anticipated under either action alternative.

4.5 TRANSPORTATION

This section describes the general traffic conditions within the affected environment in terms of access and circulation, and assesses any impacts related to these issues. The ROI for transportation is defined as the four cantonment areas at Fort Benning and the access points to those areas. This is because the majority of the personnel report to work or live in those areas. There would be no new cantonment areas proposed for either alternative and the existing cantonment areas have had sufficient traffic counts to conduct a detailed traffic analysis.

With respect to the ranges, the range roads are limited to personnel and vehicles on the range strictly for range business including training, construction and maintenance, as well as other support functions such as environmental compliance activities. Since the range roads are scheduled according to priority and safety requirements and because the range roads only are used for essential personnel, the traffic issues are not expected to significantly increase and would only affect range personnel. Therefore, no further analysis for transportation on the ranges was considered. Access outside of cantonment for recreation, land management, safety, and other topics are addressed elsewhere in this EIS.

The impact from road construction at the ranges on resources, such as storm drainage, waters, and soils will be addressed in the respective sections.

4.5.1 Affected Environment

4.5.1.1 Description of On and Off Post Roadways

The Fort Benning area is served by several federal, state, and county roads located in both Georgia and Alabama. There are nine major roads serving the Fort Benning area, some with multiple designations by Federal, state, or county systems. Because of its location relative to the Columbus and Phenix City areas, primary access to Fort Benning is predominantly from the north. In terms of average daily traffic the four most utilized access roads are Benning Boulevard, Lindsay Creek Parkway (I-185), South Lumpkin Road, and Victory Drive (U.S. Highway 27/280). The main gate to Fort Benning is located at the intersection of Benning Boulevard and South Lumpkin Road approximately two miles within the Installation boundary (Fort Benning 2005b).

Benning Boulevard is a four-lane, divided, limited access primary arterial that runs north-south and serves both regional and local commuter traffic in the Main Post cantonment and Columbus/Phenix City area. All visitors must use the Benning Boulevard gate, which is the main Access Control Point (ACP) to the Post, or the ACP on Lindsay Creek Parkway.

Lindsay Creek Parkway (I-185) is a four-lane, divided, limited access highway that runs in a north-south direction and is part of the regional road network that connects the Kelley Hill cantonment area with Columbus and points beyond. In addition to serving Kelley Hill, I-185 also provides access to the Main Post and Harmony Church cantonment areas via First Division Road. The intersection of I-185 and First Division Road is currently one of the most congested points at Fort Benning with large queues in the PM peak hours.

South Lumpkin Road is a two lane road that runs parallel to Benning Boulevard, approximately one-half mile to the west and provides access to the Main Post cantonment area.

Victory Drive (U.S. Highway 27/280) is a four lane divided limited access highway that runs through Fort Benning on a generally diagonal path from northwest to southeast. It serves as a regional facility under different names and provides access to Sand Hill and Harmony Church cantonment areas.

Access Control Points

In 2001, temporary ACPs were installed to restrict unauthorized access to Fort Benning. These ACPs consist of temporary sprung structures that shelter either military police or civilian law enforcement personnel who check the identification of everyone seeking entry into Fort Benning via the road network. There are currently seven ACPs, one each at the following locations: Benning Boulevard, Lindsay Creek Parkway (I-185), South Lumpkin Road, Custer Road, Sand Hill, First Division Road, and Eddy Bridge (see Figure 4.5-1). These ACPs are currently being replaced with permanent structures to better facilitate Installation security.

Other methods (such as drum/wedge, traffic arm barricades and bollards) to restrict unauthorized access to the Installation have been placed on other paved roads, dirt roads, and trails that formerly provided access across or into the Installation. Fort Benning is also in the process of establishing a physical security perimeter barrier (fencing, guard rail, or use of existing natural terrain barriers) to further restrict access by unauthorized vehicular movement into the Installation's main cantonment areas.

On Post Roadways

For this analysis the potential impacts are characterized in terms of the four cantonment areas (Main Post, Kelley Hill, Sand Hill, and Harmony Church), all of which are located in the western portion of the Installation east of the Chattahoochee River (GA/AL state boundary) and south of Columbus, GA. Cantonment areas, a term used for Army Installations, are where living and working populations are concentrated and buildings and infrastructure are developed to support those populations. Other areas of the Installation may contain some buildings, structures, and infrastructure, but primarily serve various maneuver and range training purposes (including safety buffers).

The maneuver, training, and range areas and associated buffer lands are generalized as north and south, with U.S. Highway 27/280 and Georgia State Route 1/520 (hereafter, referred to as U.S. Highway 27/280) bisecting the Installation northwest to southeast (see Figure 4.5-2) and acting as the dividing line between these areas. Most activities at Fort Benning have specific transportation requirements. All administrative and private vehicular traffic must have:

- Access to the Columbus expressway system;
- Travel corridors between the cantonment areas; and
- Traffic routes within the cantonment areas.

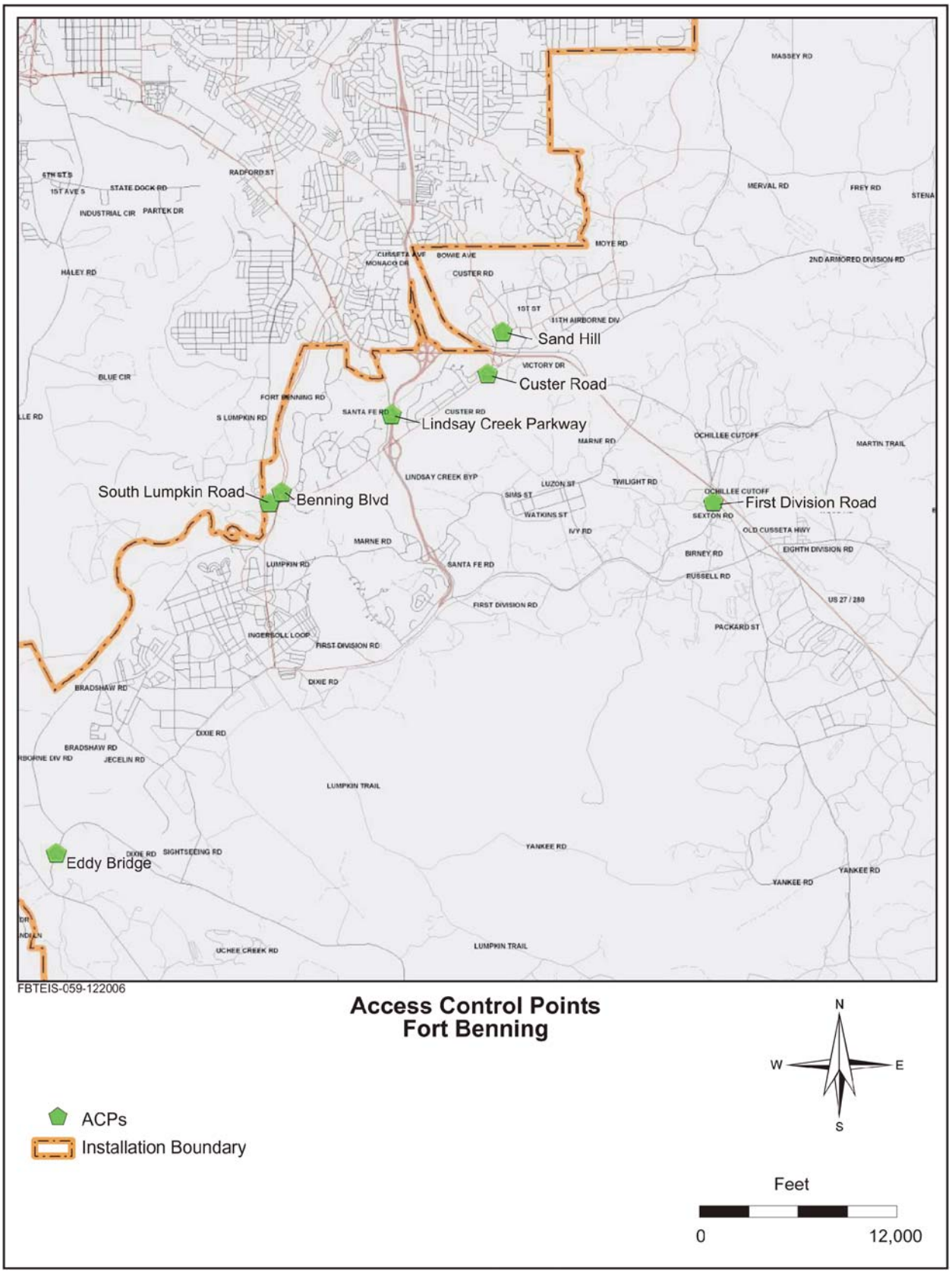

Figure 4.5-1: Fort Benning ACPs

In addition, combat vehicles must move regularly between the cantonments, maintenance, and training areas and they must be provided with a separate system of tank trails. These trails have different design characteristics: wider lanes, stronger structure, and harder materials to accommodate wider and heavier vehicles and different traction systems.

Main Post

The largest cantonment area, Main Post, includes Lawson AAF and the hospital and mall complex. Travel outside of Main Post is concentrated on access to Columbus, Sand Hill, Harmony Church, and the Malone, Alpha, and Kilo training ranges. Access to Main Post is provided by two major traffic corridors, Benning Boulevard (north-south) and First Division Road (east-west). North-south traffic is also served by Lumpkin and Sigerfoos Roads and Edwards and Anderson Streets, and east-west traffic is also served by Tenth Division and Dixie Roads and Vibbert and Wold Avenues.

Benning Boulevard. Benning Boulevard is a four-lane, divided arterial leading directly into the Main Post. According to the most recent traffic counts, the boulevard averages 20,500 vehicles per day. During the morning peak hour, 1,600 vehicles use the boulevard to enter Main Post and 3,400 vehicles use it to exit in the evening peak hour.

First Division/Dixie Roads. First Division/Dixie Roads are two lane, two-way roadways that combine and form the second major traffic corridor leading into Main Post. The Columbus expressway system is connected to Main Post through the First Division Road and Lindsay Creek Bypass interchange. Traffic volumes exceed 1,800 vehicles in the morning peak and 1,600 in the evening peak in both directions on the First Division/Dixie Road corridor.

Marne Road. Marne road is a two-lane, two-way roadway that serves as a main access route to the hospital and mall complex, Kelley Hill, and Main Post from the Lindsay Creek Bypass. High traffic volumes (572 vehicles per hour) from the mall area and Kelley Hill create backups at the intersection of Marne Road and the east Lindsay Creek Bypass ramp. Eastbound drivers attempting to make a left turn (389 vehicles per hour) onto Lindsay Creek Bypass stack up through the west side intersection while waiting for a break in oncoming traffic.

Kelley Hill

Kelley Hill houses the 3rd Brigade of the 3rd Infantry Division (Mechanized). Access to Kelley Hill is provided by Marne and Ivy Roads. Travel outside of Kelley Hill is concentrated on access to Columbus, the hospital and mall complex, Harmony Church, and the Malone and Oscar Kilo training ranges. East-west traffic is served by Marne Road and Watkins Street, and north-south by Ivy Road and Bell Richards Street. Tank trails from Kelley Hill provide limited tracked vehicle access to Harmony Church and the Malone and Kilo training ranges. There are no heavy equipment transport loading facilities or tank trails to provide tracked vehicles access to Lawson AAF and the Sand Hill and Ochillee railheads.

Marne Road. Marne Road is a two-lane, two-way roadway that links Victory Drive to the Lindsay Creek Bypass (hospital and mall area) and Main Post through Kelley Hill. Traffic volumes are approaching 4,700 vehicles per day.

Ivy Road. Ivy Road is a two-lane, two-way road that links Kelley Hill to Main Post, Harmony Church, and the Malone and Kilo training ranges through First Division and Marne Roads.

Sand Hill

Sand Hill is a consolidated recruit reception and infantry basic training cantonment consisting of unit administration, unaccompanied personnel housing, training, and some community support. Travel outside of Sand Hill is concentrated on access to Columbus, the hospital and mall complex, and the Malone training ranges. Access to Sand Hill is provided by Victory Drive, 11th Airborne Division Road, Old Cusseta Highway, and Custer Road. North-south traffic is served by Moye and Custer Roads, and east-west traffic by 11th Airborne Division, 2nd Armored Division, and 2nd Infantry Division Roads.

Victory Drive. Victory Drive is a four-lane, divided arterial which connects the eastern half of the Installation to Columbus' expressway system and passes through Sand Hill, Harmony Church, and the central portion of the Post. The Victory Drive and Custer Road interchange provides the main corridor for access to Sand Hill.

Old Cusseta Highway. Old Cusseta Highway is a two-lane, two-way road that connects Sand Hill with Harmony Church. The highway served as the main corridor for traffic between Sand Hill and Harmony Church prior to the Victory Drive and Custer Road interchange upgrade.

Custer Road. Custer Road is a two-lane, two-way road that serves as the main corridor for access to Sand Hill from Main Post.

Harmony Church

The majority of Harmony Church training activities have been relocated to Sand Hill; however, the Ranger Training Brigade and a number of smaller units are expected to remain in Harmony Church. Travel outside of Harmony Church is concentrated on access to Columbus, Main Post, and the Malone, Alpha, and Kilo training ranges. Access to Harmony Church is provided by Victory Drive and Eighth Division Road. North-south traffic is served by Hourglass, Axton, and Eighth Division Roads, and east-west by Old Cusseta Highway and Jamestown Road.

Victory Drive. Victory Drive is a four-lane, divided arterial which passes through Sand Hill, Harmony Church, and the central portion of the Installation, and connects the eastern half of the Installation to the Columbus expressway system. The Victory Drive and Eighth Division Road interchange provides the main corridor for access to Harmony Church.

Eighth Division Road. Eighth Division Road is a two-lane, two-way roadway that serves as the main access to Harmony Church from Main Post.

Post-Wide Traffic Controls

The posted speed limit at the Post ranges from 15 to 45 miles per hour within the cantonment areas. These speed limits vary depending on the level of activity present at the sides of the roads. There are several types of traffic controls at Fort Benning; the most relevant are signals, STOP and YIELD signs, striping, and occasional direction by security personnel.

Parking

Little or no information on parking conditions is available for Fort Benning based on a review of transportation and other planning documents for the Post.

Bicycle Facilities

Inside Fort Benning, the Columbus Riverwalk provides two and half miles of pedestrian and bicycle facilities. The riverwalk ends at the National Infantry Museum within Fort Benning. To the north it extends past Columbus, GA and Phenix City, AL. When completed the riverwalk is expected to have twenty continuous miles (Columbus Parks 2007).

4.5.1.2 Existing Installation Transportation

Three government operated shuttle bus routes are provided within the Installation, serving Main Post, Sand Hill, Kelley Hill, and Harmony Church. Soldiers are routinely transported for training in this area by military mass transit vehicles.

4.5.1.3 Existing Public Transportation

Bus Transportation

The only form of commercial mass transit in the Fort Benning/Columbus/Phenix City area is bus service. There are two commercial bus lines: Greyhound Bus Lines and the Columbus Transportation System, Metropolitan Transit (METRA). METRA provides bus shuttle service between Fort Benning and Columbus.

Air Transportation

Outside of Installation boundaries, commercial airline service is provided to the Columbus/Phenix City area by four commercial airlines operating out of the Columbus Metropolitan Airport. This airport is located approximately 12 miles north of Fort Benning and that airspace is managed by the air traffic control tower at Columbus Metropolitan Airport.

Railroad Transportation

Two railroads serve Fort Benning and the Columbus/Phenix City metropolitan area. Each railroad provides only freight service to the Fort Benning/Columbus/Phenix City area. The Installation also has its own rail service, provided by the Rail Loading Facility at Sand Hill. This site is not used for any type of recreational or mass transit purposes, but for the purpose of transporting military equipment (to include vehicles) between Fort Benning and other installations.

Water Transportation

The Chattahoochee River is a navigable water of the United States and thus traffic upon the river is regulated by the U.S. Coast Guard. Both civilian (small boats) and commercial (barge) craft use the river, though barges are infrequent due to the many dams. The river channel is approximately 100-ft wide with a minimum depth of approximately 9 feet from Columbus to its terminus at Lake Seminole. Access to the Gulf of Mexico from Lake Seminole is via the Apalachicola River, which empties to the Gulf at Apalachicola, Florida. The Chattahoochee, Flint, and Apalachicola Rivers have been modified by the USACE with construction of the Jim Woodruff Lock and Dam, Columbia Lock and Dam, Walter F. George Lock and Dam, and flood control and power generation facilities in the upper reaches of the Chattahoochee River. Transportation of materials to Fort Benning via water is negligible to non-existent and there is no transportation of materials on the streams located in or proximate to the northern portion of the Installation (Fort Benning 2005b).

4.5.1.4 Intersection Level of Service Analysis

In order to estimate how well the existing infrastructure accommodates the current and future traffic demand, a traffic study was complete. The intersections analyzed in this evaluation are depicted in Figure 4.5-2. As part of the analysis that supports the transportation study, a simulation model was used that represents the prevailing traffic conditions and the characteristics of the transportation system at the intersections, such as number of lanes per approach, striping, lane width, number of pedestrians crossing, signal phases and timing. The software used is called Synchro and it follows the procedures set forth by the Transportation Research Board in their Highway Capacity Manual to estimate the level of service (LOS) at intersections, signalized and unsignalized.

The Highway Capacity Manual (Transportation Research Board 2000) also defines the LOS to represent reasonable ranges in control delays as described in Table 4.5-1. For the purposes of this analysis, it is assumed that an intersection has reached capacity when it has a LOS D. If an intersection reaches LOS E or F, then that intersection is considered to have failed. At that point, the level of congestion is extensive, with drivers waiting several signal cycles to cross an intersection and further increases in traffic volumes compound the problem even further**.**

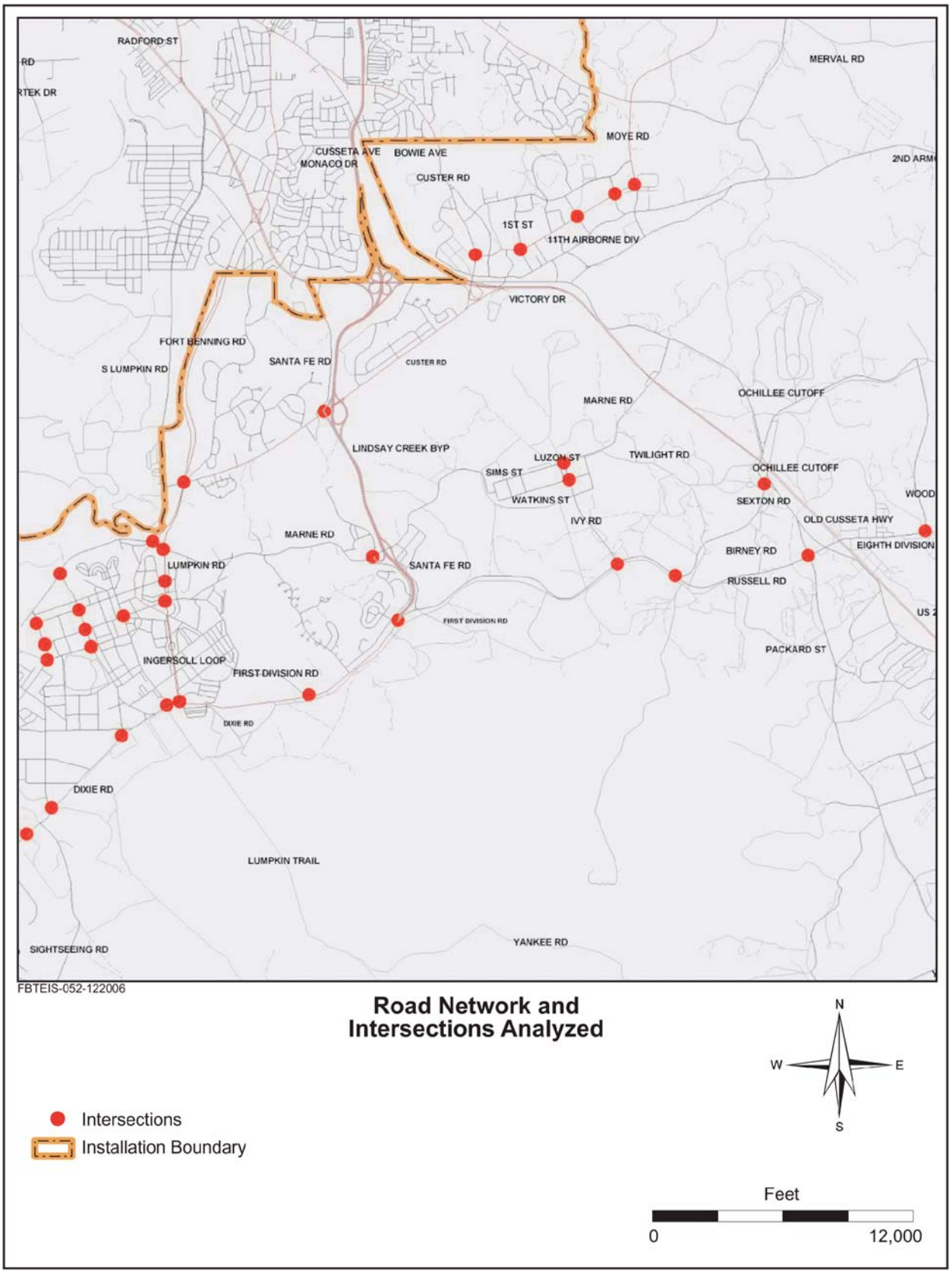

Figure 4.5-2: Road Network and Intersections Analyzed at Fort Benning

Table 4.5-1: Description of Levels of Service

Level of Service	Description
LOS A	Describes operations with low control delay, up to 10 seconds/vehicle. This LOS occurs when progression is extremely favorable and most vehicles arrive during the green phase. Many vehicles do not stop at all. Short cycle lengths may tend to contribute to low delay values.
LOS B	Describes operations with control delay greater than 10 and up to 20 seconds/vehicle. This level generally occurs with good progression, short cycle lengths, or both. More vehicles stop than with LOS A, causing higher levels of delay. Cycle failure occurs when a given green phase does not serve queued vehicles, and overflows occur.
LOS C	Describes operations with control delay greater than 20 and up to 35 seconds/vehicle. These higher delays may result from only fair progression, longer cycle lengths, or both. Individual cycle failures may begin to appear at this level. Cycle failure occurs when a given green phase does not serve queued vehicles, and overflows occur. The number of vehicles stopping is considerable at this level, though many still pass through the intersection without stopping.
LOS D	Describes operations with control delay greater than 35 and up to 55 seconds/vehicle. At LOS D, the influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, and high vehicle per cycle (v/c) ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.
LOS E	Describes operations with control delay greater than 55 and up to 80 seconds/vehicle. These high delay values generally indicate poor progression, long cycle lengths, and high v/c ratios. Individual cycle failures are frequent.
LOS F	Describes operations with control delay in excess of 80 seconds/vehicle. This level, considered unacceptable to most drivers, often occurs with over saturation, that is, when arrival flow rates exceed the capacity of lane groups. It may also occur at high v/c ratios with many individual cycle failures. Poor progression and long cycle lengths may also contribute significantly to high delay levels.

Source: Transportation Research Board 2000.

4.5.1.5 Existing Traffic Conditions

Traffic counts that were collected in April 2006 as part of the 2006 Fort Benning Comprehensive Traffic Study (Fort Benning 2006c) were used for the analysis. Given the large number of projects to be analyzed in association with the environmental consequences of the action alternatives, a traffic study involving detailed analysis was required to assess the impact of these projects on the Installation transportation network. The impact of the projects is summarized by cantonment area. The results from the level of service analysis for the intersections are presented in Table 4.5-2 and in Figures 4.5-3 and Figure 4.5-4.

Table 4.5-2: Existing LOS
(Shaded rows represent unsignalized intersections, worst approach LOS reported)

No.	Location	Road A	Road B	AM Peak	PM Peak
1	Main Post	Lumpkin	Dixie	B	B
2	Main Post	Lumpkin	Wold	A	B
3	Main Post	Lumpkin	Vibbert	A	D
4	Main Post	Lumpkin	Marne	A	F
5	Main Post	Lumpkin	Custer	F	B
6	Main Post	Ingersoll	Dixie	F	F
7	Main Post	Ingersoll	Wold	B	B
8	Main Post	Edwards	Dixie	B	B
9	Main Post	Edwards	Marchant	A	A
10	Main Post	Edwards	Wold	A	A
11	Main Post	Edwards	Vibbert	A	A
12	Main Post	Edwards	10th Div	C	B
13	Main Post	Anderson	Marchant	A	A
14	Main Post	Anderson	Wold	C	B
15	Main Post	Anderson	Vibbert	B	B
16	Main Post	Sightseeing	Dixie	B	A
17	Main Post	Jacelin	Dixie	A	A
18	Kelley Hill	1st Div	Ivy	C	B
19	Kelley Hill	1st Div	Dixie	F	D
20	Kelley Hill	1st Div	Lindsay Creek	F	F
21	Kelley Hill	Marne	Ivy	B	B
22	Kelley Hill	Watkins	Ivy	B	B
23	Kelley Hill	Marne	Vass	B	C
24	Harmony	8th Div	Wood	A	A
25	Harmony	8th Div	Jamestown	A	A
26	Harmony	1st Div	Old Cusseta	B	B
27	Sand Hill	11th St	187th	C	C
28	Sand Hill	11th St	41st	A	A
29	Sand Hill	11th St	23rd	A	A
30	Sand Hill	11th St	Moye	A	A

Source: Adapted from Fort Benning 2006c. *Note*: Shaded rows indicate two-way unsignalized intersections. At these intersections, the overall LOS is not defined. Only LOS for the stop sign approaches is defined. The worst LOS of these two approaches is reported in the table.

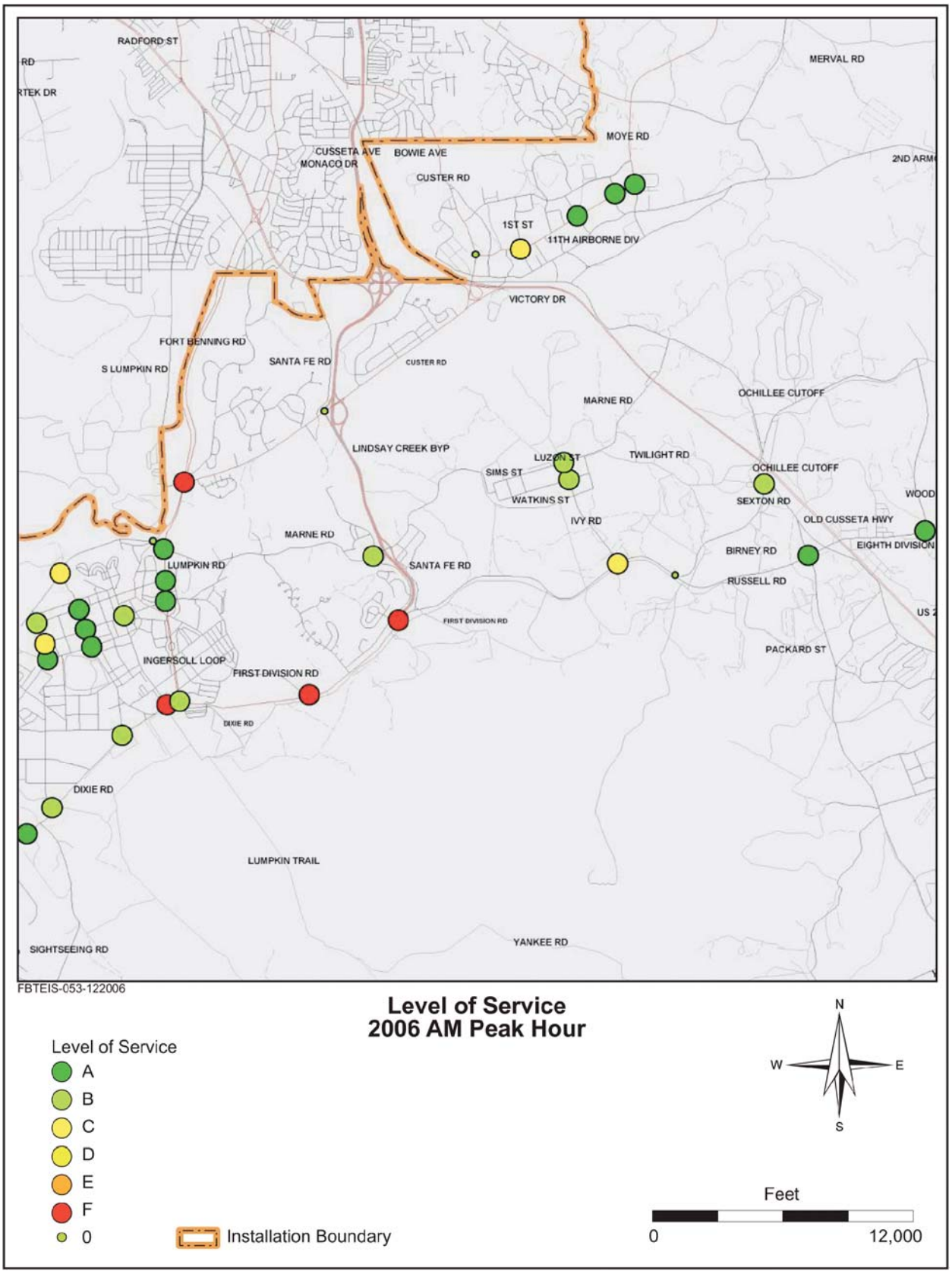

Figure 4.5-3: Existing Levels of Service, Morning Peak

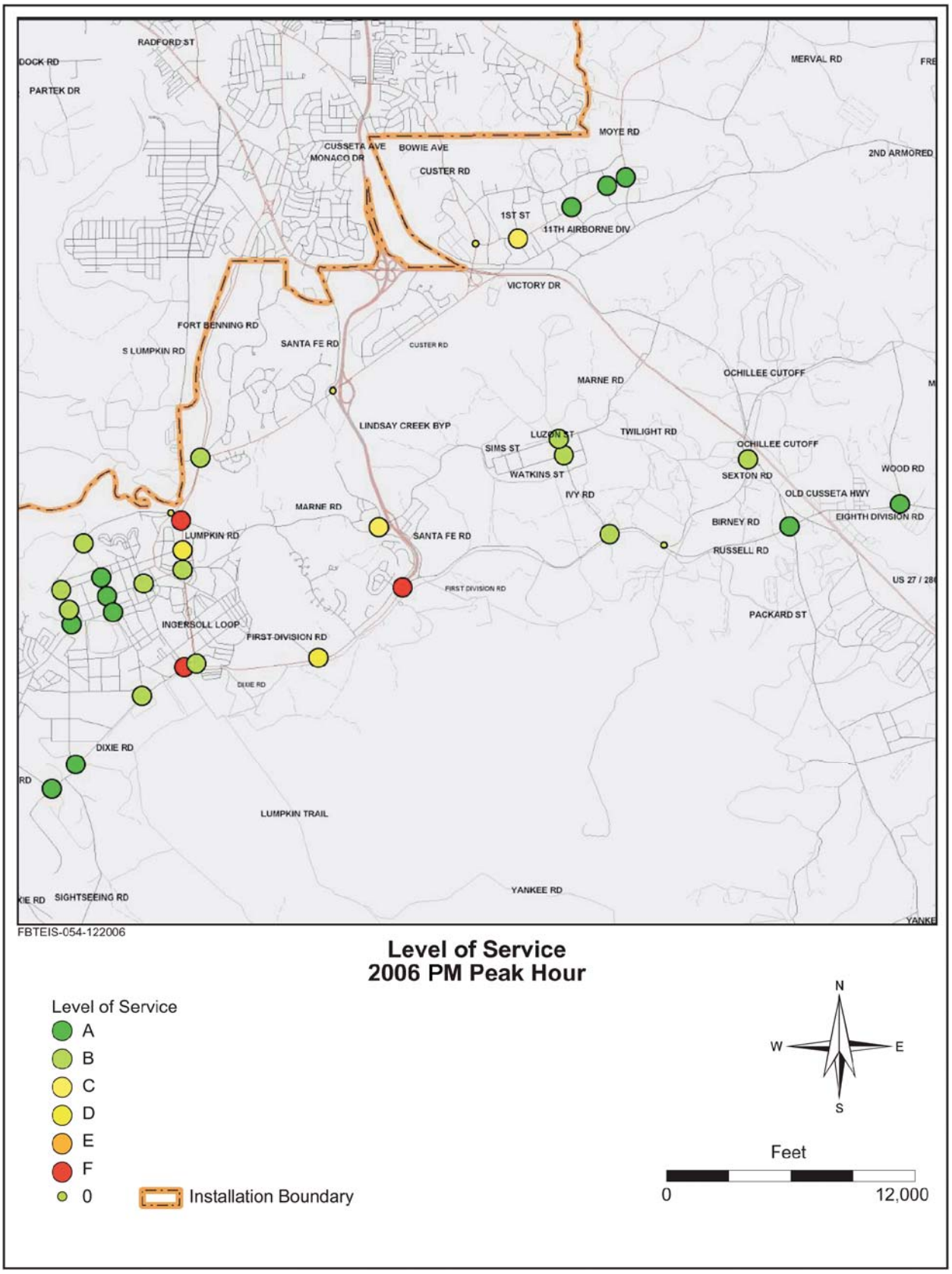

Figure 4.5-4: Existing Level of Service, Evening Peak

Existing LOS - Main Post

The main roads in this area are Benning Road, Lumpkin Road, and Edwards Street in the north-south direction, and Dixie Road, Tenth Division Road and Wold Avenue in the east-west direction. The results from the LOS analysis for the existing conditions (2006) in this area are summarized in Table 4.5-2, which shows that there are three intersections where the LOS drops to E or worse during the morning and evening peak hours. These intersections are: Lumpkin Road at Marne Road (LOS F in the evening peak hour), Lumpkin Road at Custer Road (LOS F in the morning peak hour), and Ingersoll Road at Dixie Road (LOS F in the morning and evening peak hours).

Existing LOS - Kelley Hill

The main roads in this area are Ivy Road and Harvey Street in the north-south direction, and Marne Road and Watkins Street in the east-west direction. The results from the LOS analysis for the existing conditions (2006) in this area are summarized in Table 4.5-2, which shows that there are two intersections where the LOS drops to E or worse during the morning and evening peak hours. These intersections are: First Division Road at Dixie Road (LOS F in the morning peak hour), and First Division Road at Lindsay Creek (LOS F in the morning and evening peak hours).

Existing LOS - Sand Hill

The main roads in this area are Custer Road and Moyer Road in the north-south direction and Eleventh Airborne Division Road in the east-west direction. The results from the LOS analysis for the existing conditions (2006) in this area are summarized in 4.5-2, which shows that there are no intersections where the LOS drops to E or worse during the morning or evening peak hours.

Existing LOS - Harmony Church

The main roads in this area are Jamestown Road and Old Cusseta Highway in the north-south direction and First Division Road and Eight Division Road in the east-west direction. The results from the LOS analysis for the existing conditions (2006) in this area are summarized in Table 4.5-2, which indicates that there are no intersections where the LOS drops to E or worse during the morning or evening peak hours.

4.5.2 Environmental Consequences

The traffic consequences of the implementation of the no action and any of the action alternatives are described in the following sections. The following threshold criteria have been developed to assess the transportation impacts for each of the alternatives.

No Significant Impact – Changes to the traffic patterns and level of service that maintain the same or nearly the same levels of service as is expected under the No Action Alternative without crossing the threshold to failure. An intersection is said to have failed when it reaches LOS E or worse. However, if said intersection had already failed under the No Action Alternative and continues to fail under an action alternative, then it could be said that the alternative is not causing a negative adverse effect beyond what

was already there. An intersection that is at LOS E for the No Action Alternative and remains at LOS E for another alternative is therefore considered to have no significant impact.

Moderate Impact – Changes to the traffic patterns and level of service that would cause an intersection to perform more poorly as a result of implementing that action compared with what is expected under the No Action Alternative, but without the failure of the intersection. A drop from LOS A to LOS C, or from LOS B to LOS D, comparing specific intersections between the action alternatives and the No Action Alternative, would be designated as moderate impacts.

Severe Impact – Changes to the traffic patterns and level of service that would cause an intersection to fail as a result of implementing that action beyond what is expected under the No Action Alternative. For the purposes of this EIS, a severe impact would be considered when an intersection that had not failed under the No Action Alternative fails under either of the action alternatives.

4.5.2.1 No Action Alternative

Implementation of the No Action Alternative would not alter the existing transportation infrastructure at the sites being considered under the proposed action. There would be no adverse impacts. Because the BRAC-mandated projects must be completed by 2011, this year was chosen as the horizon year for the analysis of the future conditions.

Under this scenario, traffic is assumed to grow at a constant annual rate of 1.2 percent, which reflects the expected population growth observed in the region without the proposed Transformation actions. The traffic growth surrounding Fort Benning has varied widely in the last 6 years according to data from the Georgia Department of Transportation (GDOT). The variations are substantial to the point that the information cannot be used without comparing to other relevant information. Between 1999 and 2005, the average annual traffic growth rates for facilities outside the Post have been very different, ranging from negative 2.6 percent in Victory Drive to 1.2 percent in Benning Boulevard. There are many factors that indicate that this rate should be positive.

In terms of population growth, the four-county region formed by Chattahoochee, Harris, Muscogee, and Russell counties grew at 0.2 percent per year between 1990 and 2005 (U.S. Census Bureau 1995, 2005). The population projections between 2005 and 2015 assume an annual average growth rate of 1 percent. Considering that traffic normally grows at a faster rate than population, these results also indicate the need to consider a positive rate to capture the future background growth. Therefore, the 1.2 percent annual growth rate observed in Benning Boulevard is being used as the basis for the background growth rate in this analysis.

There are no transportation network improvements considered as part of the No Action Alternative. The same network as in the existing conditions is analyzed.

The volumes estimated following the procedure described above were entered into the simulation model and resulted in the LOS for the No Action Alternative shown in Table 4.5-3 for the four cantonment areas. Figures 4.5-5 and 4.5-6 show the effects on LOS of the No Action Alternative.

Table 4.5-3: No Action LOS
(Shaded rows represent unsignalized intersections)

No.	Location	Road A	Road B	AM Peak		PM Peak	
				Exist.	No Action	Exist.	No Action
1	Main Post	Lumpkin	Dixie	B	**C**	B	B
2	Main Post	Lumpkin	Wold	A	A	B	B
3	Main Post	Lumpkin	Vibbert	A	A	D	**E**
4	Main Post	Lumpkin	Marne	A	A	F	F
5	Main Post	Lumpkin	Custer	F	F	B	B
6	Main Post	Ingersoll	Dixie	F	F	F	F
7	Main Post	Ingersoll	Wold	B	B	B	B
8	Main Post	Edwards	Dixie	B	B	B	B
9	Main Post	Edwards	Marchant	A	A	A	A
10	Main Post	Edwards	Wold	A	A	A	A
11	Main Post	Edwards	Vibbert	A	A	A	A
12	Main Post	Edwards	10th Div	C	C	B	B
13	Main Post	Anderson	Marchant	A	A	A	A
14	Main Post	Anderson	Wold	C	C	B	B
15	Main Post	Anderson	Vibbert	B	B	B	B
16	Main Post	Sightseeing	Dixie	B	B	A	A
17	Main Post	Jacelin	Dixie	A	A	A	A
18	Kelley Hill	1st Div	Ivy	C	C	B	B
19	Kelley Hill	1st Div	Dixie	F	F	D	**E**
20	Kelley Hill	1st Div	Lindsay Creek	F	F	F	F
21	Kelley Hill	Marne	Ivy	B	B	B	B
22	Kelley Hill	Watkins	Ivy	B	B	B	B
23	Kelley Hill	Marne	Vass	B	B	C	C
24	Harmony	8th Div	Wood	A	A	A	A
25	Harmony	8th Div	Jamestown	A	A	A	A
26	Harmony	1st Div	Old Cusseta	B	B	B	B
27	Sand Hill	11th St	187th	C	C	C	C
28	Sand Hill	11th St	41st	A	A	A	A
29	Sand Hill	11th St	23rd	A	A	A	A
30	Sand Hill	11th St	Moye	A	A	A	A

Source: Adapted from Fort Benning 2006c. *Note*: Shaded rows indicate two-way unsignalized intersections. At these intersections, the overall LOS is not defined. Only LOS for the stop sign approaches is defined. The worst LOS of these two approaches is reported in the table.

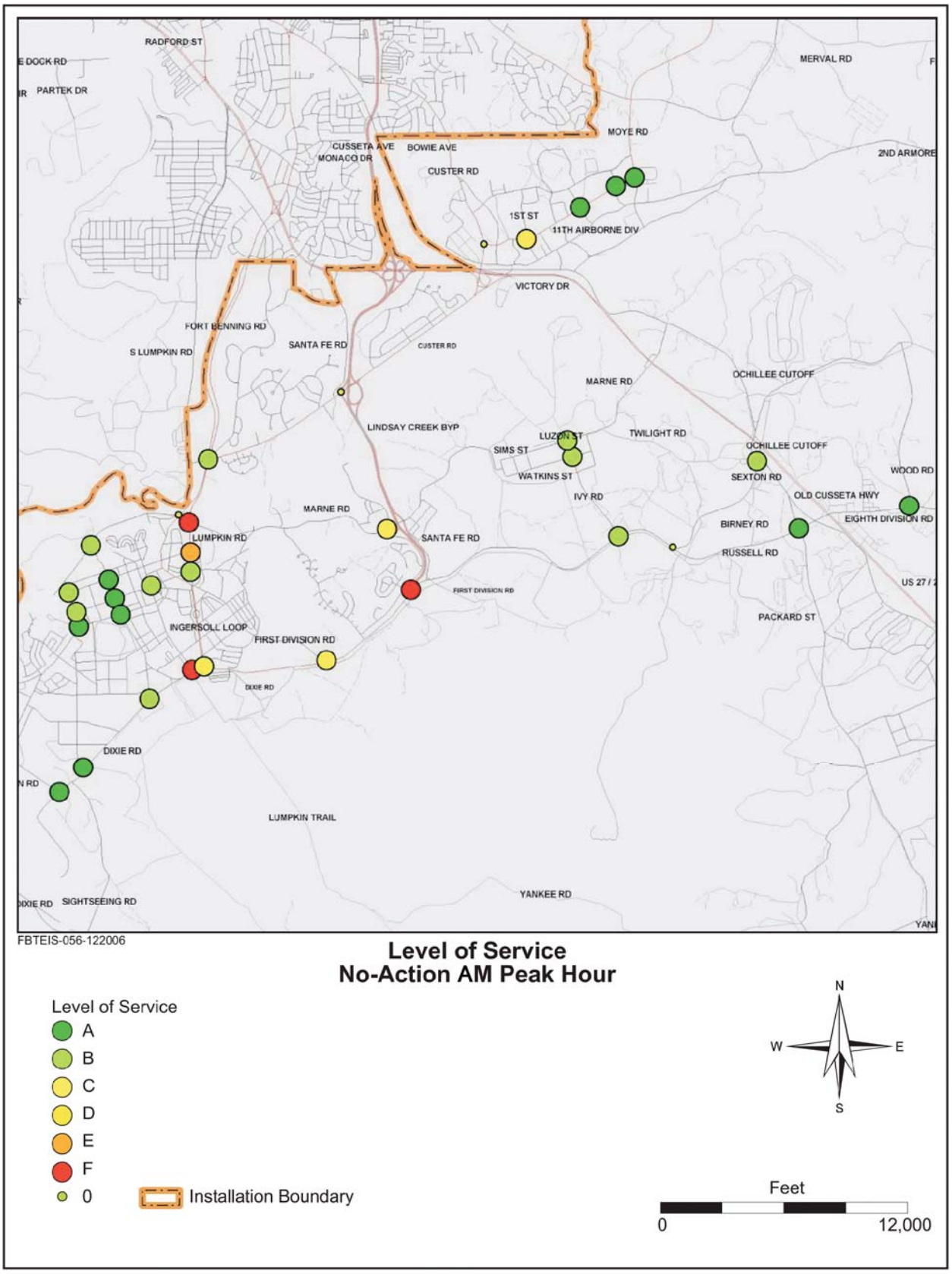

Figure 4.5-5: LOS Resulting From No Action Alternative: Morning Peak

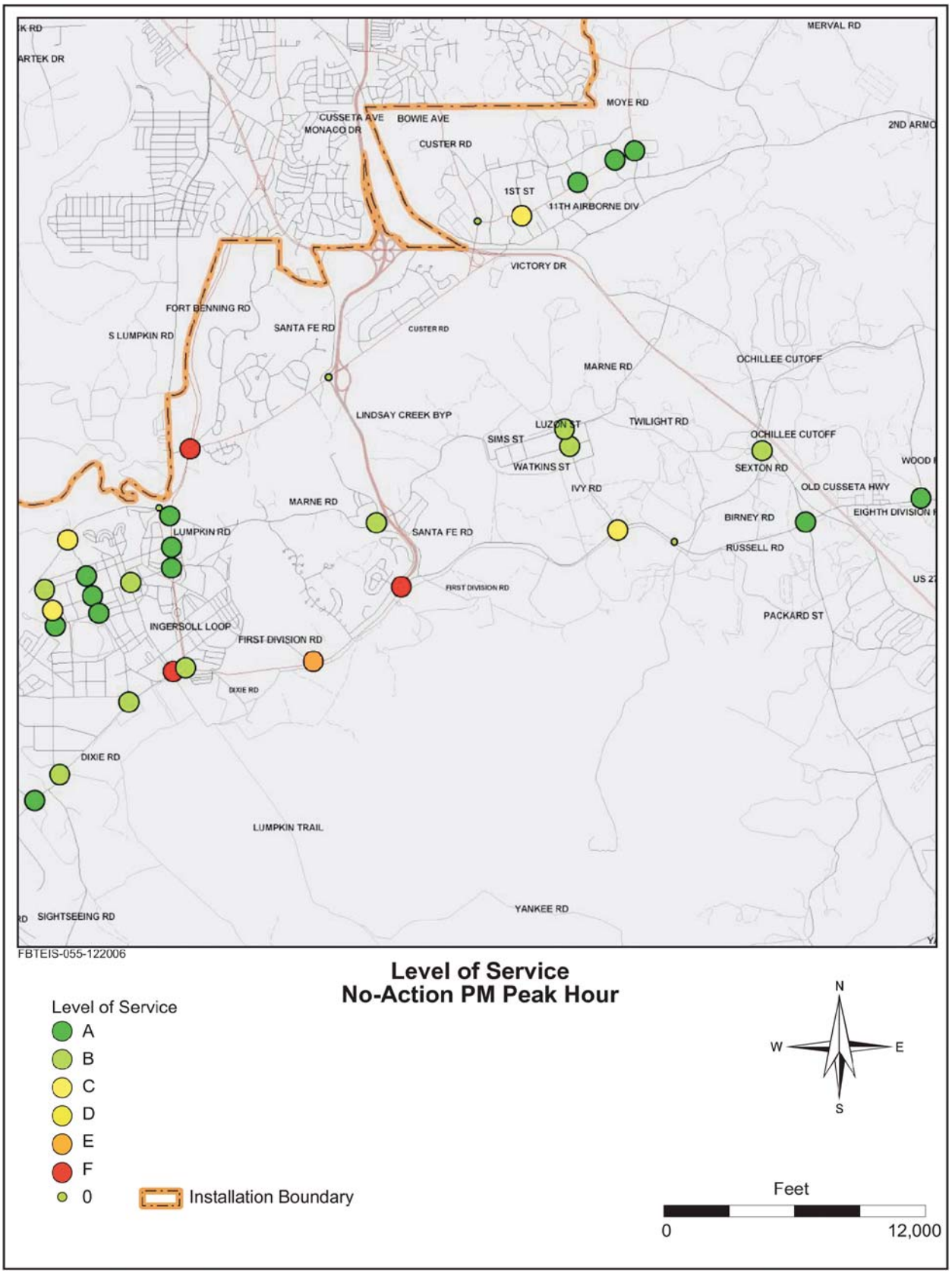

Figure 4.5-6: LOS Resulting From the No Action Alternative: Evening Peak

No-Action LOS - Main Post

The results from the LOS analysis for the No Action Alternative (2011) in this area are summarized in Table 4.5-3. As can be seen, there are four intersections where the LOS drops to E or worse during the AM and PM peak hours. These intersections are: Lumpkin Road at Vibbert Road (LOS E in PM peak hour), Lumpkin Road at Marne Road (LOS F in PM peak hour), Lumpkin Road at Custer Road (LOS F in AM peak hour), and Ingersoll Road at Dixie Road (LOS F in the AM and PM peak hours).

No Action LOS - Kelley Hill

The results from the LOS analysis for the no action conditions (2011) in this area are summarized in Table 4.5-3. There are two intersections where the LOS indicates failure and one where the LOS drops to E or worse during the evening peak hour compared to existing conditions. These intersections are: First Division Road at Dixie Road (retains LOS F in morning peak hour and LOS drops from D to E in evening peak hour), and First Division Road at Lindsay Creek Road (retains LOS F in the morning and evening peak hours).

No Action LOS - Sand Hill

The results from the LOS analysis for the no action conditions (2011) in this area are summarized in Table 4.5-3. There are no intersections that fail or where the LOS drops to E or worse during the morning and evening peak hours when compared to the existing conditions.

No Action LOS - Harmony Church

The results from the LOS analysis for the no action conditions (2011) in this area are summarized in Table 4.5-3. There are no intersections that fail or where the LOS drops to E or worse during the morning and evening peak hours when compared to the existing conditions.

No Action LOS – Overall Impact

When making an overall comparison between the existing conditions and the No Action Alternative, there are more intersections failing in the No Action Alternative than under the existing conditions (see Table 4.5-4).

Table 4.5-4: Overall LOS Comparison

Intersection LOS	AM and PM Peak	
	Existing	No Action
E or F (failed)	7	9
C or D	8	8
	AM Peak	PM Peak
Intersections with any decrease in LOS between Existing and No Action	1	2

This degradation in LOS is the result of an increase in traffic with no system capacity expansion in the No Action Alternative. Existing traffic problems are anticipated to remain and new problems are anticipated to occur as a result of future traffic growth causing the roadway system to become closer to reaching its

capacity. Under the No Action Alternative two additional intersections fail when compared to the existing conditions.

Concurrently to the preparation of this EIS, the Installation is conducting the Fort Benning Comprehensive Traffic Study. This study will make recommendations for the Installation's transportation investments that would result in better operation as well as capacity expansion to accommodate future growth. However, since these projects are not funded yet, they are not included as part of the present analysis.

Existing traffic problems are anticipated to remain and new ones to occur as a result of future traffic growth. The increase in traffic would bring the roadway system closer to reaching its capacity, with an increased overall congestion level. No Action Alternative

Installation Transportation and Public Transportation – No adverse impacts would be expected from the No Action Alternative. With respect to public transportation, currently there is only one bus route serving Fort Benning every 90 minutes. The utilization of this service is not expected to change in the future and the level of service would remain the same.

4.5.2.2 Transformation Alternative A

Several buildings and ranges in Main Post, Kelley Hill, Sand Hill, and Harmony Church are identified as part of the Transformation actions being evaluated in this EIS. The impact that these new projects would have on the transportation infrastructure is measured by the number of trips that the projects would generate combined with the current volumes and the background traffic growth expected from other non-BRAC new development. The methodology used to determine the number of trips can be found in Appendix D.

The resulting volumes under this scenario are the sum of the background traffic (existing volumes plus historic growth) calculated in the analysis of the No Action Alternative, plus the above traffic volumes that result from the implementation of the Transformation alternative. The LOS for different intersections resulting from this analysis is presented in Figures 4.5-7 and 4.5-8 and in Table 4.5-5.

Table 4.5-5: Transformation Alternative A LOS For Ft Benning
(Shaded rows represent unsignalized intersections)

Number	Area	Road A	Road B	AM Peak		PM Peak	
				No Action	Alt. A	No Action	Alt. A
1	Main Post	Lumpkin	Dixie	C	**F**	B	**F**
2	Main Post	Lumpkin	Wold	A	A	B	B
3	Main Post	Lumpkin	Vibbert	A	A	**E**	**F**
4	Main Post	Lumpkin	Marne	A	A	F	F
5	Main Post	Lumpkin	Custer	F	F	B	B
6	Main Post	Ingersoll	Dixie	F	F	F	F
7	Main Post	Ingersoll	Wold	B	**C**	B	**D**
8	Main Post	Edwards	Dixie	B	**F**	B	**F**
9	Main Post	Edwards	Marchant	A	**B**	A	A
10	Main Post	Edwards	Wold	A	A	A	A
11	Main Post	Edwards	Vibbert	A	A	A	A
12	Main Post	Edwards	10th Div	C	C	B	B
13	Main Post	Anderson	Marchant	A	B	A	B
14	Main Post	Anderson	Wold	C	C	B	**C**
15	Main Post	Anderson	Vibbert	B	B	B	**C**
16	Main Post	Sightseeing	Dixie	B	**F**	A	**F**
17	Main Post	Jacelin	Dixie	A	**C**	A	**C**
18	Kelley Hill	1st Div	Ivy	C	**F**	B	**D**
19	Kelley Hill	1st Div	Dixie	F	F	E	**F**
20	Kelley Hill	1st Div	Lindsay Creek	F	F	F	F
21	Kelley Hill	Marne	Ivy	B	B	B	B
22	Kelley Hill	Watkins	Ivy	B	B	B	B
23	Kelley Hill	Marne	Bass	B	B	C	C
24	Harmony	8th Div	Wood	A	**B**	A	B
25	Harmony	8th Div	Jamestown	A	**C**	A	**C**
26	Harmony	1st Div	Old Cusseta	B	B	B	B
27	Sand Hill	11th St	187th	C	**E**	C	**F**
28	Sand Hill	11th St	41st	A	**F**	A	**F**
29	Sand Hill	11th St	23rd	A	**B**	A	**B**
30	Sand Hill	11th St	Moye	A	A	A	A

Note: Shaded rows indicate two-way unsignalized intersections. At these intersections, the overall LOS is not defined. Only LOS for the stop sign approaches is defined. The worst LOS of these two approaches is reported in the table.

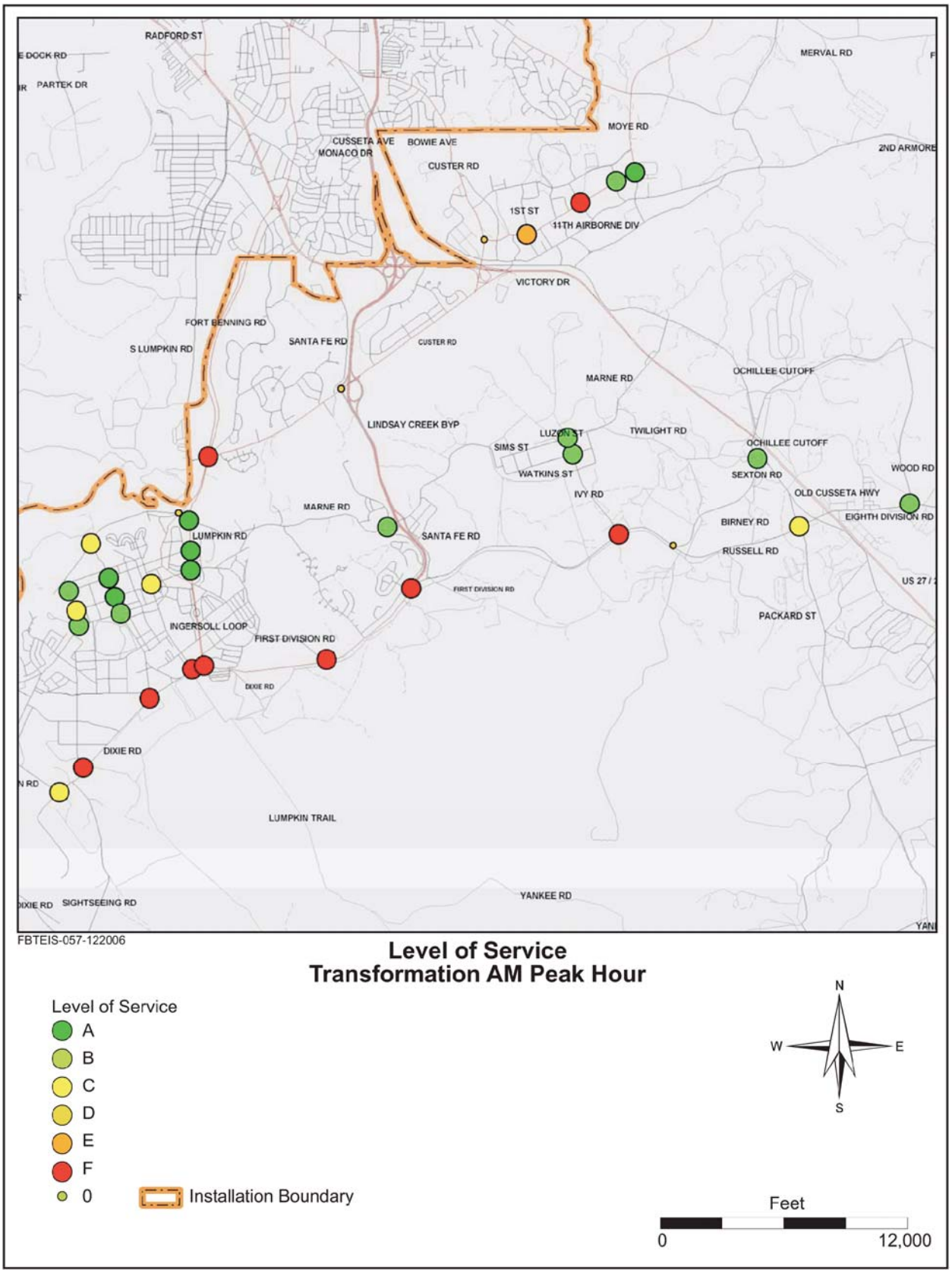

Figure 4.5-7: LOS Resulting From Transformation Alternative: Morning Peak

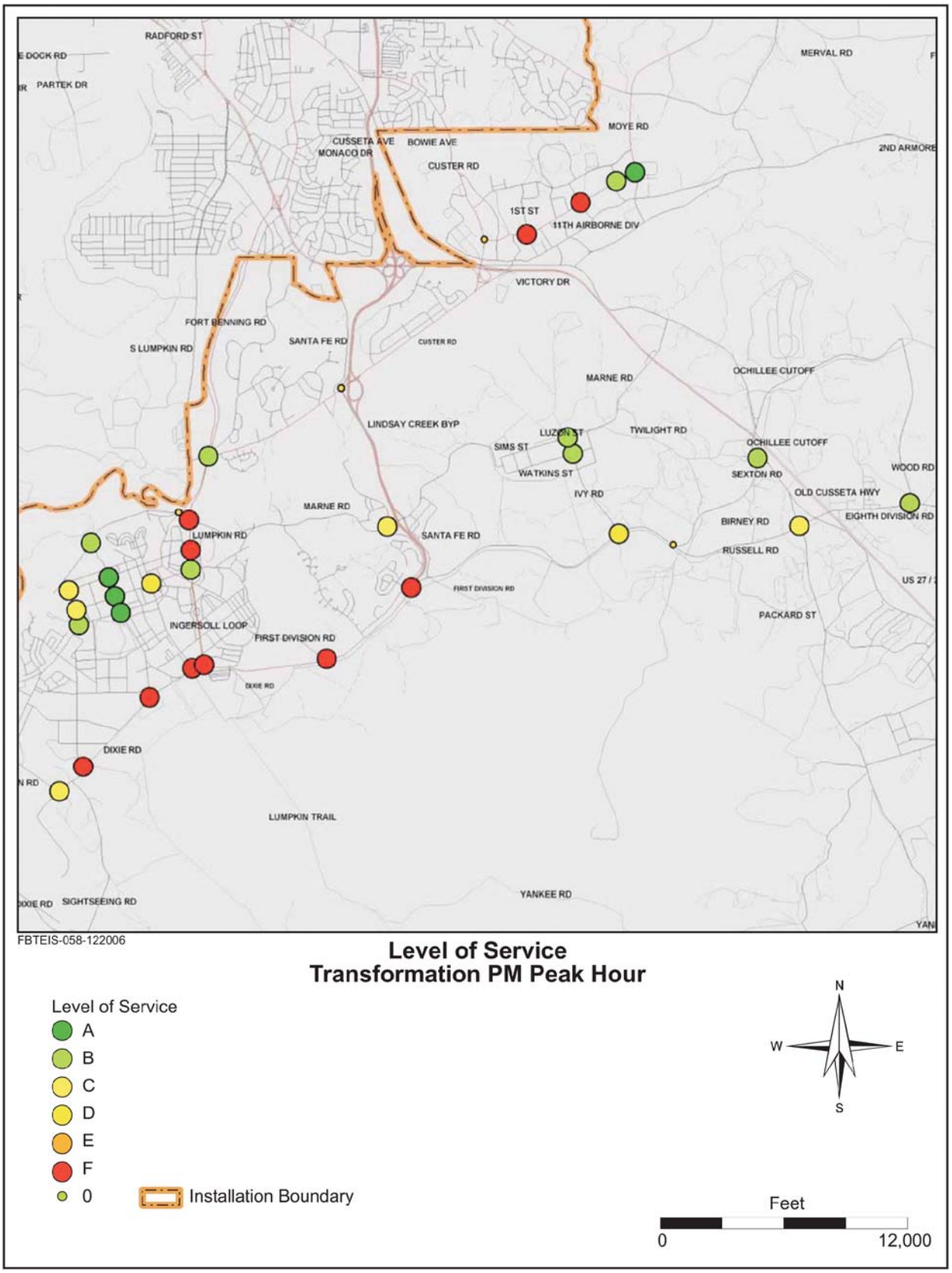

Figure 4.5-8: LOS Resulting From Transformation Alternative: Evening Peak

Transformation Alternative A LOS - Main Post

There are severe impacts resulting from the implementation of Alternative A. The analysis shows that there are three intersections where the LOS drops to E or worse during the morning and evening peak hours compared to the No Action Alternative, including Dixie Road at Lumpkin Road (LOS F from C in the morning peak hour and B in the evening peak hour under the No Action Alternative); Dixie Road at Edwards Street (LOS F from B in under the No Action Alternative); and Dixie Road at Sightseeing Street (LOS F from B under the No Action Alternative). It is also important to note that all intersections on Dixie Road have failed in this scenario. Based on these observations, capacity and operational improvements on Dixie Road (which would include all the intersections east of Jacelin Road) would be needed. This would be in addition to the proposed project suggested by the Fort Benning Comprehensive Transportation Study. It is important to note that these projects are currently not funded and therefore are not included as part of the analysis. They are relevant, however, because together with a few additional recommended projects identified as part of this analysis, they could improve the LOS at the failed intersections.

Transformation Alternative A LOS - Kelley Hill

There are severe impacts resulting from the implementation of Alternative A (see Table 4.5-5). There is one intersection where the LOS drops to E or worse during the morning and evening peak hours compared to the No Action Alternative. This intersection is First Division Road at Ivy Road (the LOS drops from C in the morning peak hour for the No Action Alternative and Alternative A). Recommended measures to minimize severity include the proposed projects by the Fort Benning Comprehensive Transportation Study.

Transformation Alternative A LOS - Sand Hill

There are severe impacts resulting from the implementation of Alternative A (see Table 4.5-5). There are two intersections where the LOS drops to E or worse during the morning and evening peak hours. These intersections are: 11th Airborne Division Road and 187th Infantry Regiment Street (LOS E/F from C under the No Action Alternative), and 11th Airborne Division Road and 41st Infantry Regiment Street (LOS F from A under the No Action Alternative). Recommended minimization measures are addressed at the end of this section.

Transformation Alternative A LOS - Harmony Church

There are moderate impacts resulting from the implementation of Alternative A (see Table 4.5-5). There are no intersections where the LOS drops to E or worse during the morning and evening peak hour. Recommended minimize measures include the construction of a new interchange on U.S. Highway 27/280 with Cusseta Road south of Hourglass Road.

Transformation Alternative A LOS – Overall Impact

When making an overall comparison between the No Action Alternative and Alternative A, there are more intersections failing under Alternative A than under the No Action Alternative (see Table 4.5-6).

Additionally, there is also an increase in the number of intersections at LOS C or D than under the No Action Alternative. These results demonstrate that, as expected, the additional development and associated traffic volumes increase the traffic and delays at Fort Benning.

Table 4.5-6: Overall LOS Comparison

LOS	AM Peak		PM Peak	
	No Action	**Transformation Alternative A**	**No Action**	**Transformation Alternative A**
E or F (failed)	4	10	5	10
C or D	5	5	2	7
	AM Peak		**PM Peak**	
Intersections with any decrease in LOS between No Action and Transformation Alternative A	13		16	

4.5.2.3 Transformation Alternative B (Preferred Alternative)

Under Alternative B, the projects associated with the cantonment areas would remain the same. Even though these are significantly different alternatives with respect to the range use and operations, for the purpose of analyzing the transportation impacts of these two action alternatives on the cantonment LOS, they are the same. The most significant differences between Alternatives A and B are related to the heavy maneuver range use and operations.

One unique aspect of Alternative B would be a new overpass for tank travel to the Good Hope Maneuver Area. This overpass would be located in Harmony Church, across U.S. Highway 27/280 from Old Cusseta Highway (between Kelley and Axton Roads on the southwest side of U.S. Highway 27/280) to Cornell Street (on the northeast side of U.S. Highway 27/280). This overpass would only be used by tracked tanks and HETT/HEMTTs. There were several alternatives considered for the overpass; one was to use the current tank overpass near First Division Road, the existing Eighth Division Road, the Babbitt Road Underpass, and the existing Hourglass Road bridge. The existing Eighth Division Road and Hourglass Road bridges are not rated for the weight of tanks or HETT/HEMTTs and are owned by GDOT. The Babbitt Road underpass is too narrow for the larger tanks and HETT/HEMTT vehicles. Because of these limitations, only the existing tank overpass and the new proposed overpass were deemed feasible.

The LOS for either overpass would not be an issue because they would both be dedicated bridges for tank crossings and there would be no competition of other traffic over the bridges. Construction of the overpass, however, could impact traffic LOS because of potential lane closures and detours during construction. At this stage, the overpass design has not had inputs from GDOT or Federal Highway Administration (FHWA) including height and width clearances, weight capacity of the road structure to handle the different vehicle types (BFVs, tanks, M88s, trucks, HETT/HEMTTs, etc.), slopes, drainage, pavement/gravel surface, and construction sequencing; therefore, construction LOS cannot be determined yet. The impacts due to constructing the overpass would be short-term and would not have an adverse impact on the LOS of U.S. Highway 27/280.

The overpass would require input and approval from GDOT and the FHWA and would have to comply with the Transportation Act as well as NEPA; appropriate level of NEPA analysis of the detailed plans and designs will be completed, which may involve supplemental NEPA documentation.

In summary, the LOS analysis, documented in Section 4.5 and shown in Table 4.5-5, identified key intersections that would be expected to encounter deteriorating traffic conditions stemming from implementation of either Alternative A or B. Most of the trouble spots are located along the Dixie Road corridor in the Main Post and Kelley Hill. To alleviate deteriorating conditions overall, numerous projects are recommended that collectively would be expected to provide relief throughout the corridor. In cases where the Dixie Road improvements would address LOS problems in specific intersections identified in Table 4.5-5 to be failing, those are noted.

Other minimization measures, not along the Dixie Road corridor, address specific intersections and provide overarching relief to the transportation network that could be realized in multiple locations.

Main Post

- Widening of Dixie Road to four lanes from Michael Street to First Division Road [Intersection(s) directly affected: (1) Lumpkin and Dixie, (2) Sightseeing and Dixie, and (3) First Division and Dixie] (Fort Benning 2006g).
- Widen Dixie Road to four lanes from Jacelin Road to Edmunds Road. This would connect to the 4-lane widening on Dixie Road past Edmunds Road that is already planned [Intersection(s) directly affected: Edwards and Dixie].
- The intersections of Dixie Road with Jacelin Road, Sightseeing Street and Ingersoll Street are currently unsignalized. It would be advisable to install signals at these intersections based on the expected traffic volume in 2011. [Dixie Road corridor general improvement].
- Implement signal coordination on Dixie Road from Jacelin Road to First Division Road to improve traffic progression and reduce delays at successive intersections. [Dixie Road general improvement].
- Add turning lanes on the eastbound direction for left-turn movements on Dixie Road at Sightseeing Street, Edwards Street, and Ingersoll Street. [Dixie Road general improvement]
- Add southbound left-turn movement lanes on Sightseeing Street, Edwards Street and Ingersoll Street. [Dixie Road general improvement].
- Optimize traffic signals on Lumpkin Road. [Intersection(s) directly affected: (1) Lumpkin and Vibbert, and (2) Lumpkin and Marne].
- Reconfigure intersection of Marne and Lumpkin Roads. [Intersection(s) directly affected: Lumpkin and Marne].

Kelley Hill

- Construction of an overpass for the First Division Road traffic wishing to travel north into Lindsay Creek Parkway (currently an unsignalized intersection) before 2011. That would cause the LOS at this intersection to improve substantially [Intersection(s) directly affected: First Division and Lindsey Creek] (Fort Benning 2006g).
- Widening of First Division Road to four lanes from Dixie Road to Ivy Road [Intersection(s) directly affected: First Division and Ivy] (Fort Benning 2006g).
- Additionally, upgrade of the unsignalized intersection is recommended at Dixie and First Division Road to a signalized intersection to improve the LOS. [Dixie Road general improvement].

Sand Hill

- Installing traffic signals at the intersection of 11th Airborne Division Road and 187th Infantry Regiment Street. [Intersection(s) directly affected: 11th and 187th]
- Coordinate the signals on 11th Airborne Division Road west of Moye Road to reduce intersection delays and improve traffic progression. [Intersection(s) directly affected: 11th and 41st].

Harmony Church

- Construct a new interchange on U.S. Highway 27/280 at the intersection of Cusseta Road south of Hourglass Road. The design of this project needs to consider the possibility of its use by heavy armor vehicles traveling to the training areas. [General improvement] (Fort Benning 2006g).

4.5.3 Mitigation Measures

No specific mitigation measures for transportation impacts were identified.

4.6 UTILITIES

For this EIS, utilities are the basic services required by the Transformation action to operate and include the following: potable water supply, wastewater and storm water systems, energy/power sources, communications, and solid waste.

4.6.1 Affected Environment

The ROI for direct and indirect effects of utility use associated with the proposed action and alternatives includes the Installation cantonment areas, training areas, the surrounding communities (consolidated Columbus City-Muscogee County and Cusseta City-Chattahoochee County in Georgia and Phenix City in Russell County, Alabama). The main direct utility impacts of the action alternatives at Fort Benning are concentrated in the cantonment areas and mostly affect the nearby water supply and wastewater service capabilities of the three counties. Direct and indirect impacts from the action alternatives also would affect the storm water systems, energy sources, communications, and solid waste management of the nearby communities; however, they would have a lesser degree of impact than water supply requirements. In recent years, Fort Benning has privatized the potable water, wastewater, electrical, and natural gas systems.

Construction activities for all utilities and infrastructure to support utilities identified in this section and the following subsections would be subject to the requirements of all applicable laws, regulations, and permits that may be required for construction. These may include, but not necessarily be limited to, stream bank buffers, NPDES and MS4 permits, which are described in more detail in Section 4.10.1.1.

4.6.1.1 Potable Water Supply

Fort Benning's water system is privatized and managed by the City of Columbus Water Works (CWW). Fort Benning retains ownership of the underlying lands; however, the ownership, operation, and maintenance of the buildings, systems, and associated water facilities are the responsibility of CWW. Currently, the major source of water for the Fort Benning permit is Upatoi Creek with a mean annual flow of 451 cubic feet per second (cfs). Water from Upatoi Creek is treated at the Installation treatment plant and distributed throughout Main Post, Sand Hill, Harmony Church, Kelley Hill, and the housing areas via a network of lines ranging in size from 8 to 20 inches in diameter. CWW is in the process of merging the Installation water service with that of the larger CWW system and changing the source to the Chattahoochee River, with completion expected in December 2006. There are also seven public water supply (drinking water) wells on Fort Benning proper (personal communication, Wilkins 2006). Water supply for all other areas of the Installation (such as the northern portion of the Installation and several ranges) is transported to the training compartments/sites by water buffaloes (600-gallon tanks on transport trailers). Additionally, there are three drinking-water wells in the Uchee Creek Recreation Area.

4.6.1.2 Wastewater System

There are two wastewater treatment plants that serve the entire Installation with a combined capacity of 8.4 million gallons per day (mgd) (personal communication, Wilkins 2006). The sanitary sewage

collection system consists of approximately 126 miles of 6- to 24-inch vitrified clay, cast iron, and concrete lines. Twenty-nine lift stations are required to move sewage flows across the rolling terrain of Fort Benning (personal communication, Wilkins 2006). Currently, approximately 95,000 gallons per month of anaerobically digested sewage sludge is land-applied at 10 permitted locations on the Installation. Fort Benning's wastewater systems are also privatized and managed by CWW. Planning is underway to consolidate the Installation wastewater treatment with that of the CWW system by June 2007, similar to the potable water operation. Separate wastewater treatment at the Installation would no longer occur.

4.6.1.3 Storm Water System

Storm water discharge in the Main Post area drains directly into the Chattahoochee River through a storm drain system. Other storm water on the Installation drains via culverts, ditches, swales, and natural seepage and overland flow. Storm water, from the Sand Hill, Harmony Church, and Kelley Hill cantonment areas, as well as the training compartments, drains directly or indirectly into nearby surface water bodies.

Fort Benning operates industrial activities subject to the requirements of the USEPA and Georgia and Alabama state industrial National Pollutant Discharge Elimination System (NPDES) regulations under the CWA. These regulations involve regulating storm water discharges from industrial activities that have the greatest potential to contaminate runoff. The applicable Installation industrial sectors include roads; vehicle maintenance facilities; wash racks; landfills; wastewater treatment facilities; hazardous waste storage, treatment or disposal activities; and others.

Installation sources of industrial storm water pollution have been identified in order to prevent contamination from runoff created by rain events to protect the water quality. Thousands of vehicles are served by the motor pools and this equipment is maintained so leaks are minimized; storage of POLs is managed properly; and a Storm Water Pollution Prevention Plan (SWP3) has been developed and implemented at Fort Benning. The SWP3 outlines Best Management Practices (BMPs) that have been implemented to reduce the potential for storm water pollution.

The CWA's Construction NPDES Program, Georgia Erosion and Sedimentation Control Act, and Alabama Water Pollution Control Act (specifically Alabama Department of Environmental Management Administrative Code Chapter 335-6-12) require that erosion and sedimentation controls be implemented during projects that require one or more acres of ground disturbance. Thus, depending upon the location of the project, the Army consistently obtains a General Permit for Storm Water Discharges via submittal of an NOI to the GADNR, development of an Erosion and Sedimentation Pollution Control Plan (ESPCP), and/or via submittal of a Notice of Registration (NOR) to the Alabama Department of Environmental Management and development of a Construction Best Management Practices Plan prior to implementation of actions. Additional information about storm water management is provided in Section 4.10, Water Resources.

4.6.1.4 Energy Sources

Georgia Power supplies electrical power via two 115-kilovolt feeders into its substation on Marne Road. Voltage is transformed, metered, and fed to the adjacent Flint Energies-owned substation. Transmission lines leave this substation to supply power to the cantonment areas, family housing, and other developed areas of the Installation. Low-capacity electrical service is also provided to facilities (such as the northern portion of the Installation) in ranges and training areas in the more remote sections of the Installation. There is no power generation system for the entire Installation, but emergency power generators are in place at critical locations, such as the airfield, control tower, hospital, communications center, stockade, water treatment plant, transmitter sites, radio beacon sites, and steam plants.

Atmos Energy supplies natural gas to Fort Benning at the rate of 2,700 thousand cubic feet (mcf) per day. Mission and loads at the Installation determine the volume of natural gas used. Natural gas supplies the majority of non-mobile fuel requirements at the Installation and propane is the main energy source for the ranges (personal communication, Hines 2006). The Installation uses propane as the backup and supplement to natural gas and has 25 tanks of 30,000 gallons each to provide propane storage. A peak shaving plant, constructed in 1959, is located in Building 1750, northwest of the main metering station on Edwards Street. The plant introduces a propane-air mixture to augment natural gas supply during peak loads, and is capable of providing up to 312,000 cubic feet per hour) through its 8-inch supply line. Two main distribution lines leave the Main Post metering station. One serves Main Post, with a branch to Custer Terrace family housing. The second runs to Kelley Hill and serves other family housing areas. Fuel oil is used as a backup fuel at Martin Army Community Hospital.

4.6.1.5 Communications

The official business on-Post telephone system is operated and maintained by contract. Bell South provides the residential phone service to family and bachelor housing and other non-military users. Trunks to facilitate toll-free calling between the two separate systems interconnect the Army owned and Bell South systems. Currently, there are dated communication trunks found within the Harmony Church area. Cellular phone service at Fort Benning is supplied by a cellular tower in the Main Post near the intersection of Upton Road and Hall Road, a second tower in the Harmony Church area, west of Old Cusseta Road and south of Pitts Avenue, and a third tower near Marne Road serves the Sand Hill and Kelley Hill areas (personal communication, Mickey 2006). An Installation cable system is provided by Time Warner Cable Company.

The Fort Benning Fire Department operates a fire reporting communications system. The cable is carried with the telephone cable distribution system. This system allows emergency responders to immediately locate the place of origin of any emergency called in to the control center. Another major communications system at Fort Benning is the cable television system, which is operated by a private company. The contractor has the responsibility for operation and maintenance of the system under terms of a license. The PAO operates a separate educational television system in Infantry Hall. It operates

under the call letters WFBG. The system is owned and operated by the Installation in support of military training. Currently, such systems are only available in the Harmony Church area of the Installation.

4.6.1.6 Solid Waste

Landfills. Fort Benning generates total solid waste at an estimated rate of 1,800 tons per month. The Installation does not have a permitted sanitary landfill in operation; all Fort Benning sanitary waste is transported to a state permitted transfer station in Phenix City by waste pick-up and hauling contractor. The waste is transferred to a landfill operated by Waste Management. The capacity of this landfill is unknown and Fort Benning is looking into the long-term feasibility of this landfill and other locations to dispose solid waste. There is one 12-acre approved inert landfill on the Installation in operation since 2004, but the landfill is currently about half full (personal communication, Morpeth 2006). This landfill is for Installation use only and not for contractor use. This landfill is designed to accept only inert materials such as fallen limbs and trees, concrete (free of lead base paint), and cured asphalt.

Recycling. Recycling reduces disposal cost, conserves natural resources, and minimizes environmental problems associated with land disposal. Fort Benning's policy on recycling is governed by the June 11, 2003 Policy Memorandum #200-1-8, entitled "Qualified Recycling Program." Under this policy, Army personnel and contractors are required to actively participate in the recycling program, and all of the proceeds from the program are retained by the Installation. One recycling center processes recyclable items from industrial work areas, barracks, and family housing areas. On the Main Post, six trailers with 10 bins each are available for drop-off recycling. Recyclable items include paper (approximately 117 tons per year), cardboard (approximately 76 tons per year), aluminum and tin cans (approximately 16 tons per year), glass (approximately 25 tons per year), and plastic (approximately 11.65 tons per year). Also, about 91 tons of tires, 92 tons of oil, 435 tons of scrap metal, and 274 tons of ammunition-related recycling (i.e., brass, links, shells, fuzeheads) are processed annually (personal communication, Morpeth 2006). Recyclable materials are turned-in to the Installation Defense Reutilization Marketing Service (DRMS) and the Materials Recovery Facility (MRF) for processing.

4.6.2 Environmental Consequences

The assessment of impacts to utilities is based on comparing existing use and condition to proposed changes on these resources. The analysis compares current utility usage for applicable functions with anticipated future demands to determine potential impacts. Population changes projected for the proposed project were used for forecasting utility demands, based on average per capita values whenever available. The threshold for impacts to utilities is the potential for change in demand that would result from the action alternatives to adversely affect the ability of a utility provider to service existing customers; in addition, the level of impacts is determined by the ability of facilities to effectively accommodate additional demands.

4.6.2.1 No Action Alternative

Under the No Action Alternative, Fort Benning would continue to use and generate the same types of demand for utilities as are described under the affected environment and currently being managed. Maintenance of existing utility systems would be ongoing. No change from existing impacts would occur.

4.6.2.2 Transformation Alternative A

Implementation of Alternative A would result in the need to connect and distribute supporting utility systems to multiple facility and building sites in the Main Post, Sand Hill, Harmony Church, and Kelley Hill areas including: potable water, sanitary sewer, storm drainage, electrical, information systems, and solid waste disposal. Additional utilities would be provided for the projects that would require increased capacity; otherwise, existing systems would be expected to have adequate capacity to provide for these changes. Additions to the utility systems that have been privatized would be turned over to the owner in accordance with existing agreements.

Potable Water Supply. Impacts from implementation of Alternative A would be considerable, but not adverse. The additional population would place an increased demand on the potable water system; however, water-efficient devices, such as low-flow showerheads, faucets, and toilets, would be installed in all new facilities to reduce the demand on the potable water supply. Based on a 150 gallon per day per capita use for water (Departments of the Army, the Navy, and the Air Force 1987) the total military, civilian, family members, and student population[4] of 42,088 associated with Alternative A would increase potable water demand by 5.98 mgd. However, CWW has approximately 30 mgd excess water capacity (Fort Benning Futures Partnership 2005), which is more than adequate for the increased demand. New capacity in water supply is in various stages of design and engineering in Chattahoochee and Russell counties, and Phenix City. New water supply lines would have a backflow preventer and water meter installed, and would be disinfected following American Water Works Association methods as required by Georgia Drinking Water Rule 391-3-5 (no new water lines would be installed in Alabama). Water tank repairs, water line replacement, and addition and replacements of fire hydrants would also occur.

Wastewater System. Wastewater system requirements from implementation of Alternative A would increase measurably, but would not be adverse. The projected population increase would cause an additional 3.5 mgd wastewater over the existing 8.4 mgd currently discharged. The CCW has an excess capacity of 15 mgd and can easily accept the additional 3.5 mgd. (Fort Benning Futures Partnership 2005) Additional sewer capacity is in various stages of design and engineering in Chattahoochee and Russell counties, and Phenix City. During construction and subsequent facility use, all wastewater discharges would be connected to the sanitary sewer system per Georgia Drinking Water Rule 391-3-6. An

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[4] 33,331 total population of military and civilians (Webster 2006) plus 8,757 students. Students' water requirements were split evenly between field training amount of 75 gallons/day and 150 gallons/day while in the classroom and dormitory (Departments of the Army, the Navy, and the Air Force 1987).

industrial wastewater collection system would be constructed to connect the vehicle maintenance facilities with the existing industrial wastewater treatment plant. Action alternative A would also construct a sewage pumping station and install about 81,000 linear feet (lf) of main sewer line at Harmony Church.

Storm Water System. The implementation of Alternative A would create impervious surfaces covered by buildings and paving, increasing storm water runoff; however, this increase is not considered significant or adverse. Drainage from these surfaces would be controlled using grading, curbs, drains, gutters, and other standard construction practices to minimize storm water pollution and runoff. Project design would include construction and Post-construction storm water controls designed to prevent offsite impacts from storm water runoff. Action alternative A construction projects would entail the extension, replacement, or addition of storm water drainage infrastructure through digging of trenches, either from existing lines along the nearest road or other primary locations. Trenches could also run from new buildings, roads, and motor pools to discharge points in existing systems or additional locations in local drainage systems. Sustainable design measures would be incorporated into these systems and retention and detention structures would be implemented to minimize impacts from uncontrolled storm water discharges. Any facilities constructed for industrial operations, such as vehicle maintenance shops, would be designed to meet spill prevention, control, and countermeasures (SPCC) requirements under AR 200-1, as well as applicable state and Federal requirements, and include oil water separators in those portions of the storm water system. Such measures for utility systems would reduce the potential for adverse impacts from the storm water system. Major proposed storm drainage construction projects include a total of 13,780 lf for the three phases of the new Maneuver Center Reception Station and 12,570 lf for the Trainee Barracks Complex 2. Nearly every construction project includes some amount of new storm drainage, including the range projects at 120 lf each.

Energy Sources. Increased demand for energy sources from implementation of Alternative A would be within the capability of providers and impacts are not considered adverse. The building space and facilities to be constructed, as well as increases in training, would require additional electricity. The increased electricity demand would be handled by the upgraded electrical system infrastructure planned for Alternative A. New electrical mains to the Harmony Church, hospital, and the Sand Hill substations are planned with a total of 311,871 lf of line, as well as expansion of the Harmony Church substation. Other major electrical infrastructure projects include expansion of the power distribution system from these substations to all portions of the cantonment and housing areas. Electrical and communication services would be established through digging trenches from existing lines along the nearest road or other primary utilities location and placing of new service lines in these trenches, which would then be covered with soil and become “buried” lines. Some portions of the utility lines may be above ground due to limitations on trenching from existing geologic features. Trenching and other utility line construction would occur in previously-disturbed ground to the maximum extent possible. Installing energy-efficient lighting, appliances, and insulation would reduce the demand for electricity. Increased electrical demand is not expected to overload the current power generation supplied by Georgia Power. The installation of 50,000 lf of natural gas main to Harmony Church, along with other gas distribution lines, would be

sufficient to supply the 580,240 thousand cubic feet (mcf) per year of natural gas demanded by the added personnel. The ranges would continue to be supplied by propane.

Communications. New communication huts would be constructed in Harmony Church, Sand Hill, Main Post, Martin Army Community Hospital, and along Custer Road. Expansions and updates to telephone, fiber optic and similar information systems would be made to communication trunks as necessary. Redundant and modern telecommunications infrastructure currently exists, and the wireless network and capacity is growing; communication capacity would accommodate the population influx. The implementation of Alternative A would not have an adverse impact on communications at Fort Benning.

Solid Waste. The building space and facilities to be constructed would generate construction and demolition debris that is generally concrete block or brick and metal. Concrete or brick material would be crushed by the contractor and recycled to the extent possible as roadbed stabilization material throughout the Post. With Alternative A demolition and construction projected over a multi-year period, the amount of recyclable debris should be readily consumed for road improvements. Any excess material not able to be utilized in this manner would be hauled away by the contractor to a permitted landfill. Asbestos may be encountered as structures are remodeled or demolished to accommodate new facilities. Asbestos, if encountered, would be removed by licensed contractors in accordance with applicable federal and state laws and regulations and disposed of in a local asbestos-permitted landfill (see also Section 4.9, Hazardous Materials, Toxic Substances, and Hazardous Waste). To the extent practical, scrap metal would be recycled by the appropriate contractor.

Long-term increases of on-Post solid waste generated would occur and these increases would incur an associated rise in costs paid to local solid waste disposal, but would be within the capacity of the existing waste collection and disposal system. The Installation recycling program would continue to be implemented to minimize solid waste streams. With the relocation of the Armor School and Center from Fort Knox to Fort Benning, it is assumed that the same amount of recycling of ammunition debris from the firing ranges would be recycled at Fort Benning as had been recycled at the Fort Knox ranges. This amounted to 100 tons of small arms brass, and 23.6 tons of scrap aluminum from tank rounds in 2005 (personal communication, Poppert 2006), with the corresponding revenue returned to the Installation. Other miscellaneous units relocated to Fort Benning would add supplementary amounts of ammunition recycling; however, these amounts would be insignificant compared to the tonnage associated with the aforementioned small arms and tank rounds. Alternative A would not have an adverse impact on solid waste disposal at Fort Benning.

Summary. Based on approximate numbers of existing and proposed military and civilian personnel, and on-Post military family members, estimated utility use would increase accordingly, by approximately 40 percent. Sustainable design measures would be implemented to minimize impacts to utility usage. Overall, implementation of Alternative A would result in substantial increased use of utility systems and services in the cantonment areas and local communities; however, these impacts are not considered adverse impacts because each utility system has the capacity to meet these increased demands.

4.6.2.3 Transformation Alternative B (Preferred Alternative)

Action alternative B is the same for utility use and availability as described under Alternative A and the resulting impacts would be the same as under alternative A. In the training areas that differ from Alternative A, no new potable water supply, wastewater systems, energy sources, or communication lines would be needed in the vehicle recovery area, drivers training, and off-road drivers training areas. However, utilities would be installed along the main access road to the proposed Good Hope Maneuver Area (extending from the southern end of the Harmony Church area) and under Alternative A, this utility infrastructure would not be needed. Storm water runoff would be minimized through BMPs described under Alternative A. No adverse impacts to utilities would result from implementation of Alternative B.

4.6.3 Mitigation Measures

No significant impacts are anticipated under either Alternative A or B for utilities; therefore, no mitigation measures are required.

4.7 NOISE

In this section, noise is defined, the existing noise environment at Fort Benning is presented, and then compared with the potential impacts of the alternatives are analyzed; the cumulative noise environment is presented in Section 4.15.

Not all people are affected the same way by the same sounds. In varying situations common sounds can interfere with our speech, disturb our sleep, or interrupt a routine task. When this occurs, these sounds become noise. Noise, therefore, is the term used to identify disagreeable, unwanted sound that interferes with normal activities or diminishes the quality of the environment (USACHPPM 2006b). Just as some people find hard rock music annoying, others find it soothing and relaxing; it is that way with sound generated from military activities—some hear the sound of freedom, others find it annoying, while many think of it both ways.

Sound intensity is measured in units called decibels (dB). The dB system of measuring sound provides a simplified relationship between the physical intensity of sound and its perceived loudness to the human ear. The dB scale is logarithmic; therefore, sound intensity increases or decreases exponentially with each dB of change. For example, 10-dB yields a sound level 10 times more intense than 1 dB, while a 20-dB level equates to 100 times more intense, and a 30-dB level is 1,000 times more intense. Table 4.7-1 presents sound levels in decibels (or dB) for typical sounds found in our environment and the reaction that might occur when a person (or receptor) is exposed to this noise.

Table 4.7-1: Common Sound Levels Measured in Decibels

Source (at a given distance)	Decibel (dB) Level	Typical Reaction
Civil Defense Air Siren (100 ft)	140	Pain
	130	
Jackhammer (50 ft)	120	Maximum Vocal Effort
Pile Driver (50 ft)	110	
Ambulance Siren (100 ft)	100	Very Annoying/ Discomfort
Motorcycle (25 ft) Power Lawnmower	90	
Garbage Disposal (3 ft) Alarm Clock	80	Intrusive
Vacuum Cleaner (3 ft)	70	
Normal Conversation (5 ft) Dishwasher	60	Normal Speech
Light Traffic (100 ft)	50	
Bird Calls (Distant)	40	Quiet
Soft whisper (5 ft)	30	
Human Breathing	20	Just Audible
	10	
	0	

The Army uses a widely accepted metric to measure environmental noise levels for their activities, the day-night sound level (DNL) measurement. This metric is recommended by the USEPA, used by most federal agencies when defining their noise environment, and applied as a land-use planning tool for

predicting areas of potential annoyance both inside and outside of an Installation. DNL describes the average daily acoustic energy over an entire year—meaning that the whole spectrum of sound, from quiet to loud noises, is averaged across the year. The DNL metric also incorporates a "penalty" for nighttime noise (normally 10:00 p.m. to 7:00 a.m.) when loud sounds are more noticeable and annoying. However, when measuring noise levels from small arms and large caliber sources, weighted noise metrics are used (USACHPPM 2006b).

The weighted measurements screen out the very high and low sound frequencies that cannot be heard by humans. A-weighted noise measurements reflect what people hear, noted as dBA or ADNL. A-weighting is typically applied to measuring noise for small arms activities. For low-frequency sounds that can cause vibrations, a C-weighting metric is used; noted as dBC or CDNL. Many find that these lower frequency sounds like artillery and explosions are more annoying than other noises so that is taken into account in this metric.

Noise Modeling. To derive the noise level contours, the following software models are used for evaluating small arms ranges, large caliber ranges, and airfields:

- Small Arms Range Noise Assessment Model (SARNAM) calculates and displays noise level contours (in dBA of DNL) for firing operations at small arms ranges. It considers the type of weapon and ammunition, number of rounds fired, range attributes such as size and barriers, metrics, time of day weapons are used, and the directivity of both muzzle blast and projectile.
- BNOISE2 calculates and portrays noise level contours for C-weighted events for large caliber weapons. It considers the weapon, ammunition, rounds fired, time of day fired, range size, and direction of both the muzzle and projectile.
- NOISEMAP is used to generate noise level contours in DNL around an airfield. The model uses the aircraft type and number; the takeoffs, landings, touch and goes, as well as closed patterns; and time of operation to depict noise levels at an airfield (USACHPPM 2006c).

All of these models, in conjunction with the LUPZ, are used to characterize the noise environment found within and adjacent to an active Installation such as Fort Benning.

Noise Perception. When hearing the noise, the reactions of people can be affected by a number of variables:

- Intensity (how loud the noise is),
- Duration (does it last a second or an hour),
- Repetition (does it occur every day or once a month),
- Abruptness of the onset or stoppage of the noise (does it startle or come about at unpredictable times),
- Background noise levels (does the person hearing the noise live in an urban or rural environment),
- Interference with activities (does it interrupt phone conversations, listening to the radio or television),
- Previous community experience with the noise (some neighbors may be new or have lived there for most of their lives),
- Time (does noise occur in the middle of the day or night),
- Fear of personal danger from the noise sources (can the noise be associated with ammunition escaping from the Installation boundary), and
- Extent that people believe the noise can be controlled (USACHPPM 2006b).

All of these factors play into how annoyed the community may feel at any one time when noise is generated at an Installation like Fort Benning. To assist the community in land-use planning and zoning, the Army uses planning zones where noise levels are separated into four categories associated with noise level contours: Land Use Planning Zone (LUPZ), Zone I, Zone II, and Zone III. The paragraphs below and Table 4.7-2 present these zones and the types of activities that are considered compatible within these zones (USACHPPM 2006b).

- **LUPZ** – is an area around a noise source which is between 60 dBA or 57 dBC and 65 dBA and 62 dBC. These areas are a buffer in Zone I where the noise could reach Zone II levels during periods of increased operations. This zone is used to provide the community with additional information regarding land use decisions. LUPZ contours are generally shown on land use planning noise documents.
- **Zone I** – includes all areas around a noise source in which DNL is less than 65 dBA or 62 dBC. This area is usually suitable for all types of land use activities (e.g., homes, schools, and hospitals). LUPZ contours are preferred and will be used for this EIS rather than Zone I areas because the LUPZ has a lower limit of 60 dBA or 57 dBC. Zone I on maps are simply areas that are neither Zone II nor Zone III.
- **Zone II** – consists of an area where the DNL is between 65 and 75 dBA or 62 and 70 dBC. Exposure to noise within this area is normally incompatible with noise-sensitive land uses and use of the land within the zone should normally be limited to activities such as industrial,

manufacturing, transportation, and resource production (e.g., industrial parks, factories, and highways).

- **Zone III –** is an area around the source of noise in which the DNL is greater than 75 dBA or 70 dBC. The noise level within this zone is considered incompatible with noise sensitive land uses such as churches, schools, parks, playgrounds.

Table 4.7-2: Zone and Compatibility

Zone	Decibel A-weighted/ C-weighted	Compatibility Level
LUPZ	60 to 65 dBA / 57 to 62 dBC	Compatible
I	<65 dBA / <62 dBC	Compatible
II	65 to 75 dBA / 62 to 70 dBC	Normally Incompatible
III	>75 dBA / >70 dBC	Incompatible

4.7.1 Affected Environment

For noise the affected environment, or ROI, includes those areas potentially impacted by noise generated at the Installation from small arms, large caliber, and aircraft operations. These areas are found adjacent to the Installation boundary. For Fort Benning this includes the urban areas of Columbus, GA and Phenix City, AL. The background noise environment in an urban setting includes noise generated on highways, street traffic, police/ambulance sirens, aircraft, construction activities, railroads, and commercial and industrial activities. In small towns around Fort Benning like Buena Vista, Cusseta, Juniper, and Upatoi, GA, the usual background noise is vehicles, lawn mowers, and overflying aircraft. Rural areas also lie to the east, southwest, and south of Fort Benning and consist of various farms, residences, and timberlands. Background noise in these areas would typically consist of vehicles and agricultural equipment. Adjacent to the Installation, sensitive receptors largely consist of residential homes and farms.

Noise generated at Fort Benning comes from small arms firing, mortar, tank gun and artillery firing and impacts, pyrotechnical devices (e.g., flares), rotary and fixed-wing tactical aircraft, and heavy-tracked vehicle operations. Figures 4.7-1 and 4.7-2 present the noise levels generated through these various activities and illustrate the general noise environment around the Installation. The U.S. Army Center for Health Promotion and Preventive Medicine (USACHPPM) used the BNOISE2 noise simulation program to analyze large caliber weapons noise and develop noise contours. Fort Benning Directorate of Training provided USACHPPM with the operational data to create the noise contours. Unlike topographic contours on a map, noise contours are not intended to be precise representations of noise zones. Geographic features, forest canopy, weather conditions, and the receiver's perception of the source, can influence the impact of noise. Noise contours cannot be so precise as to define one side of a noise contour line as clearly compatible and the other as incompatible. However, the use of noise contour maps has proven to be a reliable planning tool in noise-affected areas throughout the United States (Fort Benning 2004b).

Within the Installation, sensitive noise receptors include the hospital, schools, and housing/barracks area. Much of Harmony Church and Sand Hill, , and portions of the Main Post cantonment area (including the

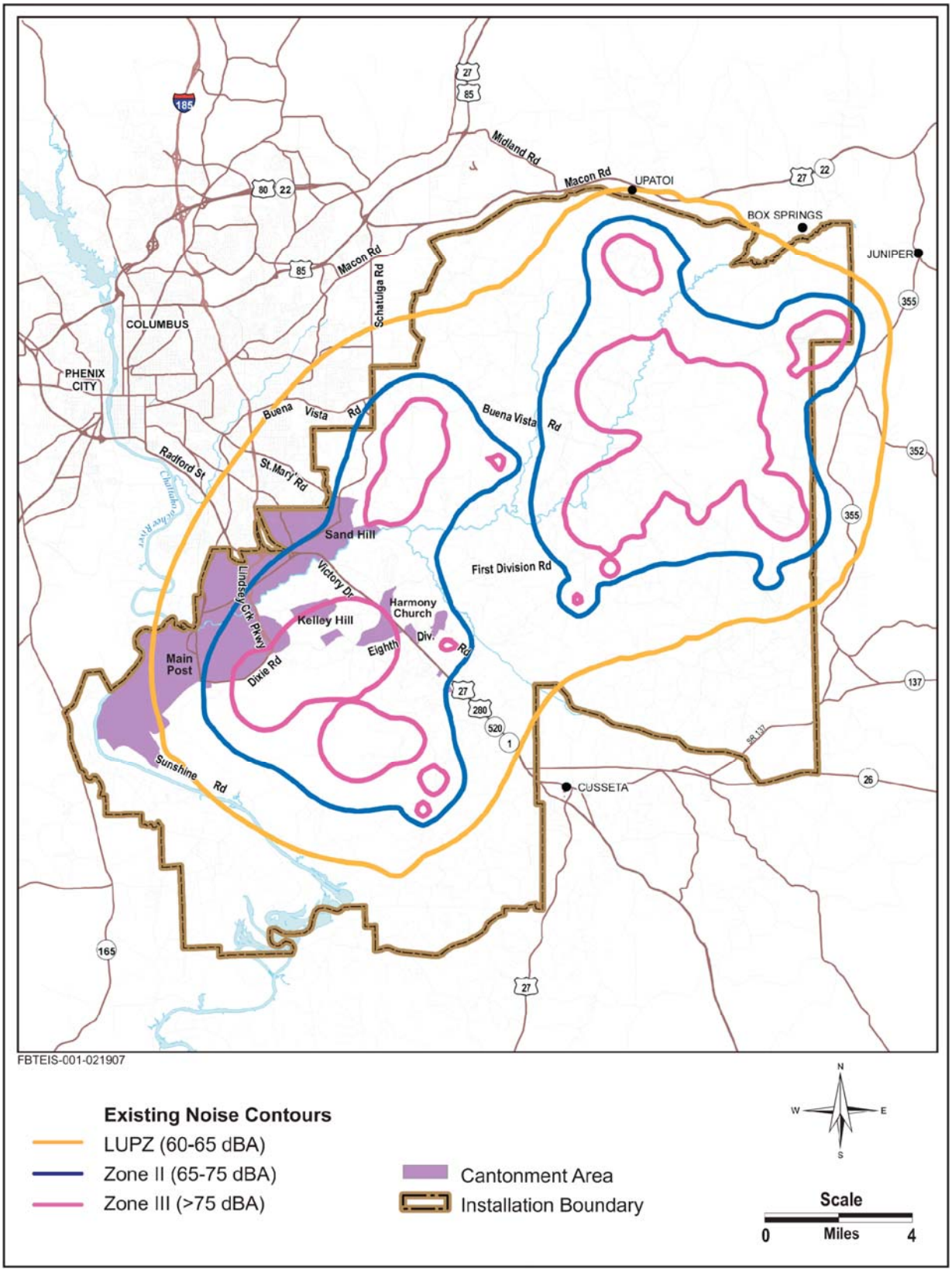


Figure 4.7-1: Existing Noise Contour Levels Generated from Large Caliber Weapons

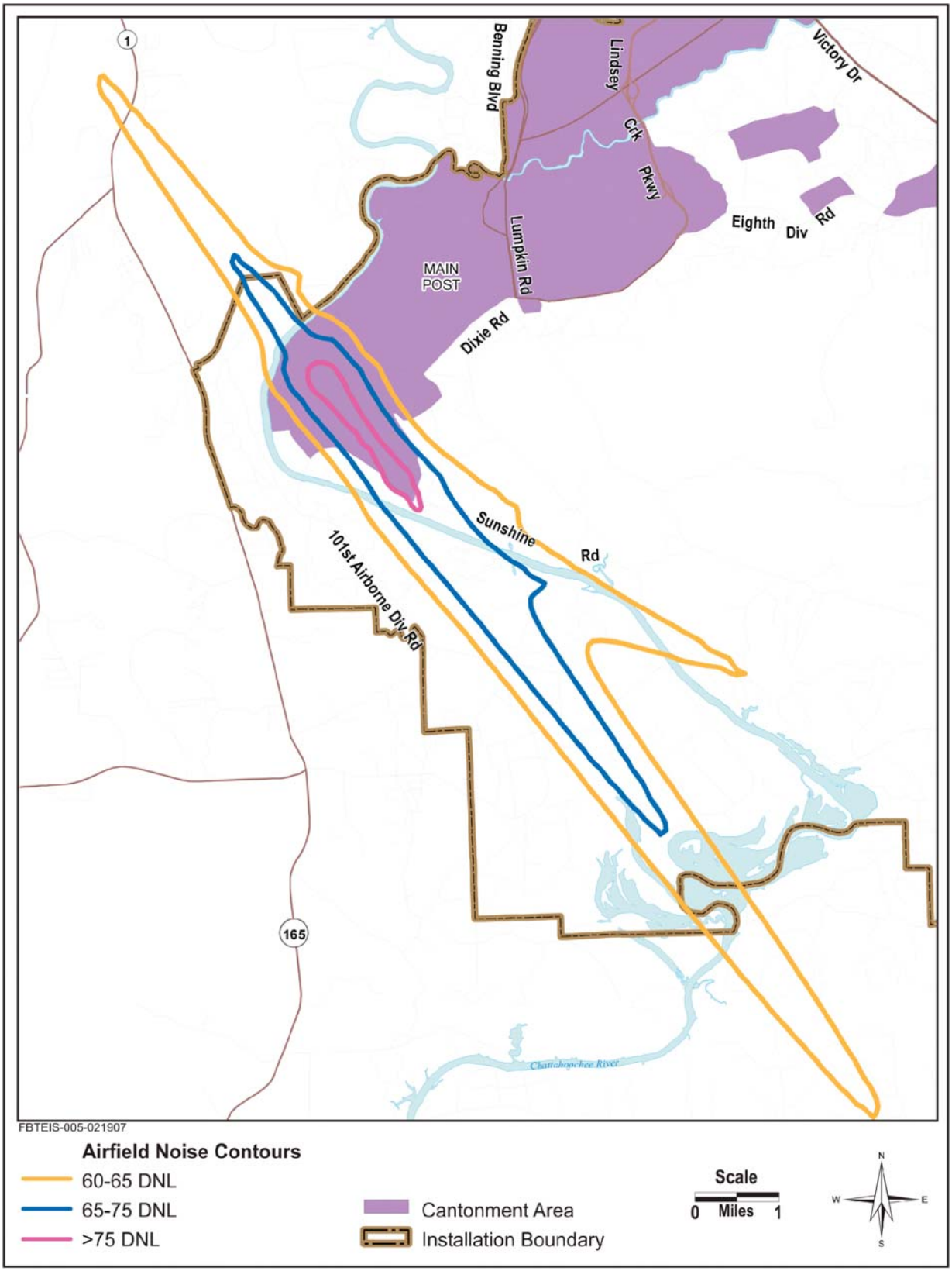


Figure 4.7-2: Existing Noise Contour Levels at Lawson AAF

Community Life/Davis Hill Youth Centers in Bouton Heights) are within Zone III. The remainder of the Harmony Church and Kelley, much of Sand Hill, and portions of the Main Post cantonment areas are in Zone II. The eastern portion of Sand Hill and the central portion of Main Post are within the LUPZ. The westernmost portion of the Main Post cantonment area is the only portion of a cantonment area that is found outside the LUPZ noise contour. Incompatible land uses are limited to the noise sensitive land use located in the Main Post and Sand Hill within Zone II, which includes portions of the Davis Hills, Bouton Heights, Iron Triangle, Perkins Place, Custer Terrace, and McGraw Manor family housing areas and child/youth development centers.

Under existing conditions, Noise Zone III extends off Post in western Marion County between the eastern boundary of the Installation and State Route 355 in the vicinity of County Road 69 and Turrentine Road. This area encompasses 290 acres. Land use is primarily agricultural and residential, with the exception of the residential area just east of Hastings Range, the rest of the area is compatible with Noise Zone III. Noise Zone II extends off Post in two locations in western Marion County, covering approximately 1,270 acres and in an approximately 140-acre area supporting incompatible low-density residential land uses in eastern Columbus Planning District 11. In terms of sensitive noise receptors, there are two schools and an undetermined number of rural residences located in existing Noise Zone II. The LUPZ extends into approximately 12,000 acres of eastern Muscogee County; 7,240 acres of western Marion County; 210 acres of northern Chattahoochee County; and 460 acres of Talbot County (Georgia Tech 2005, Fort Benning 2006d).

Currently, planning efforts at Fort Benning associated with noise and adjacent land use compatibility are found in the ACUB and in two plans in development, an Installation Operational Noise Management Plan and a community Joint Land Use Study Plan. These plans present recommendations to the surrounding counties/municipalities for adopting both a noise disclosure and a noise easement ordinance for areas within the LUPZ, Noise Zone II, and Noise Zone III, as well as within a planning area adjacent to the Fort Benning boundary. Such planning efforts encourage the community to adopt ordinances that promote land use, including noise level reduction features in new noise-sensitive buildings (e.g, schools and hospitals), that is compatible with the noise produced at Fort Benning. Current planning for the Consolidated Columbus Government and the Unified Chattahoochee-Cusseta Government includes considerations for compatible land use planning within the ROI.

Lawson AAF noise levels are presented to provide the overall Fort Benning noise environment. Both fixed-wing and rotary-wing aircraft operate out of Lawson AAF. Fixed-wing aircraft are used for air-borne jump training and helicopters for troop and cargo lift training. Both fly on the established routes and within restricted military airspace. This would not change under either Alternative A or B. In addition, small arms weapons, which are everything with a caliber less than 20 mm, are currently fired throughout the Installation, but the areas in which they are used are at a sufficient distance that noise zone levels that could be incompatible with the community stay within the Installation. Therefore, for purposes of this analysis, under existing conditions, the noise contours for large caliber (heavy) weapons are used to present the most conservative (i.e., greatest) noise levels around the Installation. Table 4.7-3

provides a summary of number of acres within the noise zones both inside and outside the Installation. The land use section (4.2) provides analysis of the noise impacts to the various land uses and sensitive noise receptors; the biological resources section (4.12) evaluates potential noise impacts to animals.

Table 4.7-3: Acres within Existing LUPZs

Zone	Acres	On Post	Off Post
LUPZ	76,478	56,498	19,980
Zone II	49,484	48,053	1,431
Zone III	32,578	32,288	290

While these noise level contours represent the average noise levels over a given year, they do not necessarily reflect exactly what is heard on a day-to-day basis; however, use of these metrics is the best measurement of the noise environment over time and provides the Army and the community with a management tool for land use development.

To help reduce noise impacts on the community, Fort Benning has imposed the following voluntary restrictions:

- Firing of weapons .50 caliber or greater is restricted between 12:00 a.m. and 6:00 a.m., exceptions to this rule can only be approved in advance by a Brigade or Regiment Commander (Fort Benning 2004b).
- In addition, units have been directed that the Fort Benning PAO shall be notified of any firing during restricted hours and, in turn, the PAO distributes that information through the local news media to the public.

A noise complaint system is maintained at the Installation to address individual concerns. Civilian noise complaints may be reported to Fort Benning by calling the 24-hour Staff Duty Officer. The complaints are relayed to EMD, as well as to the parties who generated the noise and to the Installation Command. If needed, investigation and further action follows (Fort Benning 2004b).

4.7.2 Environmental Consequences

Noise is evaluated for both construction and operational activities. It is not anticipated that maintenance activities would noticeably contribute to the noise environment due to their intermittent nature and short duration. The threshold level of impacts for noise is the increase of any Zone III (incompatible) noise contours where there are sensitive noise receptors (residences, hospitals, libraries, and etc.) due to operations.

4.7.2.1 No Action Alternative

While the No Action Alternative is not a viable option under BRAC-directed actions, the environmental consequences found under this alternative are the same as those described for the affected environment. Both within the Installation and in adjacent communities there would still continue to be an adverse impact from Zone II and III noise levels. \

4.7.2.2 Transformation Alternative A

Noise impacts result from perceptible changes in the overall noise environment that increase annoyance or affect human health. Annoyance is a subjective impression of noise wherein people apply both physical and emotional variables. To increase annoyance the cumulative noise energy must increase measurably. Human health effects such as hearing loss and noise-related awakenings can result from noise. Neither of these represents an issue for Alternative A. No individual or communities would be exposed, in terms of frequency, intensity, and duration, to noise levels sufficient to affect hearing. Noise-related awakenings could occur; however, most noise-generating training and construction activities would occur during daylight hours, thereby reducing to negligible levels the potential for awakening people.

Construction. Under Alternative A, a great deal of construction would occur from the fall of 2007 through 2013. To characterize construction activity noise level, this analysis used EPA data (USEPA 1971). Based on these EPA criteria, construction noise resulting in an hourly equivalent sound level of 75 dBA at a sensitive receptor (e.g., hospital, residence, church) would represent a significant impact. Noise from construction activity varies with the types of equipment used and the duration of use (Figure 4.7-3). During operation, heavy equipment and other construction activities generate noise levels ranging typically from 70 to 90 dBA at a distance of 50 feet. Commonly, use of heavy equipment occurs sporadically throughout the daytime hours.

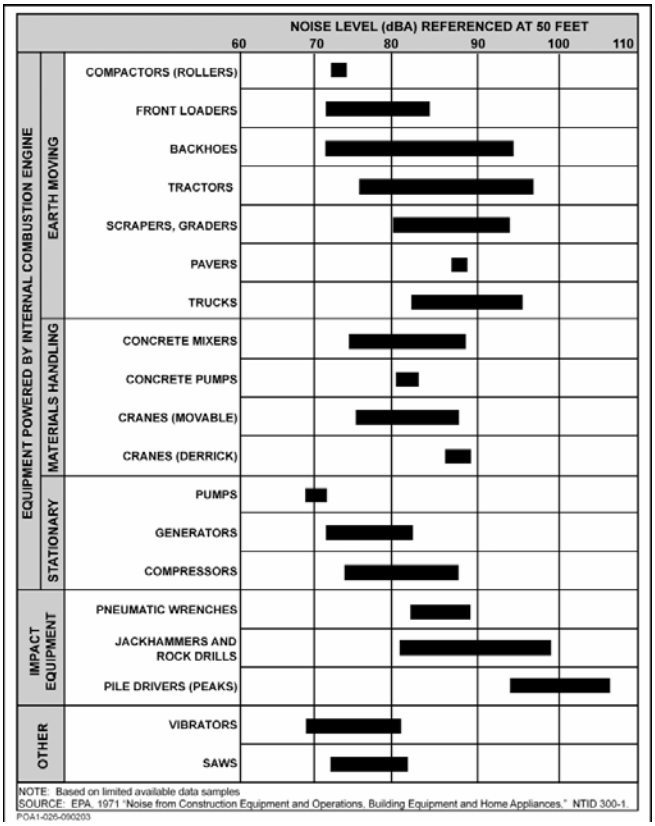


Figure 4.7-3: Common Construction Noise Levels

Although construction would occur over a 6-year time frame, minimal to negligible impacts (both inside the Installation and outside in adjacent communities) from construction noise would result for the following reasons.

- Heavy equipment that would generate the highest noise levels would not be used consistently enough to exceed the hourly equivalent noise level of 85 dBA for more than 1 hour beyond the boundaries of the Installation. National Institute for Occupational Safety and Health (NIOSH) sets a recommended exposure limit for *consistent* exposure to noise levels at 85 dBA, over an 8-hour period; anything greater than 85 dBA is considered hazardous (NIOSH 2006).
- Outdoor noise levels at the closest sensitive receptors—residences in Vista—would be reduced by approximately 20 dB to 30 dB, respectively, as a result of distance attenuation. Additional attenuation from the terrain would further reduce the effects of construction noise.
- Temporary increases in truck (e.g., dump trucks, fill transports) traffic within and near the construction corridor would produce localized noise for brief periods, but would not create any adverse noise impacts to human health, the neighboring community, or within the Installation.

Operations. Large-caliber weapon impulse noise is measured using the C-weighted metric, already defined in Section 4.7. Impulse noise generated from both Alternative A and Alternative B is presented in Figure 4.7-4 and Table 4.7-4. Noise generation would not differ for either alternative because the large-caliber range locations remain the same under both alternatives; therefore, the noise generated from these operations would be the same. Under both alternatives, noise contour levels will increase both on Post and off Post.

Table 4.7-4: Acres within Existing and Projected LUPZs

Zone	Existing			Projected			On Post % Change	Off Post % Change
	Acres	On Post	Off Post	Acres	On Post	Off Post		
LUPZ	76,478	56,498	19,980	111,780	58,403	53,377	3.37	167.15
Zone II	49,484	48,053	1,431	59,003	51,844	7,159	7.89	400.32
Zone III	32,578	32,288	290	43,260	42,959	301	33.05	3.88

On-Post Projected Noise Environment. Only a small portion of the Main Post cantonment area and the very eastern edges of the Sand Hill cantonment area would be within Noise Zone III. Noise Zone II would be reduced to include only the northeastern corner of Sand Hill, the southeastern portion of Main Post, and the southern and eastern edges of Harmony Church. The majority of the cantonment area lands would remain in the LUPZ. Some existing noise sensitive land uses (such as residences, hospital, child development center, and chapel) would continue to be exposed to incompatible noise exposure levels in Zone III. The proposed trainee barracks complex in eastern Sand Hill would be partially within Noise Zone III. The site for the proposed hospital replacement project in Main Post would be partially within Noise Zone II. Given the other natural and cultural resource constraints affecting available land for development and the training and range requirements, such impacts could not be avoided. Land use

incompatibilities with noise exposure levels within an Installation boundary are typically less of a problem than those outside of an Installation, because those who live and work on a military installation are cognizant of the predominant importance of the military mission and are less likely to complain about noise. In addition, the noise is intermittent and would not adversely impact on-Post residents' hearing or health.

Off-Post Projected Noise Environment. The 4 percent (approximately 10-acre) increase in off-Post exposure in Zone III would occur in the same location (but expanded) that is currently impacted by Zone III noise exposure: in Marion County between the eastern boundary of the Installation and State Route 355 in the vicinity of County Road 69 and Turrentine Road. Existing land use in this area is agricultural, which is compatible with this zone. There are no known noise sensitive land uses in this area; however, there is one residence that is at the transition between Zone III and Zone II at this location.

The 400 percent (approximately 5,730-acre) increase in off-Post Noise Zone II exposure represents an increase of approximately 3,650 acres in Marion County; 920 acres in Columbus/Muscogee County; and 1,150 acres in Talbot County, affecting the following areas.

- Eastern Marion County Area: This area is located at the northeastern boundary of the Installation. Existing Noise Zone II and LUPZ noise exposure affects portions of this area. Land use is primarily agriculture and forestry (see Figures 4.7-4 and 4.2-3). Noise sensitive land uses in the area are widely dispersed rural residences and churches.

Agricultural lands in western Marion County that would be located within Noise Zone II under either alternative

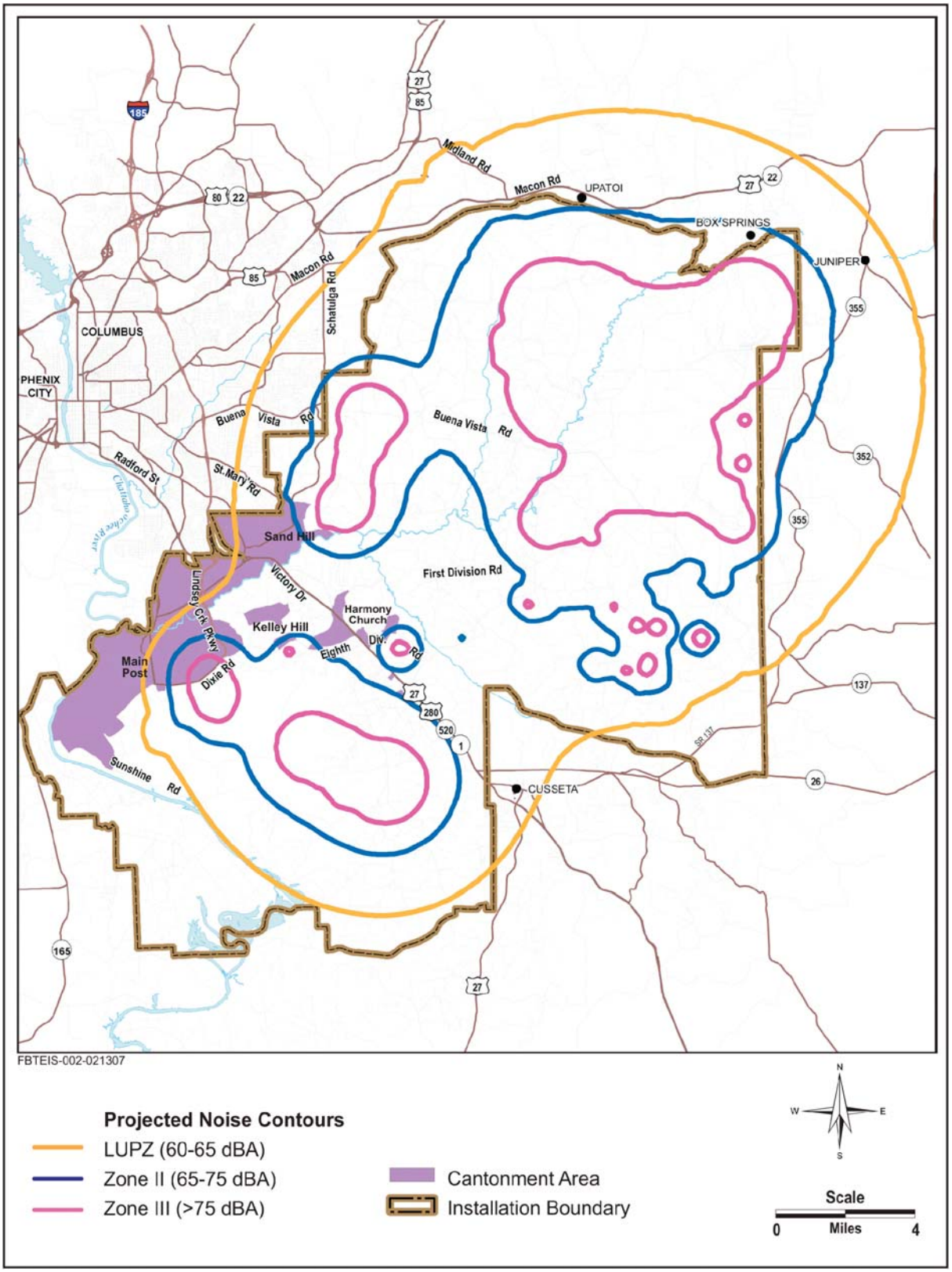


Figure 4.7-4: Projected Noise Contour Levels Generated from Large Caliber Weapons under Alternatives A and B

- Southwestern Talbot County/eastern Columbus Panhandle-Chattsworth Road Area: This area includes the southwestern corner of Talbot County south of Macon Road/U.S. Highway 80, the southeastern panhandle area of Columbus Planning District 4 south of Macon/U.S. Highway 80, and some areas in the southwestern panhandle area along Chattsworth Road (see Figure 4.7-4). Land cover in this area is primarily forestry, with some development associated with the roadways. Existing and future planned land use for the area is rural residential (see Figure 4.2-2). Noise sensitive land uses include rural residences and churches. Portions of this area are currently within the LUPZ, but are not within existing Noise Zone II.
- Eastern Columbus Planning District 11 Area: This area includes the eastern portion of Columbus Planning District 11. A small portion of this area, which currently supports low-density residential land use south of Buena Vista Road along Walters Loop, is currently within Noise Zone II. Under the proposed action, additional lands to include low-density and medium-density residential lands uses, commercial land uses, Green Acres Cemetery, Carver Park, industrial, and some undeveloped land uses in this area would fall within Noise Zone II (See Figures 4.7-4 and 4.2-2). There would be incompatibilities with noise sensitive land uses in this area.

As compared to the existing condition for sensitive land use receptors within Noise Zone II, there would be three churches and one additional school (for a total of three schools) that would be sensitive land use receptors under either alternative. No adverse impacts to sensitive noise receptors are anticipated.

The 167 percent (approximately 33,400-acre) increase in off-Post LUPZ exposure would include much of eastern and northern Columbus/Muscogee County, southern Harris County, southwestern Talbot County, western Marion County, and northern Chattahoochee County (see Figure 4.7-5). Currently, the LUPZ does not include Harris County, only includes the northernmost corner of Chattahoochee County, does not cover much of eastern and the panhandle area of Columbus, and covers a smaller area of western Marion county (see Figure 4.7-1). Lands within the LUPZ would increase by approximately 13,360 acres in Marion County; 9,420 acres in Columbus/Muscogee County; 6,090 acres in Talbot County; and 4,360 in Chattahoochee County; and approximately 250 acres in Harris County. Although there are no land use incompatibilities in the LUPZs, the increased area of noise exposure may result in noise management issues for the Installation but would not introduce adverse impacts.

Although the noise and Accident Potential Zones associated with Lawson AAF extend off Post in South Columbus and small portions of Russell, Stewart, and Chattahoochee counties (see Figure 4.7-2); they would not change under either alternative, the potential for incompatible development within these zones increases with increased development pressure on these adjacent lands. Because the Transformation action is expected to spur growth in the communities adjacent to Fort Benning, the importance of continuation of existing efforts to work with local government to plan for compatible development is underscored.

4.7.2.3 Transformation Alternative B (Preferred Alternative)

Under Alternative B, some of the maneuver areas and ranges are relocated, but for the purposes of the noise analysis, the changes do not affect the heavy artillery use and only slightly affect small arms use, therefore, the noise conditions described for Alternative A would apply to Alternative B. The only exception would be off-Post residents adjacent to the Good Hope Maneuver Area (such as the town of Cusseta) who might experience increased noise associated with training; however, this increase would not impair hearing or significantly increase the level of annoyance. No adverse impacts are anticipated. No small arms or artillery would be used; however, firing of blank-ammunitioned training devices would occur and would be generated from other areas on the training ranges and represent a minor (but not adverse) impact due to the increase in the number of training operations from that currently done by Ranger training.

In summary, while noise in LUPZ and Zone II levels adjacent to the Installation would increase considerably under either alternative there would not be any adverse noise impacts. Communities residing in these areas would experience increased noise levels but not at a level that would be adverse; tracked vehicle noise (similar to heavy earth moving equipment) would increase along roads adjacent to Installation boundaries and noise levels outside the Installation boundary would grow but would not be at such a level (refer to Figure 4.7-3) or duration to cause any hearing or health impacts. Within the Installation, increased noise levels would be experienced in the cantonment areas. These noise levels would not be at such a level or duration to adversely impact hearing or health; however, incompatible uses would continue as found under baseline conditions.

4.7.3 Mitigation Measures

No mitigation for noise impacts within Fort Benning has been identified. Fort Benning is in the process of developing an Installation Operational Noise Management Plan to establish programs to achieve the maximum feasible compatibility between the noise environment and noise-sensitive land uses. During the design phase, reasonable, economical, and practical measures may be taken to minimize noise exposure for the proposed trainee barracks complex in eastern Sand Hill and the hospital replacement project in Main Post, subject to the overriding need to ensure the safety and/or effectiveness of military operations.

4.8 AIR QUALITY

For this EIS, air emissions are generated as a result of the Transformation activities and include construction which is, by definition, temporary in nature and initiated to support the Transformation action on the Installation and permanent operational and maintenance activities that are undertaken to support the proposed action once it has been established at Fort Benning.

4.8.1 Affected Environment

The ROI for air emissions associated with the proposed action geographically covers the counties of Chattahoochee and Muscogee, GA; and Russell, AL, which include the Installation cantonment area, training areas, and maneuver corridors; and the cities of Columbus, GA, and Phenix City, AL. This ROI is the same area the EPA has used to determine regional air quality.

4.8.1.1 Ambient Air Quality Conditions

Air quality in a given location is described by the concentration of various pollutants in the atmosphere. A region's air quality is influenced by many factors including the type and amount of pollutants emitted into the atmosphere, the size and topography of the air basin, and the prevailing meteorological conditions.

The significance of the pollutant concentration is determined by comparing it to the federal and state ambient air quality standards. The Clean Air Act (CAA) and its subsequent amendments (CAAA) established the National Ambient Air Quality Standards (NAAQS) for six "criteria" pollutants: ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulate matter less than 10 microns (PM_{10}), $PM_{2.5}$, and lead (Pb). These standards (Table 4.8-1) represent the maximum allowable atmospheric concentrations that may occur while ensuring protection of public health and welfare, with a reasonable margin of safety. Short-term standards (1-, 8-, and 24-hour periods) are established for pollutants contributing to acute health effects, while long-term standards (quarterly and annual averages) are established for pollutants contributing to chronic health effects. The GA Environmental Protection Division (GEPD) adopted the NAAQS as the standards for the state.

Table 4.8-1: Georgia and National Ambient Air Quality Standards[a]

	AVERAGING TIME	PRIMARY[b,c]	SECONDARY[d]
Ozone (O_3)	1 Hour	0.12 ppm[e]	Same as Primary
	8 Hours [f]	0.08 ppm	
Carbon Monoxide (CO)	8 Hours	9.0 ppm	None
	1 Hour	35 ppm	
Nitrogen Dioxide (NO_2)	Annual Arithmetic Mean	0.053 ppm	Same as Primary
Sulfur Dioxide (SO_2)	Annual Arithmetic Mean	0.03 ppm	None
	24 Hours	0.14 ppm	
	3 Hours	---	0.5 ppm
Particulate Matter (PM_{10}) [g]	24 Hours	150 $\mu g/m^3$	Same as Primary
Particulate Matter ($PM_{2.5}$)	Annual	15 $\mu g/m^3$	Same as Primary
	24 Hours	65 $\mu g/m^3$ [h]	---
Lead (Pb)	Quarterly Arithmetic Mean	1.5 $\mu g/m^3$	Same as Primary

Source: USEPA 2006.

Notes *a: These standards, other than for ozone and those based on annual averages, must not be exceeded more than once per year. The ozone standard is attained when the expected number of days per calendar year with a maximum hourly average concentration above the standard is equal to or less than one.*
b: Concentration is expressed first in units in which it was adopted and is based upon a reference temperature of 25°C and a reference pressure of 760 mm of mercury. All measurements of air quality must be corrected to a reference temperature of 25°C and a reference pressure of 760 mm of Hg (1,013.2 millibars); ppm in this table refers to ppm by volume, or micromoles of regulated air pollutant per mole of gas.
c: National primary standards are the levels of air quality necessary, with an adequate margin of safety, to protect the public health.
d: National secondary standards are the levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a regulated air pollutant.
e: ppm = parts per million by volume, $\mu g/m^3$ = micrograms per cubic meter.
f: The 8-hour ozone standard only applies to Chattanooga, TN-GA, Catoosa Co (Subpart 1 EAC).
g: USEPA promulgated new standards for Particulate Matter, including removal of the PM_{10} annual standard. This revision went into immediate effect in September 2006.
h: USEPA promulgated new standards for Particulate Matter, including a reduction in the $PM_{2.5}$ 24-hour standard, from 65 ug/m^3 to 35 ug/m^3. This revision will go into effect in April 2010.

The affected environment for this EIS is specifically Muscogee, Chattahoochee, and Russell Counties. This portion of GA and AL is presently designated by the EPA as in attainment for all required standards for criteria pollutants. Table 4.8-2 presents total annual emissions of criteria pollutants for the multiple-county Columbus, GA-AL MSA potentially affected by the Fort Benning Transformation action alternatives.

Table 4.8-2: Total Pollutant Emissions Columbus, GA-AL MSA (tons/year)[a]

	CO	*VOCs*	*NO_x*	*SO_x*	*PM_{10}*	*$PM_{2.5}$*
MSA Emissions	104,634	16,139	14,926	3,500	13,201	4,001
Fort Benning[b]	10,271	406	199	0.61	989	NA[c]
Percent Contribution	9.8	2.5	1.3	0.02	7.5	NA

Sources: [a] USEPA 2005. Air Data Tier Emissions Report. Note: most recent data available are from 2001.
[b] 2003 Air Emissions Inventory (Fort Benning 2003a).
[c] $PM_{2.5}$ was not measured in the 2003 Emission Inventory. $PM_{2.5}$ is a subset of PM_{10}; therefore, emissions are less than 989 tons/year.

A locality's air quality status and the stringency of air pollution standards and regulations depend on whether monitored pollutant concentrations attain the levels defined in the NAAQS. Ambient air quality concentrations are expressed in parts per million or micrograms per cubic meter, but the standard used for describing existing and proposed air emissions is expressed in tons of pollutant per year. Areas with ambient concentrations less than these levels are in "attainment" and areas that exceed these standards are classified in "non-attainment." The Fort Benning area is currently in attainment for all criteria pollutants.

As indicated in Table 4.8-1, the EPA in September 2006 promulgated new particulate matter standards, revising the standards developed in 1997. The most significant revision is the reduction of the 24-hour $PM_{2.5}$ standard from 65 $\mu g/m^3$ to 35 $\mu g/m^3$. The assessment of attainment or nonattainment with this new standard will be based on ambient air monitoring data collected during calendar years 2004 through 2006. Based on these data, EPA will designate nonattainment areas by April 2010. At this time, while the Columbus, GA-AL MSA is considered to be in attainment for $PM_{2.5}$, monitoring data indicate that ambient concentrations of $PM_{2.5}$ are increasing, with exceedances documented at a monitoring location in Phenix City, AL and at a monitoring location in Muscogee County, GA. Efforts at the state and local level, including reduction planning, may be required to reverse the trend ahead of the EPA's data analysis for designating $PM_{2.5}$ non-attainment. Fort Benning would be required to assess actions for general conformity should the area be designated non-attainment for $PM_{2.5}$ in 2010. If this occurs, the state Agency(ies) in Georgia and/or Alabama would also be required to prepare a State Implementation Plan (SIP) for $PM_{2.5}$ and would likely pose restriction on $PM_{2.5}$ emissions.

4.8.1.2 Installation Air Pollutant Emissions

While concurrent emissions inventories for the Installation and the MSA are not available, it appears that Fort Benning emissions represent a less than 9 percent contribution of all criteria pollutants within the MSA (see Table 4-8.2). This seems justified since no major changes at the Installation have occurred during this time period to equate to significant change in air emissions.

Fort Benning is categorized as a major source of criteria pollutant emissions. The major source determination is due to the Installation's potential to emit 100 tons per year (tpy) of any one criteria pollutant, total, from all stationary sources. Stationary sources providing the greatest potential for emitting criteria pollutants include heating units and stationary internal combustion engines. Area source emissions from prescribed burning are the largest single source of criteria pollutant emissions on the Installation.

The "major source" designation triggers the provisions of 40 CFR 52.21, *Prevention of Significant Deterioration (PSD)*. The PSD provisions require Fort Benning to assess all new emission units to determine if their operation constitutes a major modification as defined in the "Georgia Rules for Air Quality Control." If a new unit fits the definition of a major 58 modification, then a construction and operating permit is required for the unit. The major source designation also subjects Fort Benning to the CAA Part 70 Operating Permit Regulations (Fort Benning 2003c), usually referred to as "Title V." Fort Benning submitted a Title V Permit application for review in 1996, as per the request of GEPD Air Permitting Section, and the state issued the Title V permit on 16 July 2003. The permit will be subject to renewal five years from the issue date (16 July 2008).

Fort Benning generates air pollutants from prescribed burning activities as part of their ongoing ecosystem management program. It is required as part of the recovery strategy for the federally listed Red-cockaded woodpecker and historical evidence indicates that prescribed burning reduces wildfires and therefore reduces unmanaged air emissions. .

4.8.2 Environmental Consequences

The assessment of impacts to air quality is based on comparing existing use and conditions to proposed changes associated with the alternatives. The analysis compares current air emissions with anticipated future emissions, including construction, operations, and maintenance, to determine potential impacts. The threshold for air quality impacts is the violation of applicable federal or state laws and regulations, such as the CAA, and the potential for any new *stationary* source (i.e., a specific facility) to be considered a major source of emissions as defined in 40 CFR 52.21, where total emissions of any pollutant subject to regulation under the CAA is greater than 250 tons per year for attainment areas. Prescribed burning would not increase or decrease under Transformation so emissions would not differ from those currently generated and is not evaluated further in this EIS.

4.8.2.1 No Action Alternative

Fort Benning would continue to generate emissions on a similar scale as in 2003 (the most up-to-date information available). Management of existing air emission sources would continue as currently occurs, unless the region goes into non-attainment for particulate matter (2.5 microns). Permit conditions would be monitored and met as has been done historically, but no changes to emission sources would occur, other than those that would be mandated by maintenance, replacement, or elimination of sources as they aged or were removed from service. Ecosystem management and training land enhancement through prescribed burning would continue.

4.8.2.2 Transformation Alternative A

The implementation of Alternative A involves a substantial, multi-year construction effort involving thousands of acres of the Installation and millions of square feet of new buildings. Additionally, as construction phases reach completion, the Transformation operations and maintenance activities begin to

phase in, with resultant operational emissions associated with boilers, emergency generators, fuel storage and refueling activities, ordnance detonation, and commuting workers, as examples.

In order to assess the air quality impacts of Alternative A proposal, emissions for both the construction and operational/maintenance segments of the action were evaluated on an annual basis. This evaluation involved review of data supplied by the Installation, including Form 1391s, *Military Construction Project Data* (U.S. Army vd), for information on the proposed construction activities and new sources that would be required as part of Alternative A. Appendix E contains the detailed emission calculations prepared to assess the air quality impacts of Alternative A.

Construction. From 2007 to 2013, numerous administrative and residential buildings, training complexes, and ranges would be developed under Alternative A, primarily in support of the relocation of the Armor School and Center. Additionally, roads, both paved and unpaved, would be either repaired or constructed to provide access to ranges and complexes. Table 4.8-3 summarizes the estimated annual emissions from these construction activities for the period 2007 through 2013.

Table 4.8-3: Criteria Pollutant Construction Emissions
Alternative A: Tons per Year

Year	VOC	CO	NO_x	SO_2	PM_{10}	$PM_{2.5}$
2007	36	126	215	24	391	50
2008	38	128	245	27	287	42
2009	46	152	211	24	356	48
2010	30	87	122	14	102	17
2011	56	61	116	13	167	23
2012	16	46	106	12	93	20
2013	13	37	102	11	34	6

VOC, CO, NO_x, and SO_2 mobile source emissions are primarily generated by diesel-fueled heavy equipment operated in the construction areas. Particulate matter emissions, in the form of PM_{10} and $PM_{2.5}$ are primarily due to fugitive dust created by land disturbance activities, which include land clearing; soil excavation, cutting, and filling; trenching; and grading. Other sources of PM_{10} and $PM_{2.5}$ include diesel emissions from heavy construction equipment and tailpipe emissions from construction worker privately owned vehicles operated within the Installation fenceline. Fugitive dust is particulate emissions released from sources that do not have a pinpoint exit such as a stack or vent. Fort Benning's Title V Permit explicitly includes GA Rules and Regulations, Chapter 391-3-1.02(2)(n) *Fugitive Dust*, with a list of possible dust reduction actions to ensure compliance. Additionally, an Erosion and Sediment Pollution Control Plan is required under the National Pollution Discharge Elimination System (NPDES) for construction activities, and this plan includes requirements for dust control in disturbed areas.

Construction activities have the potential to exceed 250 tons for criteria pollutants, however, these activities are not stationary sources, and the emissions significance threshold does not apply. These construction activities could also have the potential to exceed the GARR 391-3-1.02(2)(n) 20 percent opacity rule for fugitive dust, depending on the particular onsite controls used and local meteorological conditions. The fugitive dust emission factor for PM_{10} (which is used as part of the $PM_{2.5}$ calculation) is

assumed to include the effects of typical control measures such as routine site watering for dust control. A dust control effectiveness of 50 percent is assumed, based on the estimated control effectiveness of watering. Other or additional controls, such as those presented in Table 4.8-4, may be needed to ensure compliance with regulations. The EPA promulgated revised $PM_{2.5}$ standards in September 2006. The 24-hour average reduction, to 35 $\mu g/m^3$, is scheduled for implementation in April 2010 and could become an issue if results of the 2004 through 2006 monitoring period for the Columbus, GA-AL MSA indicate exceedances of the new standard. Designation of the Columbus, GA-AL MSA as nonattainment in 2010 could trigger a general conformity analysis of Transformation activities.

Table 4.8-4: Control Options[a] for General Construction Open Sources of PM_{10}

Emission Source	Recommended Control Methods(s)
Debris handling	Wet suppression Wind speed reduction
Truck transport[b]	Wet suppression[c] Paving Chemical stabilization[d]
Bulldozers	Wet suppression
Pan scrapers	Wet suppression of travel routes[b]
Cut/fill material handling	Wind speed reduction Wet suppression
Cut/fill haulage	Wet suppression Paving Chemical stabilization[d]
General construction[e]	Wind speed reduction Wet suppression Early paving of permanent roads

Source: *WRAP 2004*
a Wet suppression and paving are control methods recommended by GEPD under GARR 391-3-1.02(2)(n)
b Dust control plans (prepared by the construction contractor) should contain precautions against watering programs that confound trackout problems.
c Loads could be covered to avoid loss of material in transport, especially if material is transported offsite.
d Chemical stabilization is usually cost-effective for relatively long-term or semi-permanent unpaved roads.
e Excavated materials may already be moist and not require additional wetting.

*Operations/Maintenance***.** As operations phase in for Alternative A, possible air emissions include the operation/maintenance of additional boilers, the addition of commuter traffic, increased ordnance detonation in training, increased fuel storage and use, and an increase in the number of emergency generators located onsite. Additionally, construction of a replacement hospital will include new heating and chiller plants. Some of the new equipment will serve as replacements to aging systems. Other new equipment will be required due to the increase in Fort Benning's operational size. The Installation will have to evaluate new emission sources for construction/operating permits and for possible inclusion in the Title V permit amendments or modifications. Additional reporting, such as Tier I/Tier II or Form R requirements under the Emergency Planning and Community Right-to-Know Act (EPCRA), may be required.

Over the last several years, Fort Benning has decentralized the Installation heating system, and the net result has been a reduction in emissions as aging units are replaced with more efficient ones. Numerous

individual heating systems will be required for new facilities planned for construction under Alternative A. The vast majority of these systems will be small onsite electric or natural gas heating units that are well capable of heating under the mild winter conditions Fort Benning is subject to, and that fall under the insignificant status under GA regulations. Larger facilities, such as barracks and other sizeable complexes comprising 150,000 square feet or more, will require the Installation of one or more boilers of less than 10 million (MM) Btu/hour capacity. Additionally, new boilers that may be required will not be tied to the hot water supply system. By separating the two systems (heat and water), and limiting the allowed input capacity of the boilers, Fort Benning can ensure that boiler use is limited to the heating season, which runs from 1 November to 30 April, and may remain exempt from permitting requirements or accept operational limits if they are included in the Title V permit.

One major construction effort, involving a heating plant, is the replacement hospital for Martin Army Community Hospital. The current hospital uses three boilers, two with an input capacity of 16.2 MM Btu/hour and one with an input capacity of 36.1 MM Btu/hour. These three boilers operate year round and provide both heat and hot water to the medical facility. The primary fuel source is natural gas, but fuel oil is permitted as a backup fuel. Although Martin Army Community Hospital is to be replaced, the structure itself will remain and is expected to continue to be operational in some other capacity. Therefore, the boilers that currently are associated with the existing hospital are expected to remain in operation. The construction of the new hospital will therefore require additional boilers. Assuming that the new hospital is approximately the same size as the existing hospital, the boiler requirements will be similar. Therefore, emission estimates are based on the emissions associated with the three boilers that operate currently. The new boilers will have an input capacity of greater than 10 MM Btu/hour and, therefore, require permitting to construct and inclusion in the Title V permit.

Thus, while additional heating systems will be required to support the proposed Transformation operations, the overall impact on Installation air emissions is expected to be small.

Fuel storage is projected to increase with the relocation of the Armor School from Fort Knox to Fort Benning. This increase would be accommodated by the Installation of additional state-of-the-art tanks, primarily underground storage tanks (USTs), at specific locations. Information obtained from the *Military Construction Project Data* forms indicate that tanks will be installed at seven new locations with a capacity in excess of 200,000 gallons. The Fort Knox 2005 Emission Inventory Survey provides information on annual fuel consumption, and in particular, JP-8, which is the fuel used in Armor School vehicles (Fort Knox 2005). Fuel VOC emissions from the Armor School vehicles are estimated at 8,095 pounds annually based on the 2005 fuel throughput at Fort Knox, with an estimated JP-8 fuel consumption allotment to the Armor School of 70 percent (Personal communication, Gaines 2006).

In addition to storage tanks for mobile source fuels, tanks to store fuel for stationary engines (such as emergency generators) will also be required. These tanks are often fairly small, and account for a minor portion of the total fuel storage capacity on the Installation. While the total number and capacity of these tanks is not known at this time, available data indicate that a minimum of 12 new emergency generators will be required as part of Alternative A. Eight of the 12 generators will be located at the new hospital.

While all emergency generators operating less than 500 hours per year are exempt from permitting requirements, an assessment of projected air emissions (see Appendix E) indicates that the emissions associated with the generators (from monthly testing) would be very small and would not exceed one ton per year for any criteria pollutant.

Based upon discussions with Fort Knox personnel (personal communication, Gaines 2006) engine test *cells* will not be relocated to Fort Benning as part of the Armor School move. However, the Armor School owns, and uses engine test *stands* as part of their training curriculum. Engines from mobile sources (an M-1 tank, for example) are temporarily placed outside of the engine compartment as part of maintenance training. The engines are, however, still integrally attached to the vehicles via hoses, when run on the engine test stand, and therefore remain classified as mobile sources. In accordance with 40 CFR 63.9285, a mobile engine must be uninstalled (not an integral part of the vehicle) in order to fall under the requirements of 40 CFR 63 Subpart PPPPP, National Emission Standards for Hazardous Air Pollutants: Engine Test Cells/Stands. Thus, as installed engines (mobile sources), they remain exempt as military tactical vehicles.

Other potential mobile sources would increase as a result of Alternative A. These increases would include military vehicle training on the ranges as part of the Armor School, and commuting vehicles as part of the projected increase of individuals working at the Installation. Mobile source emissions from military tactical vehicles and equipment are exempt from Georgia vehicle emission regulations. Additionally, the vehicles and equipment are exempt from Georgia fugitive dust regulations, as specified in a letter from Harold Reheis, Director, GA Department of Natural Resources (GDNR), to the Southeastern Regional Environmental Office (SREO), dated 21 April 2003, that states that the "use of vehicles and equipment in military training and military exercises, on ranges and unpaved road and trails, is not subject to Rule (n)." The letter further states "...Rule (n) is not applicable to most vehicle and equipment travel at a military base, since the travel is not a part of a process and there is no manufactured product."

Emissions from commuting workers are based on an increase of the Fort Benning population, to include a total military, civilian, family members, and student population of 42,088. Of the 14,069 representing the increase in population, 5,718 are non-student transfers and are composed of 4,486 military and 1,226 civilians. Commuting emissions from students were not included in the analysis because of their transitory nature, as well as the fact that most students are housed on the Installation and do not require commuting. Calculations of commuter traffic (see Appendix E) as a subset of this non-student transfer population (70 percent military, 100 percent civilian) indicate increases in annual local mobile source emissions, with the most substantial increase in CO projected to be in excess of 50 tons per year.

The use of ordnance on the ranges would increase with the presence of the Armor School. Increases would predominantly be in the use of small arms (.50 caliber or less) ordnance. Primary emissions resulting from ordnance detonation include PM_{10} and $PM_{2.5}$. Estimates of ordnance emissions from the Alternative A can be found in Appendix E.

Total emissions were estimated for the Alternative A and compared to the 2003 air emission inventory baseline in order to assess the impact of the increase in operation/maintenance emissions. Table 4.8-5 summarizes this comparison, taking into account the full implementation of the Alternative A, and based on emissions from commuting POVs, boiler, generators, fuel storage, and ordnance detonation.

Table 4.8-5: Criteria Pollutant Operation Emissions Under Either Action Alternative Tons per Year

	VOC	CO	NO_x	SO_2	PM_{10}
Transformation Emissions	10.5	62.7	12.1	0.30	60.4
Fort Benning 2003 Baseline[a]	406	10,721	199	0.61	989
Percent Increase	2.6	0.6	6.1	49	6.1
MSA Emissions	16,139	104,634	14,926	3,500	13,201
Regional Total Percent Contribution	2.6	9.9	1.4	0.03	7.9

[a]Air Emissions Inventory for 2003 (Fort Benning 2003a).
[b]$PM_{2.5}$ was not included in the 2003 Emission Inventory. $PM_{2.5}$ is a subset of PM_{10}; therefore, emissions are less than 989 tons/year.

Based on the best information available and calculation performed using this information, operational emissions would increase modestly from stationary sources with the implementation of Alternative A. The highest percent increase is for SO_2 emissions due to the operation of relatively large boilers needed for the new hospital. Based on current plans, these boilers will operate in addition to the boilers associated with the current hospital. The overall result still indicates that Fort Benning is a very small generator of SO_2 emissions, at less than 1 ton annually. The largest mass increases are for CO and PM_{10}, respectively. CO emission increases are largely due to an increase in commuter traffic and it should be noted that because the 2003 inventory does not take into account mobile sources, the baseline values did not include commuting traffic for 2003. Ordnance detonation is the primary source of increased PM_{10} emissions. Detailed information on calculated values for operational emissions can be found in Appendix E.

In summary, emissions due to operations and maintenance would not exceed federal and/or state standards but would have a minor impact on regional air quality due to the small increase in annual criteria pollutant emissions (see Table 4.8-5). While Fort Benning will comply with all applicable federal and state air quality regulations, mobile source emissions from construction would increase from 2007 through 2011. Given these construction emissions, regional air quality will be impacted from mobile source construction emissions under Alternative A. If the Columbus, GA-AL MSA is designated as non-attainment for $PM_{2.5}$, emissions would need to be reevaluated and a general conformity analysis may be needed to cover Transformation activities post 2010.

4.8.2.3 Transformation Alternative B (Preferred Alternative)

Emissions for stationary sources would be the same under Transformation Alternative B as presented in Alternative A. No criteria pollutants would exceed federal and/or state emissions thresholds in attainment areas. However, for construction activities, there would be an increase in total acres disturbed and therefore a matching increase in mobile source emissions from clearing and grading activities at the Good

Hope Maneuver Area and separate drivers training area and off-road drivers training area. Table 4.8-6 presents the anticipated emissions of criteria pollutants due to construction.

Table 4.8-6: Criteria Pollutant Construction Emissions
Alternative B: Tons per Year

Year	VOC	CO	NO_x	SO_2	PM_{10}	$PM_{2.5}$
2007	36	126	215	24	391	50
2008	38	128	245	27	287	42
2009	81	260	276	31	782	95
2010	63	192	187	21	474	59
2011	77	127	163	18	535	63
2012	16	46	106	12	93	14
2013	13	37	102	11	34	6

As with Alternative A, PM_{10} mobile emissions would exceed 250 tons in 2007 and 2008, but under alternative B exceedances of this level would continue through 2011. In addition, under Alternative B, NO_x emissions from mobile sources would exceed 250 tons in 2009. In summary, air quality may be impacted from mobile source construction emissions under Alternative B, but would not be adverse. Emissions from operations and maintenance activities would be minor and not adversely impact regional air quality. As with Alternative A, if the Columbus, GA-AL MSA is designated as nonattainment for $PM_{2.5}$, emissions would need to be reevaluated and a general conformity analysis may be needed to cover Transformation activities after 2010.

4.8.3 Mitigation Measures

While no mitigation measures (outside existing regulations, permits, and plans) are required, both Alternatives A and B would result in new emissions sources which will require modification of Fort Benning's Title V permit. It is not anticipated that stationary source emissions will exceed any of the established permit limits. Emissions, primarily arising from mobile sources during construction, are limited primarily to PM and to a lesser extent, CO. PM emissions can be managed in accordance with Fort Benning's Title V permit regulations, the dust control requirements that are part of any construction project's Erosion and Sediment Control Plan, as well as additional measures which are presented in Table 4.8-4. These measures will reduce the impact that construction activities may have on local air quality.

4.9 HAZARDOUS AND TOXIC MATERIALS AND WASTE

A hazardous substance is any item or agent (biological, chemical, physical) which has the potential to cause harm to humans, animals, or the environment, either on its own or through interaction with other factors. The terms "hazardous material," "toxic substance," and "hazardous waste" are used in this section, first to emphasize that they are all hazardous substances that may present a substantial threat to public health, welfare, and the environment, and second, to define the terms in reference to their unique applications under specific federal regulations.

Hazardous substances are defined and regulated in the United States primarily by laws and regulations administered by the U.S. Occupational Safety and Health Administration (OSHA), the USEPA, and the U.S. Department of Transportation (DOT). Each agency incorporates hazardous substance terminology in accordance with its unique Congressional mandate; therefore, the OSHA regulations categorize substances in terms of their impacts on employee and workplace health and safety, the DOT regulations in terms of the safety in transportation, and the U.S. EPA regulations in terms of protection of the environment and the public health.

In terms of their environmental impacts, hazardous materials, toxic substances, and hazardous wastes are regulated under federal programs administered by USEPA, including the Comprehensive Environmental Response Compensation and Liability Act (CERCLA), Emergency Planning and Community Right-to-Know Act (EPCRA), Toxic Substances Control Act (TSCA), and Resource Conservation and Recovery Act (RCRA). DoD installations are required to comply with these laws and all other applicable federal, state and DoD regulations, as well as CFR 112, EOs 13101 and 13148.

The OSHA Hazard Communication regulation (29 CFR 1910.1200) defines a hazardous chemical as any chemical which is a physical or health hazard. The definition includes chemicals which are carcinogens, toxins, toxic agents, irritants, corrosives, and sensitizers; agents which act on the hematopoietic system; agents which damage the lungs, skin, eyes, or mucous membranes; chemicals which are combustible, explosive, flammable, unstable (reactive), or water-reactive; oxidizers; pyrophorics; and chemicals which in the course of normal handling, use, or storage may produce or release dusts, gasses, fumes, vapors, mists, or smoke that may have any of the previously mentioned characteristics. Currently, OSHA regulates workplace exposure to approximately 400 substances, including dusts, mixtures, and common materials such as paints, fuels, and solvents (OSHA 2006).

In CERCLA Section 101(14), the USEPA defines the term "hazardous substance" by reference to provisions in other environmental statutes that identify substances as hazardous (e.g., the OSHA definition as described above). The USEPA definition includes any item or chemical which can cause harm to people, plants, or animals when released by spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping or disposing into the environment and any substance for which a reportable quantity is established in 40 CFR 302.4.

The DOT Hazardous Materials Regulations (49 CFR 171) define a hazardous material as a substance or material that has been determined to be capable of posing an unreasonable risk to health, safety, and

property when transported in commerce. The DOT definition includes hazardous substances, hazardous wastes, and marine pollutants.

The promulgation of TSCA represented an effort by the federal government to address those chemical substances and mixtures for which it was recognized that the manufacture, processing, distribution, use, or disposal may present an unreasonable risk of injury to health or the environment, and to effectively regulate these substances and mixtures in interstate commerce. Toxic chemical substances regulated by USEPA under TSCA include asbestos, lead, polychlorinated biphenyls (PCBs), and radon, and the TSCA Chemical Substances Inventory lists information on more than 62,000 chemicals and substances.

In regulations promulgated under RCRA, the USEPA defines hazardous waste as a solid waste which is not excluded from regulation as a hazardous waste under 40 CFR 261.4(b) and exhibits any of the characteristics (ignitability, corrosivity, reactivity, toxicity) described in 40 CFR 261; or is listed in 40 CFR 261 Subpart D; or is a mixture containing one or more listed hazardous wastes. Hazardous wastes may take the form of solid, liquid, contained gaseous, or semi-solid wastes (e.g., sludges), or any combination of wastes, that pose a substantial present or potential hazard to human health or the environment and have been discarded or abandoned. Military munitions used for their intended purposes on ranges, or collected for further evaluation, such as recycling, are not considered waste per the Military Munitions Rule (40 CFR 266.202) as incorporated by reference by the State of Georgia Environmental Rule 391-3-11-.10(3).

4.9.1 Affected Environment

The ROI for hazardous materials, toxic substances, and hazardous wastes consists of the entire Installation.

Through the combined efforts of the Safety Office, the EMD, and the Directorate of Logistics (DOL), programs have been established at Fort Benning to control the entry of hazardous substances to the Installation; to safely manage their handling and transportation within the Installation, to inform military and civilian employees of their dangers; to minimize the risk of human exposure and release to the environment associated with these substances; and to dispose of these substances in an environmentally sound manner when they are no longer useful.

4.9.1.1 Hazardous Materials Storage, Use, and Handling

Routine operations on Fort Benning require the use of a variety of hazardous materials, including POL products, solvents, cleaning agents, paints, adhesives, and other products necessary to perform vehicle and equipment maintenance, military training activities, installation upkeep, and administrative and housing functions.

The garrison activities and tenants at Fort Benning procure hazardous materials through several supply channels. The primary supply channel is the Hazardous Materials Management Program, which is centrally managed by the DOL. The DOL maintains a contract with Shaw Infrastructure, Inc. to operate a

Centralized Hazardous Materials Control Center (CHMCC) for the procurement and distribution of products needed to maintain the Installation's facilities and to sustain the military mission.

The CHMCC contractor staff, who are trained in hazardous materials management, utilize the Army supply system to conduct materials requisition and issue transactions. These transactions are entered into an Army-approved database program that relies upon a process of review and authorization to limit the types and quantities of hazardous materials that may be brought to the Installation. Through the use of the database, the CHMCC staff assist in ensuring user accountability for issued materials by providing a means of tracking each material through its life cycle. When the user has emptied the container or no longer needs the product, he/she can bring the container back to the CHMCC so that a final disposition entry can be made in the database or so that the remaining quantity of product can be reissued to another user to reduce unnecessary waste disposal.

Bulk quantities of fuels (e.g., heating oil, JP-8, gasoline, diesel) and other POLs (products and wastes) are managed in aboveground and underground storage tanks (ASTs and USTs), pumps, pipelines, and oil/water separators across the Installation, and these storage locations and facilities represent potential sources of small spills (Fort Benning 2004c). Emergency generators are typically supplied with fuel (JP-8, diesel, or motor gasoline [MOGAS]) stored in tanks; however, a few emergency generators on the Installation are fueled by natural gas and do not have an associated oil tank. In addition, some other hazardous materials (e.g., motor oil, antifreeze) are stored in tanks at various locations across the Installation. The ASTs and USTs at Fort Benning are managed in accordance with the Storage Tank Management Plan included in the Integrated Contingency Plan (ICP) which delineates the Spill Prevention, Control, and Countermeasure, Installation Spill Contingency Plan, National Pollutant Discharge Elimination System, and Storm Water Pollution Prevention Plan requirements, and all other applicable federal and state laws and regulations.

4.9.1.2 Toxic Substances Management

Toxic substances commonly occurring on Army Installations include asbestos, lead-based paint, PCBs, and radon.

Asbestos. Routinely, all Fort Benning facilities scheduled for maintenance, renovation, remodeling, and demolition are inspected for presence of Asbestos-containing Materials (ACM). When required by law or as a precautionary measure, ACM is removed through outside contracts by licensed specialized firms. Removed ACM is transported off Post by appropriately licensed transporters and disposed in appropriately permitted landfill facilities in accordance with applicable federal, state, local, and DoD regulations.

Lead-based Paint. The likelihood for buildings constructed prior to 1978 to contain lead-based paint (LBP) is high. Painted surfaces can be tested to determine if LBP is present. If testing has not been performed on surfaces painted before 1978, these surfaces should be presumed to contain LBP. There are several structures and buildings known or suspected to contain LBP on the Installation, and the LBP in these areas is generally managed in-place in accordance with industry guidelines and practices (e.g.,

National Institute for Building Sciences) in order to minimize the potential for creation of respirable dust, direct contact with the LBP surfaces, and contamination of the surrounding environment.

PCBs. PCBs are highly stable organic chemical compounds with a low flammability (i.e., they do not readily burn), high heat capacity, and low electrical conductivity; therefore, in the past they were extensively used as a component of many materials, most notably as heat insulating materials (e.g., hydraulic fluid in vehicles, lifts, elevators) and as dielectric fluids in electrical transformers and capacitors. The harmful effects of PCBs to humans and the environment were not well documented in the past; however, PCBs are now known to cause skin irritation and cancer and to persist in the environment (i.e., they do not easily break down and they tend to accumulate in the tissues of living organisms). Under the authority of the TSCA, the USEPA banned the continued manufacture of PCBs after 1978. In addition, the agency imposed controls related to existing PCB-containing electrical equipment that remain in use or that are removed from service for reuse or disposal.

In 1998, Fort Benning developed a PCB Inventory Report, which indicated that of the 2,157 transformers surveyed on the Installation, 1,166 were assumed to be "PCB Transformers" (i.e., they contained equal to or greater than 500 parts-per-million PCBs) (Fort Benning 1998). Also in 1998, Fort Benning developed a PCB Management Plan (Fort Benning 1998) to formally establish the program for compliance with TSCA and other relevant regulatory requirements. Topics covered in the plan include transportation, storage, sampling, and disposal of PCBs. Since the utilities privatization initiative was implemented in 1999, the operation, maintenance, and repair of the electrical distribution system and, therefore, most of the PCB-containing electrical equipment on Fort Benning has been under the control of Flint Electric. One exception is electrical system at Lawson AAF, which is under the management of Interior Electric. PCB-containing materials are not purchased for use at Fort Benning in any of these systems or materials for use in construction, maintenance, and renovation projects on the Installation (personal communication, Clarke 2006).

Transformers at Fort Benning are located either on pads or on poles and are equipped with compartments for oil having a capacity of 20 to 40 gallons, depending on the size of the transformer. The oil used in these transformers is classified as either PCB/PCB-contaminated, or non-PCB. The non-federal owners of the electric system on the Installation are responsible for any PCB spills and other spills resulting from the operation of those electric systems (Fort Benning 2004c).

Radon. Radon is a naturally occurring, colorless, odorless, radioactive gas produced by the decay of uranium in rock and soil. Radon is a known carcinogen, capable of causing direct damage to lung tissues and increasing the risk of lung cancer when inhaled. If present, radon gas, which tends to occur more commonly in the western and midwestern parts of the U.S., will typically concentrate in airtight buildings and particularly in basements. Although there are no federal regulations that define an acceptable level of radon exposure, the USEPA recommends the voluntary, consensus-based mitigation of radon based on the standard developed and issued by the American Society for Testing and Materials (ASTM) International, *Standard Practice for Installing Radon Mitigation Systems in Existing Low-Rise Residential*

Buildings, ASTM E-2121**.** The Army and the USEPA recommend an action level of 4 picocuries per liter (pCi/L).

In FY 1988, the Army initiated a comprehensive indoor radon measurement and mitigation program. In the early 1990s, Fort Benning conducted a radon gas survey of 650 priority buildings (personal communication, Clarke 2006). This survey resulted in radon measurements that were well below the EPA action level of 4 pCi/L. Only one site was recommended for re-survey; however, because of logistical impracticality, this site was not resurveyed. The Army Policy for Radon as outlined in AR 200-1, Radon Policy Reduction Program requires measurement of radon in newly constructed Army facilities and use of USACE design criteria for radon reduction in new construction. Radon information provided by Region IV of the USEPA and statistics maintained by the GEPD suggest that radon is not an issue of concern in the region. Transformation actions would not affect radon levels nor would the activities increase radon exposure levels; therefore this topic will not be further analyzed in this document.

4.9.1.3 Hazardous Waste Generation and Disposal

Routine operations across the Installation generate a variety of hazardous wastes, including various solvents; paints; antifreeze; aerosols; contaminated filters, rags and absorbents; weapon cleaning patches and sludges; and some items managed as universal wastes, such as used batteries and fluorescent light tubes. The Centralized Accumulation Points (CAPs) and Satellite Accumulation Points (SAPs) are located throughout the Installation and contain a variety of wastes, which are typically stored in 5-gallon pails, 55-gallon drums, and other similar-sized containers.

The Fort Benning EMD oversees the management of hazardous waste on behalf of the military units and activities that generate the waste. SAPs and CAPs are maintained in various locations across the Installation to facilitate the collection of hazardous wastes and to ensure that the wastes are transported off Post in accordance with applicable federal, state, and DoD regulations.

Hazardous wastes generated by Garrison and tenant activities are collected and transferred to a central storage area where they may be stored for no longer than 90 days before being transported offsite for treatment or disposal. Fort Benning arranges for the transport and disposal of its hazardous waste by appropriately-licensed waste management and transportation companies through a Defense Reutilization and Marketing Office (DRMO) contract.

The EMD Environmental Programs Management Branch annually trains approximately 1,000 workers, inspects nearly 500 waste accumulation areas, and provides program oversight for the disposal of over 300,000 pounds of hazardous and toxic waste (Fort Benning 2006h). Fort Benning formerly operated under Hazardous Waste Facility Permit (RCRA Part B) No. HW-021 (CA) and Facility I.D. No. GA3210020084. Currently, Fort Benning operates as an RCRA Large Quantity Generator and manages compliance with the relevant regulations through its Hazardous Waste Management Plan.

4.9.1.4 Contaminated Sites

Past resource and waste management practices at DoD facilities have resulted in the presence of toxic and hazardous waste contamination at some Installations, including Fort Benning. In response, Fort Benning has undertaken mitigation and cleanup activities under its Installation Restoration Program (IRP) to manage these sites, which are referred to as Solid Waste Management Units (SWMUs) (Fort Benning 2005c and d). The Fort Benning EMD actively manages programs for addressing contaminated sites in compliance with RCRA and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP).

These sites are designated either as Operation and Maintenance, Army (OMA)-SWMUs, which are being managed—and will be managed in the future as they are discovered—under the 2005 Fort Benning Environmental Action Plan (EAP), or as Environmental Restoration, Army (ER,A)-SWMUs, which are being managed under 2005 Fort Benning Installation Action Plan (IAP). The cleanup activities initiated under the EAP are directed at contamination primarily resulting from current operations, and the contaminants of concern include POLs, trichloroethylene (TCE), metals, volatile organic compounds (VOCs), pesticides, and leachate. The IAP is specifically focused on contamination resulting from past activities, and the contaminants of concern include gasoline (including its constituents, benzene, toluene, ethylbenze, and xylenes), paint, TCE, and leachate. Both the EAP and the IAP have been developed through consultation and coordination with the U.S. Army Environmental Center (USAEC), USEPA, GEPD, and the public. There are currently 27 OMA-SWMU sites categorized as Active Site Investigations under the EAP and 30 ER,A-SWMU sites categorized as Active under the IAP.

4.9.2 Environmental Consequences

The nature and magnitude of potential impacts associated with hazardous and toxic materials and wastes depends on the toxicity, storage, use, transportation, and disposal of these substances. The threshold for impacts to hazardous materials, toxic substances, and hazardous waste is surpassed if the storage, use, handling, or disposal of these substances substantially increases the risk to human health due to direct exposure, substantially increases the risk of environmental contamination, or violates applicable federal, state, DoD, and local regulations.

4.9.2.1 No Action Alternative

The No Action Alternative would have no effect on the management of hazardous materials, toxic substances, hazardous waste, or contaminated sites at Fort Benning.

4.9.2.2 Transformation Alternative A

Hazardous Materials Storage, Use, and Handling. The number of sites storing, using, and handling hazardous materials would increase slightly under the Alternative A. Any facilities (such as motor pools, maintenance areas, fuel loading areas, ammunitions storage) constructed to store hazardous materials will need to be designed to meet spill prevention requirements under AR 200-1, as well as applicable federal and state regulations. The Armor School relocating to Fort Benning from Fort Knox will be required to

employ a hazardous materials procurement strategy identical to that currently employed by Fort Benning; therefore, the authorization process already in place for the acquisition of such materials would ensure that only the specific types and quantities necessary to carry out the military training mission would be brought to the Installation. Similarly, the components from the 81st RRC ECS and the USARC relocating to Fort Benning from Fort Gillem, GA and Columbus, GA, respectively, will be required to employ a materials procurement strategy utilizing the existing CHMCC.

The quantity of POL products, including fuels (diesel fuel, gasoline, heating oil), delivered to and used on the Installation would increase significantly as a result of the Transformation activities. In the short term, quantities of various fuels in excess of current operating demand would be required for construction activities due to the use of mobile-power generators and heavy equipment. Over the long term, quantities of various petroleum fuels in excess of current operating demand would be required to meet future operating demand due to the increase in the number of buildings using fuels for heating, hot water production, and backup power supply. Most of the proposed facilities would be connected to the natural gas supply and not rely on POL products. Furthermore, the energy saving mandates required by LEED would reduce the need for POL heating fuels for those facilities without access to the natural gas lines.

The risk of uncontrolled release of hazardous substances would be minimized through the use of industry accepted methods and by following applicable federal, state and Army laws and regulations of storage for fuels (e.g., double-walled aboveground storage tanks equipped with leak detection systems) and other hazardous materials (e.g., self-contained storage cabinets with appropriate flammability ratings). The activities relocating to Fort Benning (e.g., Armor School, 81st RRC) would be required to operate under the requirements specified in relevant environmental management documents developed by Fort Benning, including, but not limited to, the SWP3, Hazardous Waste Management Plan, ICP, and Activity-Specific Emergency Action Plans as these are developed.

Potential spills from the secondary containment structures associated with ASTs or spills in uncontained areas would be contained through the use of absorbent materials, portable booms, or other barriers. Absorbent materials such as dry sweep, sawdust, clay, vermiculite, diatomaceous earth, and manufactured oil absorbents would be used to control small isolated spills (Fort Benning 2004c). Absorbent materials and spill kits are currently maintained in sufficient quantities at existing oil handling and storage facilities and would be provided at any new oil handling and storage facilities constructed under the Transformation Alternative A.

Units performing training exercises on Fort Benning that involve vehicles or refueling would continue to be required to take special care to prevent spills and to mitigate them should they occur. In addition, visiting training units would continue to be required to provide the Directorate of Facilities Engineering and Logistics funds in advance of their exercises to cover the cost of cleanup of any spills should they occur. These funds, the amount of which depends upon the type of the training exercise, are returned to the units if they are not used (Fort Benning 2006i).

Toxic Substances Management. There are several structures on the Installation that are known or suspected to contain ACM and/or LBP and for which renovation or demolition projects are proposed under the Transformation Alternative A. The following table lists a sample of the proposed projects for which involvement of these toxic substances can reasonably be expected.

Table 4.9-1: Transformation Projects Potentially Generating Toxic Substances

Fiscal Year	Project Title
FY 2007	Training Support Brigade Complex (Phase I and 2)
	Trainee Barracks Complex 1
2008	Infrastructure Support
	16th CAV Regt HQ Building Complex (BDE, BN, and COFs)
	General Instruction Building Complex
2009-2011	Hospital Replacement
2009	Armor Officer Basic Course Headquarters Complex Conversions
	Maneuver Center Headquarters Building Expansion and CDI Facility
2010	Construct Installation-Wide Roads, Paved
	Maneuver Center Renovations, Building 4
2011	Barracks Complex
	3 ID BCT (Heavy) Complex
2013	Child Development Center Under 6 Years
2007 or 2008	AT/FP Access Control Point
2007 through 2010	Conversion of UPH Billeting Space to Transient UPH
	Infantry Officer Basic Course Headquarters Complex Building Conversions

Asbestos. It is expected that the quantity of ACM present on the Installation would be reduced (i.e., a positive impact) under the Alternative A, because ACM removal actions would be initiated prior to or during the renovation and demolition of existing structures. ACM encountered during Transformation activities would be managed in accordance with applicable federal, state, and local regulations as well as the Fort Benning Asbestos Management Plan (Fort Benning 2002). The handling and disposal of existing asbestos-containing materials will not substantially increase the risk of environmental contamination, and will be carried out in accordance with applicable federal, state, DoD, and local regulations.

Lead-based Paint. The quantity of LBP present on the Installation would not be expected to change significantly because the preferred strategy for addressing LBP in existing buildings is to maintain it in good condition or cover it with non-lead-containing paint, and this strategy would be employed for buildings undergoing renovation. Where LBP is known to exist in buildings undergoing demolition, appropriate precautions would be taken to identify and segregate materials that must be classified as hazardous waste due to their lead content and to arrange for their proper disposal in accordance with state and Federal regulations. The handling and disposal of existing LBP and LBP-contaminated materials will not substantially increase the risk to human health due to direct exposure, will not substantially increase the risk of environmental contamination, and will be carried out in accordance with applicable federal, state, DoD, and local regulations

PCBs. The number of PCB-containing and PCB-contaminated items present on the Installation would not be expected to change significantly under the Alternative A. There may be PCB-containing electrical

system components and other PCB-containing equipment located on or near the sites where construction, renovation, or demolition activities are proposed under the Alternative A. Efforts would be made to identify PCB-containing equipment (light ballasts, transformers, capacitors, hydraulic lifts, elevators, etc.) prior to and during the proposed activities. If identified, the removal and disposal or decontamination of such PCB-containing items would be carried out in accordance with applicable federal, state, local, and DoD regulations. The Alternative A would not utilize PCB-containing materials.

Hazardous Waste Management. The Installation would maintain its status as a USEPA Large Quantity Generator of hazardous waste under the Alternative A. Furthermore, it is expected that the types and quantities of hazardous wastes generated by the military units relocating to Fort Benning under the Alternative A would be accommodated by the existing Fort Benning hazardous waste management system. The existing DRMO contracts for hazardous waste disposal are not limited in terms of the volume of hazardous waste that may be shipped offsite, and these contracts are reviewed annually; therefore, the DRMO would maintain the ability to amend the contracts to take into account minor changes in reference to the types and quantities of wastes managed in the future.

Hazardous waste and other regulated waste generated by visiting units during the training exercises would continue to be required to be disposed of through the Fort Benning DRMO. Training units would continue to be required to certify in advance of training that they have funds available to pay for waste disposal, and the units are responsible for completing all funding and related turn-in documents. Training units would continue to be required and instructed to comply with all applicable Installation policies such as Spill Prevention Control and Countermeasure requirements, as well as all federal, state, and DoD regulations pertaining to the handling, containment of spills, packaging, labeling, storage, and transportation of wastes generated by their activities on Fort Benning (Fort Benning 2006i).

It is expected that during construction and demolition activities there would be periodic increases in the quantity of hazardous waste generated and shipped offsite for disposal. Specifically, demolition debris and contaminated soils which exhibit any of the characteristics of hazardous waste would be managed as hazardous waste in accordance with applicable federal, state, local, and DoD regulations.

Contaminated Sites. Due to the limitations on land development and redevelopment on the Installation, it is expected that some of the proposed Transformation activities would necessarily occur on sites where contamination is known or suspected to exist. These sites may include either OMA-SWMUs, or ER,A-SWMUs (defined in Section 4.9.1.4). Disturbance of any SWMU is prohibited unless the GEPD determines the action to be acceptable and appropriate; therefore, Fort Benning EMD will coordinate with the GEPD in advance of initiating Transformation activities on any of its SWMU sites.

When new construction occurs on sites where contamination has been identified, existing management regimes would be employed to ensure that the risk of human exposure to contaminated media is minimized as much as possible. Such measures would include direct involvement of and consultation with EMD and Safety Office representatives, review of existing reports, laboratory data, and relevant management plans prior to initiation of onsite activities, and the employment of a combination of visual

observation, screening / monitoring, and sampling techniques to identify and segregate contaminated media encountered during all stages of site preparation and construction. For example, when site preparation includes earth moving activities (e.g., grading, leveling) in areas where the shallow subsurface soils are known to be contaminated, the contractors would be informed of the nature of the contamination in advance so that appropriate precautions can be taken to protect the workers and to appropriately manage the contaminated soils if and when they are encountered. Tank traffic in maneuver areas can cause disturbances; however, there are no SWMU sites located in the proposed maneuver areas.

In summary, the storage, use, handling, and disposal of hazardous materials, toxic substances, and hazardous wastes under the Alternative A would not substantially increase the risk to human health due to direct exposure, would not substantially increase the risk of environmental contamination, and would not violate applicable federal, state, local, or DoD regulations. If Alternative A were implemented, it is not anticipated that there would be any adverse impacts associated with hazardous and toxic materials and wastes due to increased quantities on the Installation. Existing management procedures, regulations, plans, and permits will be used to minimize risk.

4.9.2.3 Transformation Alternative B (Preferred Alternative)

Hazardous Materials Storage, Use, and Handling. The majority of activities proposed under Alternative B which would involve the storage, use, or handling of hazardous materials are the same as Alternative A and the resulting impacts would be the same. The exceptions to this would be the bridge over U.S. Highway 27/280 which would use some hazardous materials for construction.

Toxic Substances Management. Transformation Alternative B activities that would require the management of toxic materials would be the same as Alternative A and are listed in Table 4.9-1.

Hazardous Waste Management. The Installation would maintain its status as a USEPA Large Quantity Generator of hazardous waste for either Alternative A or B. Except for a small amount of waste that could be created during the bridge construction, all other activities which would generate hazardous waste would be the same as those under Alternative A.

Contaminated Sites. Transformation alternative B moves the maneuver area from the north to the south portion of Fort Benning to the Good Hope area. There are no SWMU sites located in the Good Hope Maneuver Area which could be impacted by tank traffic.

In summary, the storage, use, handling, and disposal of hazardous materials, toxic substances, and hazardous wastes under the Alternative B would be similar to Alternative A. Under either alternative, no substantial increases would be expected to pose a risk to human health due to direct exposure; neither would substantially increase the risk of environmental contamination or violate applicable federal, state, local, or DoD regulations. If Alternative B were implemented, it is not anticipated that there would be any adverse impacts associated with hazardous and toxic materials and wastes due to increased quantities on the Installation, and existing management procedures will be used to minimize risk.

4.9.3 Mitigation Measures

No mitigation measures are required beyond those prescribed under existing federal and state laws, regulations, and permit requirements to minimize, avoid, or reduce impacts.

4.10 WATER RESOURCES

4.10.1 Affected Environment

The following sections provide a summary of the general condition and character of water resources found at Fort Benning as well as more specific descriptions of the existing conditions of water resources in the immediate vicinity of the area where Transformation actions would be implemented. Types of water resources investigated include surface water, groundwater, and floodplains. Each topic is discussed briefly in this section.

In terms of the regulated components of water resource management, the proposed projects would require coverage under GDNR National Pollution Discharge Elimination System (NPDES) Permit GAR 1000001, GAR 100002, or GAR 100003 (GAR 100001 regulates stand-alone construction activity, GAR 100002 regulates infrastructure construction sites, and GAR 100003 regulates common development construction). NPDES permitting regulates water quality as required by the Clean Water Act (CWA). An Erosion Sediment Pollution Control Plan (ESPCP) would be required prior to any land disturbances. Implementation of the proposed project would require coverage under the Section 404 permits for jurisdictional wetlands of stream bank impacts as administered by the USACE. The requirements of federal and state law and regulations pertain to activities off Post also reduce storm water concerns as well.

Field verification of “state waters” would be required during the design phase of all proposed Transformation projects. A GEPD Stream Buffer Variance (SBV) would be required in cases where new construction including infrastructure improvements requires the crossing or encroachment upon a “state water” by the removal of trees and/or vegetation within a 25 ft buffer of “state water”. Application for a SBV must include an approved ESPCP, yet the application process for this variance is an entirely separate process from either the GDNR NPDES or Section 404 permit processes. The SBV restrictions apply to project construction activities, as well as timber removal within the 25-ft buffer.

4.10.1.1 Surface Water

Watersheds. Fort Benning is located primarily within the Chattahoochee River Basin (USGS 2006) Hydrologic Unit Code1 (HUC) 03130003). The basin contains parts of the Blue Ridge, Piedmont, and Coastal Plain physiographic provinces. The ecological transition between Piedmont and Coastal Plain occurs along a Fall Line located at the northern boundary of Fort Benning. This geologic feature results in a unique character of the rivers and creeks and the biotic communities they support (Fort Benning 2001). The basin is 8,770 square miles, of which 6,140 square miles (70 percent) lie in Georgia, 2,574 square miles (29 percent) lie in AL, and 56 square miles (1 percent) lie in Florida (CRBWPP 2006). The rolling terrain in the Chattahoochee River Basin is highest in the east, rising approximately 740 ft above sea level, and lowest in the southwest along the Chattahoochee River, about 190 ft above sea level (Fort Benning 2001).

Watershed management practices adhered to by Fort Benning include the development and implementation of a soil conservation program at the watershed level. Watershed Management Units (WMUs) were identified at Fort Benning for use as a framework for monitoring water quality and erosion, watershed restoration projects, and for other management activities as part of a watershed inventory in 1998 (Figure 4.10-1). Based on data from this watershed inventory, Fort Benning is composed of 27 WMUs. Fifteen WMUs occur completely or nearly completely within the boundaries of the Installation. One of the objectives stated in Fort Benning's INRMP (Fort Benning 2001) is to continue to conduct monitoring via the Land Condition Trend Analysis component of the ITAM Program and add new monitoring plots, as necessary, to enable monitoring within a watershed context to facilitate land-use decisions and other land management activities (Fort Benning 2001). A watershed modeling system for Fort Benning is under development

Construction

Management of storm water during construction activities including infrastructure/lineal projects would be covered under GDNR NPDES General Permits 100001, 100002 and 100003 and would also require the development and implementation of an ESPCP. A Notice of Intent (NOI) for construction-related storm water discharge must be obtained from the GDNR. It is expected that the implementation of the

[1] **Hydrologic Unit Codes (HUC):** Watersheds are organized into a system that divides and subdivides the United States into successively smaller watersheds. These levels of subdivision, used for organization of hydrologic data, are called "hydrologic units". Hydrologic Unit Codes are given to each of these units in a manner that preserves watershed hierarchy. This is done by adding additional digits to a watershed's HUC to designate smaller sub-watersheds within an encompassing watershed. As an example, a large river watershed may have an 8 digit HUC of 02040301. All sub-watersheds to this watershed would begin with this 8 digit number, but would have additional digits as their unique identifier (02040301*102*, 02040301*103*, etc.) These unique identifiers are commonly used by federal and state agencies to organize and track water quality impairments.

Figure 4.10-1: Fort Benning Watershed Management Units

ESPCP would reduce or minimize any impacts in water resources and protect waterways from sedimentation due to eroding soil conditions. Failure to comply with mitigation measures stipulated in the NPDES would result in moderate impacts during construction activities and moderate effects emanating from military operations causing increased soil erosion and sedimentation.

Field verification of "state waters" would be required during the design phase by a design professional. Stream buffers must be defined on design plans prior to the initiation of construction activities. Perpendicular crossings to "state waters" would be approved with an ESPCP as required by GDNR NPDES General Permits 100001, 100002 or 100003 if no stream channel changes are required. The design must address all proper BMPs to reduce the potential for stream sedimentation including: low-water crossing; identification of areas where drainage may be an issue in the project planning stage; and use of double row type C silt fencing; and site monitoring to ensure the integrity of erosion control measures.

Erosion control measures must be in place prior to initiation of land disturbing activities. If any changes in, or to the stream channel where straightening of the stream would be needed or required for a better approach; the straightening of the stream would require application for a Stream Buffer Variance. The design must address all proper BMPs as stated above for the crossing as well as the relocation of the new channel. All construction areas must be stabilized (permanently or temporarily) within 14 days of project completion. If the contractor or operator returns to the construction site within the initial 14 days to conduct some additional land disturbing activities the timeframe in which stabilization is required may be extended by 7 days. A 25 ft buffer must be maintained and protected at all times at all "state waters". It is expected that implementation of Georgia's stream buffer rules would reduce or minimize any impacts to water quality due to stream sedimentation or storm water runoff. Failure to comply with Georgia's stream buffer rules would have notable long-term and short-term adverse environmental consequences on water quality due to notable increases in stream sediment and storm water runoff.

Implementation and operation of the proposed project would require compliance with NPDES Municipal Separate Storm Water Sewer System (MS4) Permit conditions and associated Storm Water Management Plan (SWMP) including the monitoring of activities conducted within the Installation boundary. NPDES MS4 and the SWMP help to ensure that illicit discharges are prohibited and that pollutants entering into waterways from construction and maintenance facilities are prevented, reduced or minimized. Spill Prevention Control and Countermeasure (SPCC) requirements must be adhered to during construction activities as well as during operations of the newly constructed facilities. Proper design of the facilities under SPCC CFR 112 would help to make certain that no illicit discharges from the facility would adversely impact the surface and or ground water. Some of the support facilities with latrines and their associated septic systems and drainage fields may result in the indirect deposition of pollutants (biota) into the groundwater and possibly even the adjacent streams if the latrines are not operating properly. Failure to comply with the NPDES MS4 permit conditions and SPCC requirements would result in a greater probability of illicit discharges entering into waterway from construction sites. The NPDES construction permit and NPDES MS4 permit would be used to mitigate water resource impacts.

It is likely that a Section 404 permit would be required for project implementation and that mitigation measures would be specified by the USACE as conditions of permit approval. It is expected that the implementation of mitigation measures specified in the Section 404 permit would reduce or minimize any impacts in water resources and protect waterways from sedimentation due to eroding soil conditions. A violation of the Section 404 permit would occur if these mitigation measures were not enforced.

Indirect water quality impacts to waterways, including stream sedimentation and increases in the volume of storm water runoff would occur as a result of land disturbing activity associated with the proposed project from 2007 to 2012. Transformation Alternative A, if implemented, would disturb approximately 10,741 acres of land (majority of which would occur in 2007). Transformation Alternative B, if implemented would disturb approximately 19,012 acres of land. The anticipated land-disturbance has the potential to affect the amount of sediment entering into waterways occurring within the Installation, and other downstream water resources. Fort Benning would mitigate the adverse effects to water resources associated with land disturbing activities by complying with the NPDES ESPCP as required by the CWA. As part of the NPDES permit, Fort Benning would update its existing SWP3 to include projects in the planning stages of construction and operation. As the site specific ESPCP is being developed BMPs designated to minimize pollution through source control including rock check dams, rock channels, sediment basins, diversions and the placement of silt fence and erosion control practices must be considered. The Storm Water Pollution Prevention Plan (SWP3) is modified in instances of notable change in site design, construction, or maintenance operations.

Applicable management practices that may be used to help reduce and/or maintain the average annual sediment loads include:

- Compliance with the requirements of the Georgia NPDES permit program;
- Implementation of Georgia Forestry Commission BMPs for forestry;
- Natural Resources Conservation Service (NRCS) Conservation Practices;
- Adoption of proper unpaved road maintenance practices;
- Implementation of ESCPs for land disturbing activities; and
- Mitigation and prevention of stream bank erosion due to increased stream flow velocities caused by urban runoff (GEPD 2003a and Fort Benning 2004).

Management practices recommended by GDNR, and followed by Fort Benning, to reduce and/or maintain the average annual fecal coliform is similar to those for sediment loads and include:

- Compliance with NPDES permit limits and requirements;
- Adoption of NRCS Conservation Practices; and
- Application of Best Management Practices (BMPs) appropriate to agricultural or urban land uses, whichever applies (GEPD 2003b).

Operation, Maintenance, Training Exercises

Surface water resources are subject to contamination from soil sedimentation, oil spills, pesticide residue, and untreated sewage bypasses. These potential pollution sources are controlled and minimized, however, by implementation of SPCC, Installation Spill Contingency Plan (ISCP), SWP3 (General Permit No. 000000) for industrial facilities, ESPCP and SWMP, GDNR NPDES MS4, by sewage bypass reduction efforts, and by the related NPDES permit requirements to prevent sewage bypasses under the Columbus Water Works (CWW) NPDES permit for their Waste Water Treatment Plant (WWTP) and pretreatment facilities. The SWP3 provides protection for the water sources within the Installation by monitoring storm water discharges and implementing BMPs including inspection of the facilities and maintenance vehicles, awareness of potential circumstances for spills and selection of smart storage locations.

Rivers, Streams, Tributaries, and Other Water Bodies. Figures 4.10-2 and 4.10-3 depict the major rivers, streams, tributaries, and other water bodies at Fort Benning. The largest water body associated with Fort Benning is the Chattahoochee River which flows through approximately 15 miles of the Installation (Fort Benning 2001). The Chattahoochee River is the most heavily used water resource in Georgia (CRBWPP 2006). It arises as a cold-water mountain stream in the Blue Ridge Province at altitudes above 3,000 ft and flows 430 miles to its confluence with the Flint River (USGS 2006). This river covers a distance of 434 miles across the state of Georgia, beginning in the Blue Ridge Mountains of Union County, GA, flowing past metropolitan Atlanta, reaching the Georgia and Alabama borders at West Point Lake. Ultimately, the southern flow of the Chattahoochee River terminates in Lake Seminole in Florida, an impoundment of the Apalachicola River (CRBWPP 2006).

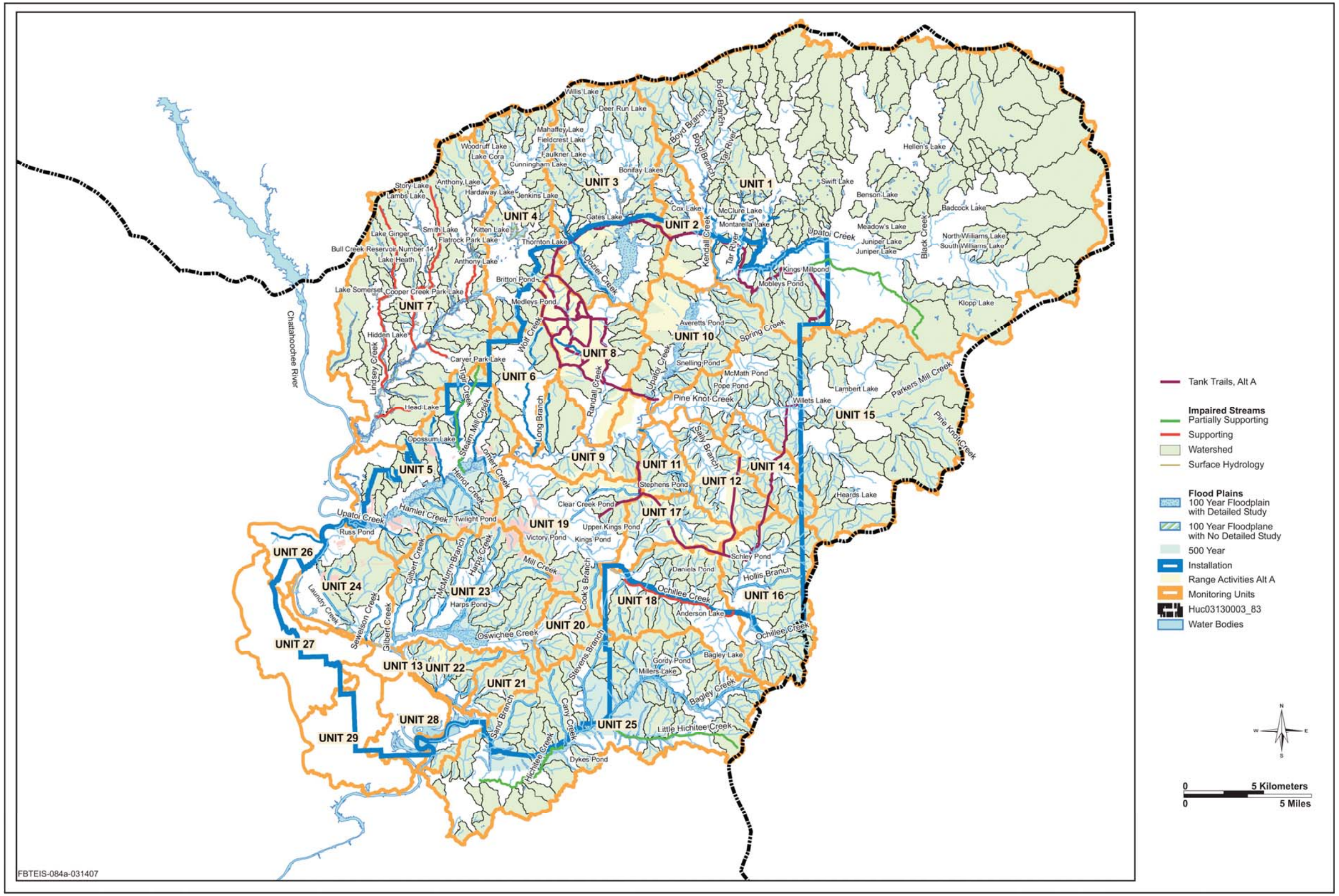
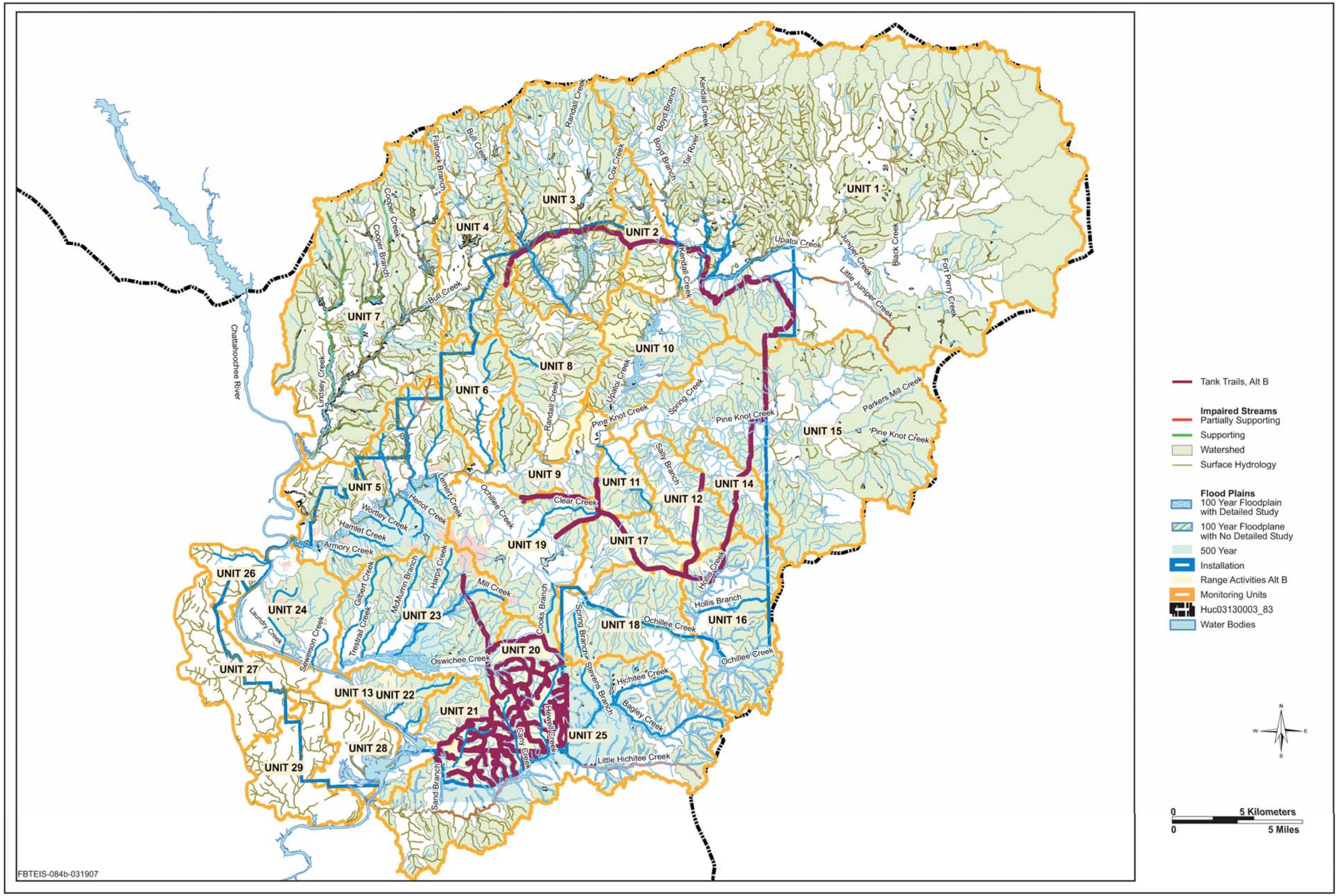


Figure 4.10-2: Surface Waters Found at Fort Benning--Alternative A



4.10-3: Surface Waters Found at Fort Benning--Alternative B

Several dams have been built on the Chattahoochee River upstream and downstream of Fort Benning to regulate river flow and to produce hydroelectric energy. The northern portion of Lake Walter F. George, on the Chattahoochee River extends into the southwest portion of the Installation. The River Bend area, which is part of the Lake Walter F. George impoundment, constitutes the only lake on the Installation. Numerous oxbows, abandoned meander channels, and isolated ponds are found along the Chattahoochee River.

In contrast to the main stem of the Chattahoochee River, many tributaries remain free flowing (CRBWPP 2006). Most streams found within Fort Benning flow into the Chattahoochee River through Upatoi Creek on the Georgia side and Uchee Creek on the Alabama side. The southern most portion of Fort Benning drains directly into the Chattahoochee River, and the northwest portion of the Installation drains into Bull Creek (Fort Benning 2001). A very small area in the southeast corner of Fort Benning flows into the Flint River basin to the east. These two rivers join to the south and flow into the Gulf of Mexico (Fort Benning 2004).

Major streams of Piedmont origin having the potential to be affected by the proposed Transformation project include Randall Creek and Upatoi creek, flowing from the east to west on to Fort Benning. Coastal Plain streams originate in the Coastal Plain and generally flow from east to west on the GA side and west to east on the AL side. Ochillee Creek and Pine Knot Creek, both located on the GA side and Oswichee Creek, are the major Coastal Plain streams on Fort Benning that could potentially be affected by the proposed Transformation project. The Piedmont and Coastal Plain streams possess completely different limnological and hydrological characteristics (Fort Benning 2001).

GEPD has identified 31 stream segments in the Chattahoochee River Basin as “water quality limited” (i.e. State of Georgia 305(b)/303(d) listed) or impaired due to sedimentation or fecal coliform. Out of the 31 stream segments identified by GEPD, six that have the potential to be affected by the proposed Transformation action, occur within the boundaries of Fort Benning (see Table 4.10-1) (USEPA 2002 and GEPD 2006a).

Table 4.10-1: Impaired Streams at Fort Benning

Water Body Name EPA HUC	*State Designated Use*	*Attainment Status*	*State Impairment*	*TMDL Pollutant Description/ Type*	*Annual Average Sediment Load* (tons/yr)*	*Approximate Location*
Chattahoochee River GAR031300030	Fishing	Not Supporting	Fecal Coliform	Fecal Coliform/ Urban Runoff	Not applicable (as long as NPDES limits are not exceeded)	Upatoi Creek to Chattahoochee/ Stewart Co. Line (Chattahoochee County)
Pine Knot Creek GAR031300030305	Fishing	Partially Supporting	Biota Impacted	Sediment/ Point; Non-Point Source	6,945	Parker Mill Creek to Little Pine Knot Creek
Little Pine Knot Creek GAR031300030307	Fishing	Partially Supporting	Biota Impacted	Sediment/Non-Point Source	272	Headwaters to Pine Knot Creek
Little Hitchitee Creek GAR 0310003062	Fishing	Partially Supporting	Biota	Non Point/Point	489.3	Headwaters to Hichitee Creek
Hitchitee Creek GAR 031300030603	Fishing	Partially Supporting	Biota	Non Point/Point	489.3	Caney Creek to Sand Branch
Tiger Creek GAR031300030306	Fishing	Partially Supporting	Biota Impacted	Sediment/Non-Point Source	625	Headwaters to Upatoi Creek

** Sources: USEPA 2002, GEPD 2003a, and GEPD 2006a*

In addition, the following three impaired stream segments are located within or adjacent to the Installation:

- Bull Creek, which flows through south Columbus, to the northwest of Fort Benning. There are numerous unnamed tributaries located on Fort Benning that flow into Bull Creek. Bull Creek is listed as partially supporting its designated use of fishing due to being biota impacted by urban runoff (GEPD 2006a).
- Little Juniper Creek, which is located in the northeast corner of the Installation, partially supports its designated use of fishing and is biota impacted by non-point sources of sedimentation (GEPD 2006a).
- Chattahoochee River northward from Upatoi Creek to North Highland Dam is categorized as partially supporting its designated use of fishing due to biota impacts from fecal coliform from urban runoff sources (GEPD 2006a).

Water bodies on the 303(d) list are required to have a Total Maximum Daily Load (TMDL) evaluation for the water quality constituent(s) in violation of the water quality standard. The TMDL process establishes the allowable pollutant loadings or other quantifiable parameters for a water body based on the relationship between pollutant sources and in-stream water quality conditions. This allows water quality-based controls to be developed to reduce pollution and to restore and maintain water quality. The state-designated water use classification for all 31 of the stream segments listed as water quality limited (i.e. 303(d) listed as Biota Impacted) due to sedimentation is fishing. The general water quality criteria not

being met states: "All waters shall be free from material related to municipal, industrial or other discharges which produce turbidity, color, odor or other objectionable conditions which interfere with legitimate water uses." The Biota Impacted designation indicates that studies have shown a modification of the biological community, more specifically, fish (GEPD 2003a).

Data collected during the development of the TMDL suggests that impaired streams may be due to sediment resulting from past land use practices. Farmland use, specifically row crops, appears to have been a major source of sediment. The established TMDL determines the allowable sediment load and is based on the hypothesis that an impaired watershed having annual sediment loading rates similar to other streams that are not impaired would remain stable. It is believed that if sediment loads are maintained at an allowable level (i.e., no more than the 2002 annual average sediment load), streams would repair themselves over time. No set "allowable" level has been established for the stream segments on Fort Benning; instead, the Installation is utilizing management practices, as defined in the GDNR guidance for TMDLs.

Applicable management practices that may be used to help reduce and/or maintain the average annual sediment loads include:

- Compliance with the requirements of the Georgia NPDES permit program;
- Implementation of Georgia Forestry Commission BMPs for forestry;
- Natural Resources Conservation Service (NRCS) Conservation Practices;
- Adoption of proper unpaved road maintenance practices;
- Implementation of ESPCPs for land disturbing activities; and
- Mitigation and prevention of stream bank erosion due to increased stream flow velocities caused by urban runoff (GEPD 2003a and Fort Benning 2004b).

The State of Georgia has identified 79 stream segments located in the Chattahoochee River Basin as water quality limited due to fecal coliform. A stream is placed on the partial support list if more than 10 percent of the samples exceed the fecal coliform criteria and on the not support list if more than 25 percent of the samples exceed the standard. Part of the TMDL development process is to identify potential source categories. Sources are broadly classified as either point or non-point sources. A point source is defined as a discernable, confined, and discrete conveyance from which pollutants are or may be discharged to surface waters. Non-point sources are diffuse, and generally, but not always, involve accumulation of fecal coliform bacteria on land surfaces that wash off as a result of storm events. Columbus Water Works has two permitted point sources on Fort Benning (wastewater treatment plants) that discharge to the Chattahoochee River, and Fort Benning has a general storm water permit. The wastewater treatment plants are owned by CWW. They are located within the installation boundary and all discharges and regulations associated with discharges of waste waters are covered under a separate industrial NPDES permit under CWW. Combined point and non-point source fecal coliform releases originating from sources located upstream from the Installation are also contributors for fecal coliform in the Fort Benning section of the Chattahoochee River. The waste load allocation is established by the GEPD and is used to determine the

"maximum allowable" levels of fecal coliform that may be discharged into the stream or river. As long as Fort Benning maintains its discharges below the waste load allocation, it is not required to reduce its discharge into the Chattahoochee River and is in compliance with the TDML program (GEPD 2003b and Fort Benning 2004b).

Management practices recommended by GDNR, and followed by Fort Benning to reduce and/or maintain the average annual fecal coliform, are similar to those for sediment loads and include:

- Compliance with NPDES permit limits and requirements;
- Adoption of NRCS Conservation Practices; and
- Application of BMPs appropriate to agricultural or urban land uses, whichever applies (GEPD 2003b).

The amount of sedimentation and fecal coliform pollutants delivered to a stream is difficult to determine. The state requires and monitors the implementation of management practices to improve stream water quality, and represent a beneficial measure of TMDL implementation (GEPD 2003a and GEPD 2003b). Although GEPD has identified some water quality impairment, there is also information indicating biologically productive and ecologically sustainable water resources exist within the Installation. Recent aquatic surveys conducted by the USFWS documented 53 historically represented fish species and 5 new fish species. The five new fish species are state-listed species of conservation concern. Six native mussel species were identified along with one introduced species of mussel. Three of these mussel species are identified as species of special concern in AL (Fort Benning 2001).

4.10.1.2 Hydrogeology/Groundwater

Fort Benning is located within the Coastal Plain hydrogeologic province. The principal groundwater source for Fort Benning is the Cretaceous aquifer system. The recharge area for this aquifer is the Sand Hill cantonment area (Fort Benning 2004b). The regional direction of ground-water flow in the Coastal Plain is from the north to south. Aquifers in the Coastal Plan consist of porous sands and carbonates, and include alternating units of sand, clay, sandstone, dolomite and limestone that dip gently and thicken to the southeast. Several of these are prolific producers of ground water (CRBWPP 2006).

4.10.1.3 River and Stream Floodplains

Executive Order 11988, Floodplain Management, instructs federal agencies to consider the risks, danger, and potential impacts of locating projects within floodplains. The EO specifies that, in situations where alternatives are impractical, the agency must minimize potential harm to or within the floodplain and take appropriate steps to notify the public.

Floodplains typically are described as areas likely to be inundated by a particular flood. For example, a flood that has a one percent chance of occurring in any one year is the 100-year flood. The 100-year floodplain includes those lands that are flooded by small and often dry watercourses. To determine the location of the 100-year floodplain within the study areas, the 1985 Flood Insurance Rate Maps (FIRM) for Muscogee and Chattahoochee Counties and GIS maps developed for this area were reviewed.

The Chattahoochee River floodplain, and its associated blackwater and tupelo swamps, is found in the southwestern portion of the Installation. The floodplain areas provide abundant recreational opportunities to Installation personnel and the general public (Fort Benning 2001). Threats to the area and its wildlife include water pollution, water level manipulation, sedimentation, and disturbance of nesting migratory bird species. The Chattahoochee blackwaters are identified in Fort Benning's INRMP as a UEA. Military use of the Chattahoochee River floodplain is minimal (Fort Benning 2001).

Stream floodplains on Fort Benning are extensive. Military training within the stream floodplains is minimal and a large portion of these areas have been proposed for protection as UEAs. Threats to stream floodplain include damage by rooting feral swine, damage to stream ecology from low water crossings, future range construction, and water pollution (Fort Benning 2001).

Per U.S. Army infantry Center (USAIC) Regulation 210-4, stream fording and crossing within the Installation with wheeled and tracked vehicles currently is approved for the following locations:

- Catus Road at Pine Knot Creek;
- Buena Vista Road at Pine Knot Creek;
- Buena Vista Road at Upatoi Creek;
- Buena Vista Road at Randall Creek;
- Bulls Eye Road at Randall Creek;
- Hourglass Road at Ochillee Creek;
- Midwest Road at Randall Branch; and
- Resaca Road at Sally Branch (U.S. Army 2005b).

Articulating concrete mats are used to harden low-water crossing sites along tank trails at Fort Benning

4.10.1.4 Stormwater Management

Storm water discharge in the Main Post cantonment area of Fort Benning drains directly into the Chattahoochee River through a storm drainage system. Other storm water on the Installation drains via culverts, ditches swales, and natural seepage and overland flow. Storm water from the other cantonment areas, Sand Hill, Kelley Hill, and Harmony Church as well as the training compartments, drain directly and indirectly into nearby surface water bodies (Fort Benning 2004b).

Installation requirements to comply with the provisions of the CWA and state regulations to manage storm water prevention are stipulated in AR-200-1, Environmental Protection and Enhancement, GDNR NPDES and ADEM NPDES rules and regulations. The requirements of federal and state laws and regulations pertaining to activities off Post also reduce storm water concerns.

Surface water resources are subject to pollution from soil sedimentation, oil spills, pesticide residue, and untreated sewage bypasses. These potential contamination sources are controlled and minimized, however, by implementation of the Fort Benning SPCC Plan (Fort Benning 2003b), Fort Benning's ISCP (Fort Benning 2000), Fort Benning's SWP3 (General Permit No. 000000) for industrial facilities, ESPCP

and the SWMP, General MS4, by sewage bypass reduction efforts, and by the related NPDES permit requirements to prevent sewage bypasses under the CWA NPDES permit for their WWTP and pretreatment facilities. The SWP3, ESPCP, and the SWMP provide guidance for the protection for the water resources within Fort Benning by monitoring storm water discharge and implementing BMPs.

Management of storm water would be accomplished by meeting the requirements of three separate NPDES permits. Implementation of proposed projects having the potential to disturb one acre of land would require coverage under GDNR NPDES Permit GAR 100001, 100002 or 100003. An ESPCP would be developed prior to construction activities as required by the NPDES permit. Operators and contractors must follow and implement all requirements identified in the NPDES permit. The ESPCP must be prepared/designed and signed by a design professional with a GA NPDES Level II Training. Personal qualified through GA NPDES Level 1A training are required to be on site during construction activities.

For projects that are not covered under the GDNR NPDES GAR 1000001, GAR 1000002, or GAR 1000001 due to the land disturbance threshold of one acre it is recommended that a basic Erosion and Sedimentation and Pollution Control Plan be designed similar to the one required under GAR 100001 Part IV. Projects that are not subject to GDNR NPDES permit would not be covered under a State permit but should protect all water resources from sediment and other pollutions.

Good housekeeping measures should be implemented to control soil erosion; reduce the amount of runoff and to prevent or minimize pollution of storm water. Double row type C silt fencing would be installed prior to any land disturbing activities. Contractors and operator should ensure that permanent or temporary stabilization of previously disturbed soils in place within 14 days of project completion. If the contractor or operator returns to the construction site within the initial 14 days to conduct some additional land disturbing activities the timeframe in which stabilization is required may be extended by 7 days. Other BMPs to be implemented during land disturbance and/or construction activities include: dust control measurements, off site vehicle tracking control, proper waste disposal at the site and site sanitation. BMPs for land disturbing and or construction activities, including road improvements must:

- Be designed in accordance to the Manual for Erosion and Sediment Control in Georgia;
- Protect all storm water drainages near the work area that would be affected from runoff during storm events;
- Comply with SPCC requirements as outlined in AR 200-1 when handling hazardous materials/waste within a construction site;
- Prevent discharges of wastewater into storm drains; and
- Collect wastewaters for proper disposal, and/or coordinate with Columbus Water Works to ensure operations would not affect plant operators if wastewaters were discharged into sewer lines.

The contractor and or proponent are responsible for the cleanup of any hazardous material/waste or chemical spills.

The function of the stream buffers is to physically protect and separate streams from land disturbing activities and/or encroachment. Stream buffers function primarily to filter storm water runoff, stabilize stream banks, facilitate nutrient uptake to tree roots, and provide shading to moderate water temperature and to provide flood capacity during flooding events. The design/siting of facilities within the Installation would influence the effects to water resources by determining the direct impacts to streams and/or their buffers. Georgia's Erosion and Sedimentation Act implements stream buffer regulations stating that any proposed land disturbing activity within a 25-ft buffer of a "state stream" would require a GEPD stream buffer variance Specific requirements would need to be followed if there are any stream buffer variances. Fort Benning would also follow the guidance of the Georgia Water Quality Control Act. The Georgia Water Quality Control Act declares that the water resources of the state shall be utilized prudently for the maximum benefit of the people. Field verification of "state waters" would be required during the design phase of all proposed Transformation projects. Application for a SBV must include an approved Erosion Sediment Pollution Control Plan (ESPCP). Restrictions on the encroachment of riparian stream buffer apply to project construction and operation activities, as well as for timber removal within the 25-ft buffer.

Adherence to GDNR NPDES requirements ensures that all wastewater from dining/kitchen/ bathrooms/shower facilities and other operation requiring potable water are connected to the sanitary sewer system, not the storm waters sewer system. Coordination with CWW is required for Sanitary Sewer and Sewage Disposal Ordinance requirements, particularly to meet Ordinance NO. 83-101 Section 7 for management of fat, oils and grease. Good management practices and maintenance of grease/oil collection sumps are to be implemented at all times to prevent or minimize sanitary sewer overflow to meet Fort Benning requirements.

Management of storm water at industrial facilities includes the implementation of Permit GAR 000000 requirements for industrial facilities and the development and utilization of the SWP3. Surface water resources are subject to contamination from oil spills, pesticide residue, and untreated sewage bypasses. These potential contamination sources are controlled and minimized, however, by implementation of the SPCC, ISCP, and SWP3 (General Permit No. 000000), by sewage bypass reduction efforts, and by the related NPDES permit requirements to prevent sewage bypasses. Installation requirements to comply with the provisions of the CWA and state regulations for storm water prevention are stipulated in AR 200-1. The NPDES permits provide protection for the water resources of Fort Benning by monitoring storm water discharge and implementing BMPs (Fort Benning 2001).

Fort Benning's SPCC Plan applied to new or redesigned facilities such as vehicle maintenance facilities, and facilities used to store hazardous materials in containers larger than 55 gallons and /or the use of underground storage tanks and/or above ground storage tanks. All maintenance and chemical storage areas would require proper design to ensure that no illicit discharges from the facilities would come in contact with surface and/or ground waters. All new storage areas for hazardous materials; chemicals; or wastes should be designed to allow for secure product storage and to provide secondary containment as

per AR-200-1 and CFR 112. This would also meet CWW Ordinance No. 83-101 as well as future Fort Benning NPDES MS4 SWMP requirements.

Management of storm water at the Installation level would be accomplished by implementing Fort Benning's NPDES MS4 permit for military installations and by the SWMP. Construction site run off and post-construction storm water management are Minimal Control Measures (MCM) required under the Military MS4 permit (Draft GAGXXXXXX). Installation units would be required to follow MCM under MS4 for all storage areas within industrial areas, living quarters, parking areas and other day-to-day operations. Under the Phase II NPDES MS4 requirements, activities constructed within the Installation boundary would be monitored to help ensure illicit discharges are prohibited and that pollutants from small construction or maintenance activities are prevented, reduced, and/or minimized to meet Fort Benning standards as per the SWMP. Good housekeeping measures for municipal operation are also addressed by the SWMP. These would prevent and minimize water quality impacts within the Installation and meet NPDES requirements. Fort Benning has been regulated under GDNR NPDES MS4 Phase II since August 2003; however, this permit still has not been finalized by GEPD. Basic requirements are being implemented at the Installation level as part of the basic AR 200-1 requirements.

Areas where drainage is anticipated to be a problem should be identified during the planning stages of a proposed project. Projects proposed in areas identified as having the potential for drainage issues may require additional requirements during and after maintenance or construction activities to manage storm water runoff outside of the actual project boundary; to include measurements to prevent and minimize water quality impacts after construction ends. These may include but are not limited to: evaluation and design of new and existing drainage systems to ensure proper capacity; Low Impact Development (LID) considerations; storm water runoff watershed protection; existing and future state-generated TMDL Plans.

4.10.1.5 Sediment and Erosion Regulations

The Georgia Water Quality Act (1964) established a standard of not more than a 25 nephelometric turbidly units (NTUs) difference between water samples above a land disturbing activity and water samples below the activity. Alabama's Department of Environmental Management rules and regulations prohibit more than a 50 NTUs difference between upstream and downstream measurements.

Fort Benning actively manages storm water quality and sedimentation from surface water runoff in conformity with the Georgia Erosion and Sediment Act of 1975, and Clean Water Act (Georgia State Clean Water Laws) (Fort Benning 2001). Fort Benning requires the use of BMPs for all soil disturbing activities that may occur during construction, demolition and maintenance projects, training activity, site restoration and forest management activities (Fort Benning 2001). Fort Benning personnel ensure that all RECs (FB-144R) provide military units and natural resource management personnel with soil conservation planning assistance before and during land disturbing projects. The NRCS conducts inventories and evaluates erosion sites, develops and implements rehabilitation contracts, provides technical inspection during construction and conducts follow-up evaluation. The Fort Benning Soil

Conservationist assists NRCS, military units and DPW on erosion projects that are larger than 1 acre (Fort Benning 2001).

Georgia's Erosion and Sedimentation Act (OCGA 12-7-1) implements stream buffer regulations for non-trout waters. Any proposed land disturbing activity within a 25-ft buffer of a water resource would require a GEPD Stream Buffer Variance (SBV). At the current time, Alabama has no requirements for stream buffers relating to construction activities yet water quality is regulated through Alabama's NPDES program. The state of Alabama uses the authority delegated to the states under Federal storm-water regulations (40 Code of Federal Regulations, Parts 122, 123 and 124) to regulate land disturbing activities in the state of Alabama. A NPDES General Permit is required from the Alabama Department of Environmental Management (ADEM) for all land disturbing projects or activities that exceed five acres or, if less than 1-acre, is part of adjacent to or associated with a larger common plan of disturbances development that eventually any exceed five acres of total disturbance.

4.10.2 Environmental Consequences

This section assesses the potential effects of the no action and Transformation action alternatives on water resources. These effects would result from the construction of new facilities, changes to training operations, and ongoing operation and maintenance throughout the Installation. Potential effects to surface water characteristics and increased impervious surfaces and storm water flows and their potential effects on surface water quality and quantity are considered.

The threshold level of significance for water resources is defined as any impacts (chemical, physical, or biological effects) that would be detectable and would be frequently altered from the historical baseline or desired water quality conditions; and/or chemical, physical, or biological water quality standards or criteria would be locally, slightly, and singularly, exceeded on either a short-term or prolonged basis. The project actions would adversely impact a water body currently considered impaired under CWA.

Section 4.10.2.1 addresses the potential impacts of the No Action Alternative. Implementation of either Alternative A or B would have some potential adverse impacts to water resources; mitigation that would minimize those impacts is identified in Section 4.10.3 of this document.

4.10.2.1 No Action Alternative

No adverse impacts to water resources would be expected as a result of taking no action at Fort Benning. In keeping with Fort Benning's vision to support the military mission while promoting the ecological integrity of its landscape, long-term beneficial effects would be expected (Fort Benning 2001). Fort Benning's environmental stewardship efforts seek to ensure that natural resource conservation measures and military activities on Fort Benning mission land and cantonment areas are integrated and are consistent with federal stewardship requirements (Fort Benning 2001). Fort Benning has begun to integrate its INRMP with its Strategic Environmental Research and Development Program (SERDP) and to Strategic Ecosystem Management Plan (SEMP) to better monitor the ecosystem and respond to environmental issues, concerns, and formal requirements emerging from all DoD services (USACE

2002b). Another important program being implemented at Fort Benning is the ITAM Program, which can be used to monitor land composition trends and mitigate adverse impacts of the military mission on long-term training land viability (Fort Benning 2001). Programs and initiatives such as these, which may commence in the absence of the proposed Fort Benning Transformation, are may reduce negative impacts to water resources.

4.10.2.2 Transformation Alternative A

The potential for direct and indirect impacts to water resources are analyzed below for the cantonment and range areas. It is important to note that, with the exception of projects slated for FY 2007 and FY 2008, complete design information is not yet available. Therefore, a programmatic analysis is based on the total potentially affected area for projects. As previously stated, when siting projects considerations were made for avoidance of environmental impacts (including water resources) and construction footprint. Additional considerations will be implemented in the design, construction, and long-term operation and maintenance phases of these projects. Section 4.10.3 addresses these considerations in terms of required and recommended mitigation.

Refer to Figure 4.10-2 depicting the Transformation alternatives in context of water resources for Alternative A. Tables 4.10-2 thru 4.10-8, lists those projects having the potential for direct impacts, defined as where a portion of the potentially disturbed project area (or total disturbance envelope) falls within 25 ft of perennial streams and indirect impacts, meaning that the impact associated with the project may occur later in time or farther removed from the project but are the result of project implementation. Temporary adverse impacts associated with the implementation of the Harmony Church expansion in the absence of mitigation measures include stream bank erosion, potential stream channel changes, sedimentation, and deterioration of stream buffers. Adverse impacts would include sedimentation, stream channel change, and permanent stream buffer encroachment. Minor impacts such as soil erosion within construction sites and deterioration of stream buffers are expected to occur even with properly implemented BMPs and other mitigation measures.

Harmony Church Cantonment Area

Within the Harmony Church Cantonment Area, 19 projects located within WMUs 19, 23, and 5 have the potential to adversely affect water resources (Table 4.10-2). In the absence of BMPs and adherence to environmental mitigation measures as discussed in Section 4.10.3, stream sedimentation and an increase in storm water runoff would be anticipated to adversely impact Ochille Creek and its tributaries; Lemert Creek and its tributaries; Heriot Creek; Harps Creek and its tributaries; Mill Creek and its tributaries; Twilight Pond; Victory Pond; Upatoi Creek tributaries; and tributaries to Oswichee Creek. Streams that are anticipated to be directly impacted, if Harmony Church Cantonment Area projects are constructed as proposed, are also susceptible to indirect impact in the absence of mitigation measures as discussed in Section 4.10.3.

Table 4.10-2: Potential Water Source Impacts (Harmony Church Cantonment Area)–Alternative A

Project FY	Project Title	Total Potentially Affected Area (in acres)	Potential Direct Impacts to Water Resources	Potential Indirect Impacts to Water Resources	WMUs
Harmony Church		1,118	Tributaries to Ochille Creek; tributary to Lemert Creek; tributary to Heriot Creek; tributary to Harps Creek; Harps Creek; tributaries to Mill Creek; and Mill Creek.	Twilight Pond; Victory Pond; Lemert Creek; Ochillee Creek; various tributaries to Ochillee Creek; tributaries to Heriot Creek; tributaries to Lemert Creek; Harps Creek; tributaries to Harps Creek; Mill Creek; tributaries to Mill Creek, tributaries to Upatoi Creek; and tributaries to Oswichee Creek	19, 23, and 5
2007	Initial Entry Training (IET) Brigade Headquarters Building				
2007	Trainee Barracks Complex 1				
2008	Maneuver Center Simulation Facility				
2008	Unit Maintenance Activity Facility				
2008	Troop Medical Clinic				
2008	16th CAV Regt HQ Building Complex (BDE, BN, and Company Operations Facilities (COFs)				
2009	Armor Officer Basic Course Headquarters Complex Conversions				
2009	Vehicle Maintenance Instruction Facility				
2009	Centralized Wash Facility with Soaking Capability				
2010	Army Reserve Center				
2010	Equipment Concentration Site (ECS)				
2011	Recreation Center, Harmony Church				
2011	Physical Fitness Center with Pool				
2012	Battle Command Training Center				
2012	Chapel				
2007-2008	Training Support Brigade Complex (Phase I and 2)				
2008	Trainee Barracks Complex 3				
2011	3 ID BCT (Heavy) Complex				

Sand Hill Cantonment Area

Within the Sand Hill Cantonment Area, six projects all located within WMU 5 would potentially directly affect water resources. The western edge of the Trainee Barracks Complex BCT area of potential effect is Steam Mill Creek. The eastern edges of the Maneuver Center Reception Station Barracks and Processing

Center Complex abut Opossum Creek. At two locations, infrastructure support (utility corridors) traverses Tiger Creek (along the Fort Benning boundary and in association with the Chapel project). The proposed improvements to transportation infrastructure in the southern portion of this cantonment area would occur at the existing Victory Drive interchange, which is just north of Upatoi Creek. Impacts associated with the implementation of proposed projects in the Sand Hill Cantonment Area would be similar to those discussed for the Harmony Church Cantonment Area (Table 4.10-3).

Streams that are anticipated to be directly impacted, if Sand Hill Cantonment Area projects are constructed as proposed, are also susceptible to indirect impact in the absence of mitigation measures as discussed in Section 4.10.3 of this document. Proposed project construction from 2007 to 2013 is anticipated to disturb approximately 246 acres of land. Unmitigated water quality impacts would likely include stream sedimentation and an increase in pollutant loading in water resources due to increased storm water runoff and a higher potential for illicit discharges to enter into waterways.

Table 4.10-3: Potential Water Source Impacts (Sand Hill Cantonment Area)–Alternative A

Project FY	Project Title	Total Potentially Affected Area (in acres)	Potential Direct Impacts to Water Resources	Potential Indirect Impacts to Water Resources	WMUs
Sand Hill		246	Opossum Creek; Upatoi Creek and its tributaries; Steam Mill Creek; and Tiger Creek	Opossum Creek; Upatoi Creek and its tributaries; Steam Mill Creek; and Tiger Creek and its tributaries	5
2007	Trainee Barracks Complex 2				
2008	Health Clinic Expansion - Winder				
2008	Solomon Dental Clinic Expansion				
2008	Training Aids Center Building Conversions				
2008-2010	Reception Station Barracks and Processing Center				
2012	Chapel				

Main Post Cantonment Area

The Main Post is located on the banks of a portion of the Chattahoochee that is impaired. Impacts associated with the implementation of proposed projects in the Main Post Cantonment Area are similar to those discussed for the Harmony Church Cantonment Area. Strict adherence to all Fort Benning NPDES permits and Georgia's stream buffer rules would be required to ensure no adverse impacts and that no additional stream impairment from sedimentation and fecal coliform occurs within the Chattahoochee River.

Proposed project construction from 2007 to 2013 is anticipated to disturb approximately 562 acres of land (Table 4.10-4). In the absence of BMPs and adherence to environmental mitigation measures as discussed in Section 4.10.3, stream sedimentation and an increase in storm water runoff would be

anticipated to adversely impact tributary to Chattahoochee River; Tributary to Hamlet Creek; Laundry Creek and its tributaries; Upatoi Creek and its tributaries; Armory Creek; and Gilbert Creek. Streams that are anticipated to be directly impacted, if Main Post Cantonment Area projects are constructed as proposed, are also susceptible to indirect impact in the absence of mitigation measures as discussed in Section 4.10.3

Table 4.10-4: Potential Water Source Impacts (Main Post Cantonment Area)–Alternative A

Project FY	Project Title	Total Potentially Affected Area (in acres)	Potential Direct Impacts to Water Resources	Potential Indirect Impacts to Water Resources	WMUs
Main Post		562	Upatoi Creek and its tributaries; tributary to Hamlet Creek; Laundry Creek, and Gilbert Creek	Tributary to Chattahoochee River; Tributary to Hamlet Creek; Laundry Creek and its tributaries; Upatoi Creek and its tributaries, Armory Creek; and Gilbert Creek	5, 24
2007	Child Development Center 6-10 Years				
2008-2010	Maneuver Center Renovations, Building 4				
2009	Museum Operations Support Buildings				
2009	CIDC Group/BDE Headquarters Building				
2009	Consolidated Troop Medical Clinic				
2010	Maneuver Center Headquarters Building Expansion and Capabilities Development and Integration (CDI) Directorate Facility				
2012	Headquarters Complex, 14th Combat Support Hospital				
2009-2010	Hospital Replacement				
2008	Special Operations Forces (SOF) Special Troops Battalion HQ Building				
2008	SOF Ranger HQ Addition				
2008	SOF Vehicle Maintenance Shop				
2011	SOF Ranger Support Company HQ				
2013	Child Development Center Under 6 Years				
2011	Barracks Complex				

Kelley Hill Cantonment Area

Within the Kelley Hill Cantonment Area, two projects located within WMUs 5 and 24 would potentially affect water resources (Table 4.10-5). The Direct Support/General Support Vehicle Maintenance Facility and the General instruction Building Complex both have the potential to directly impact tributaries to McMurrin Branch; Daugherty Creek; Hamlet Creek; and Heriot Creek.

Impacts associated with the implementation of proposed projects in the Kelley Hill Cantonment Area would be similar to those discussed for the Harmony Church Cantonment Area.

Streams that are anticipated to be directly impacted, if Kelley Hill Cantonment Area projects are constructed as proposed, are also susceptible to indirect impact in the absence of mitigation measures as discussed in Section 4.10.3 of this document. Proposed project construction from 2007 to 2013 is anticipated to disturb over 85 acres of land. Unmitigated water quality impacts would likely include stream sedimentation and an increase in pollutant loading in water resources due to increased storm water runoff and a higher potential for illicit discharges to enter into waterways.

Table 4.10-5: Potential Water Source Impacts (Kelley Hill Cantonment Area)–Alternative A

Project FY	Project Title	Total Potentially Affected Area (in acres)	Potential Direct Impacts to Water Resources	Potential Indirect Impacts to Water Resources	WMUs
Kelley Hill		85	Tributary of McMurrin Branch; tributary of Daugherty Creek; Wortley Creek and its tributaries; and tributary of Heriot Creek	Twilight Pond; tributary of McMurrin Branch; tributary of Daugherty Creek; Wortley Creek and its tributaries; tributary of Hamlet Creek; and tributary of Heriot Creek	5, 24
2012	Direct Support/General Support (DS/GS) Vehicle Maintenance Facility				
2008-2010	General Instruction Building Complex (includes Student Dining Facility and Main Post Quarter, Non-Unaccompanied Personnel Housing (UPH) Billeting Space to Transient UPH Advanced Skills Training, Infantry Officer Basic Course Headquarters Complex Building Conversions)				

Ranges North of U.S. Highway 27/280

There are numerous range facilities proposed near the northwestern edge of the Installation within WMUs 3 and 4. The Oscar Range Complex would include two 20-acre Fire and Movement Ranges; one 43-acre and four 24-acre Fire and Movement Ranges; and five 1-acre Rifle/Machinegun Zero Ranges (Table 4.10-

6). The heavy use impact area (or area that was modeled to best represent the area in which the greatest amount of operation impacts and maintenance activities associated with range operations would occur) associated with many of these ranges overlaps. Water resources in the vicinity of the proposed Oscar Range Complex range facilities include Dozier Creek, Randall Creek, and their tributaries. Soils found within the boundaries of the Oscar Range Complex consist largely of loamy sand and sand loam and are highly susceptible to erosion once disturbed. In the absence of mitigation as specified in Section 4.10.3 of this document, direct impact to Dozier Creek and Randall Creek associated with proposed construction and operation activities would result in notable increases in stream sedimentation and storm water runoff.

The design process for those ranges proposed for FY 2007 has begun and, as a result, a more detailed analysis of potential impacts to water resources from these projects can be provided. Construction of the Fire and Movement Range 1 and the Modified Record Fire Range 2 would require the construction of four (two for each site) temporary sedimentation basins to meet state sediment and erosion control criteria. There are no "waters of the state" within 200 ft of the Modified Record Fire Range, with the exception of an unnamed ditch crossing the entry road (USACE 2006a). The entry road would be crossed at a 90-degree angle with disturbance of 100 lf of ditch line. The proposed roadway is exempt from Georgia's SBV. The only "waters of the state" within 200 ft of the Fire and Movement Range are wetlands which are tributary to Dozier Creek located to the east of the wetlands.

The Rail Car Storage and Tracks for deployment is located within the WMU 19. Implementation of this proposed project is anticipated to abut portions of Ochillee Creek. Soils found within the boundaries of the Rail Car Storage and Tracks consist largely of sand loam and sand, making it highly susceptible to erosion once disturbed. In the absence of site design and mitigation as specified in Section 4.10.3, direct impact to Ochillee Creek would result in notable increases in stream sedimentation and storm water runoff.

The northeastern most portion of the proposed Multipurpose Machine Gun Range has the potential to directly impact Dozier Creek and to indirectly impact water quality within both Dozier Creek and Randall Creek. The Multipurpose Machine Gun Range is being proposed as a 238-acre facility. Soils found within the boundaries of the Multipurpose Machine Gun Range consist largely of loamy sand and sand loam and are highly susceptible to erosion once disturbed. In the absence of site design and operation mitigation as specified in Section 4.10.3, direct impact to Dozier Creek and Randall Creek would result in notable increases in stream sedimentation and storm water runoff.

The eastern edge of two stationary tank/fighting vehicle gunnery ranges, which are planned at 740-acres each plus an associated beaten area, are anticipated to encroach upon Upatoi Creek and its stream buffer. The northern stationary tank/fighting vehicle gunnery range (ST1), which occurs within WMUs 3 and 10, is an FY 2007 project for which design has begun. Current design for this range indicates that water resource impacts would be avoided. The southern stationary tank/fighting vehicle gunnery range (ST2) occurs within WMUs 3, 8, and 10 as an FY 2009 project. Impacts to water resources that would result from the construction and ongoing operation of these ranges include notable increases in sediment loading into Upatoi Creek, its tributaries, and other downstream water resources. Soils found within the

boundaries of the stationary tank/fighting vehicle gunnery ranges consist largely of loamy sand and sand loam and are highly acceptable to erosion once disturbed. In the absence of water quality mitigation, direct impact to Upatoi Creek would result in adverse increases in stream sedimentation and storm water runoff.

The portion of the CACTF Phase 2 project potentially impacting water resources is located at the end of the westernmost branch of the Heavy Maneuver Corridor - South in the northern ranges. The proposed site for this portion of the CACTF Phase 2 is near a tributary to Ochillee Creek. In the absence of site design and operation mitigation as specified in Section 4.10.3, direct impact to a tributary to Ochillee Creek would result in adverse increases in stream sedimentation and storm water runoff.

In addition to these range facilities, the development and use of the Heavy Maneuver Area – North to support heavy maneuver training for the Armor School would result in adverse impacts to water resources if not properly mitigated. Disturbance of soils caused primarily by the use of heavy machinery and tanks would increase the likelihood of that sedimentation and pollutants would enter water resources by way of storm water runoff. Potential impacts to water resources are of greater concern in the Heavy Maneuver Area – North, given the adjacency to Randall Creek. This maneuver area is located in WMUs 4 and 6. The estimated heavy/repeated impact within this maneuver corridor is depicted in Figure 3.2-7. Low-water stream crossings would be established at tank trails; there would not be free maneuver training along stream banks. A relatively large area is identified for heavy/repeated free maneuver training in the southeastern corner of the maneuver corridor adjacent to Randall Creek. Specific requirements would need to be followed for any stream buffer variance during the implementation of this project. Tributaries just to the northwest of this maneuver area empty into Bull Creek (located to the west of the Installation boundary), which is designated by GEPD as “biota impacted” due to increased sedimentation loads from non-point sources. Establishment and ongoing use of the Heavy Maneuver Area – North would not be expected to affect Bull Creek, its impaired status, or TMDLs.

There are fewer water resources that would potentially be impacted as a result of establishment and ongoing operation and maintenance of the Heavy Maneuver Corridor - South area. As with the Heavy Maneuver Area – North, stream banks would not be used for heavy maneuver (see Figure 2.3-7). The estimated 2,734 acres of heavy/repeated impact within this maneuver corridor would occur within WMUs 9, 11, 12, 14, 16, 17, 18, and 19. The easternmost branch of the Heavy Maneuver Corridor - South would cross Little Pine Knot Creek. The westernmost branch of the maneuver corridor includes crossings for Bonham Creek and tributaries of Ochillee Creek. The area of free maneuver would be to the north and south of these stream crossings; the existing trail would be reinforced/upgraded including hardening at the stream crossing to minimize potential impacts to water resources, both at the stream crossing and at down-gradient waters. The down-gradient portion of Little Pine Knot Creek is listed as partially supporting fishing uses; it is considered ‘biota impacted’ caused by sediment non-point/unknown sources. Prevention of further impairment of Little Pine Knot Creek may require the development of state-generated TMDL Plans prior to and after project implementation. The southern portion of the Heavy Maneuver Corridor - South area and the bottom finger (of the 3-fingered corridor) along Hourglass Road

proceeding in a westward direction consists of loamy sand and sandy loam soils making these areas susceptible to erosion once disturbed. In the absence of water quality mitigation, direct impact to Little Pine Knot Creek, Bonham Creek, and tributaries of Ochillee Creek would result in adverse increases in stream sedimentation and storm water runoff.

The acreage that would be impacted by the development of the Drivers Training Area (to include the Basic and Advanced Drivers Training Courses, Vehicle Recovery, and Off-Road Drivers Training) in the absence of mitigation measures includes tributaries to the Upatoi Creek. Potential impacts to these water resources would be minimized in the ultimate layout of the roads and obstacles that would comprise this course. Soils found within the boundaries of the Drivers Training Area consist largely of loamy sand, sand loam, and loamy course sand and are highly susceptible to erosion once disturbed. In the absence of water quality mitigation, direct impact to tributaries of Upatoi Creek would result in adverse increases in stream sedimentation and storm water runoff.

Table 4.10-6: Potential Water Source Impacts (Ranges North of U.S. Highway 27/280)–Alternative A

Project FY	Project Title	Total Potentially Affected Area (in acres)	Potential Direct Impacts to Water Resources	Potential Indirect Impacts to Water Resources	WMUs
Range Development Projects North of U.S. Highway 27/280		8,282	Ochillee Creek; tributaries to Randall Creek; Randall Creek; tributaries to Upatoi Creek; tributaries to Ochillee Creek; Dozier Creek; Halloca Creek; Sally Branch; Bonham Creek; Clear Creek; Little Pine Knot Creek; and tributaries to Bull Creek	Ochillee Creek; tributaries to Randall Creek; Randall Creek; tributaries to Upatoi Creek; tributaries to Ochillee Creek; Dozier Creek; Hedley Creek; tributaries to Cox Creek; Wolf Creek and its tributaries; and tributaries to Bull Creek	19,8,23,9,11,12,14,16,17,18,3,10, and 4
2007	Fire and Movement Range-FM1				
2007	Modified Record Fire Range-MRF2				
2008	Modified Record Fire Range-MRF4				
2008	Modified Record Fire Range-MRF6				
2008	Modified Record Fire Range-MRF3				
2008	Combat Pistol Qualification Complex				
2008	Rifle/Machinegun Zero Range-Z1				
2008	Rifle/Machinegun Zero Range-Z2				
2008	Rifle/Machine Gun Zero Range-Z4				
2009	Heavy Maneuver Corridor – South				
2009	Basic and Advanced Drivers Training Course, Off-Road Drivers Training, and Vehicle Recovery Area				
2009	Heavy Maneuver Area – North				
2011	Multi-Purpose				

Table 4.10-6: Potential Water Source Impacts (Ranges North of U.S. Highway 27/280)–Alternative A					
Project FY	**Project Title**	**Total Potentially Affected Area (in acres)**	**Potential Direct Impacts to Water Resources**	**Potential Indirect Impacts to Water Resources**	**WMUs**
	Machine Gun Range-MPMG3				
2009	Modified Record Fire Range-MRF5				
2009	Rifle/Machine Gun Zero Range-Z5				
2009	Combined Arms Collective Training Facility, Phase II (CACTF)				
2009	Rifle/Machinegun Zero Range-Z3				
2010	Fire and Movement Range-FM3				
2007	Tank/Fighting Vehicle Stationary Gunnery Range-ST1				
2009	Tank/Fighting Vehicle Stationary Gunnery Range-ST2				
2010	Repair Existing Training Area Roads, Paved				
2012	Rail Car Storage and Tracks				

Ranges South of U.S. Highway 27/280

The establishment and ongoing operation and maintenance of the Qualification Training Range in the southern ranges and associated heavy use impact area as the potential to impact tributaries to Chattahoochee River. The portion of the Chattahoochee River down gradient from potentially impacted waters does not support fishing due to TMDL impairment from fecal coliform and urban runoff. Although direct impacts to water resources would be minimized in the design phase for these facilities, impacts to water resources would be expected as a result of vegetation clearing of these range areas, establishment of range facilities, and ongoing impacts from range maintenance and use. With respect to impaired streams, the proposed project may result in increased management practices to ensure that TMDLs for sedimentation are not affected by the proposed Transformation. In the event that sediment levels entering streams exceed regulatory limits, additional watershed management measures that are consistent with the Chattahoochee River Basin Plan would be implemented which may include the development of state-generated TMDL plans (Table 4.10-7).

Table 4.10-7: Potential Water Source Impacts (Ranges South of U.S. Highway 27/280)–Alternative A

Project FY	Project Title	Total Potentially Affected Area (in acres)	Potential Direct Impacts to Water Resources	Potential Indirect Impacts to Water Resources	WMUs
Range Development Projects South of U.S. Highway 27/280		448	Tributaries to Chattahoochee River; tributary to Red Mill Creek; and tributaries to Oswichee Creek	Tributaries to Chattahoochee River; tributary to Red Mill Creek; and tributaries to Oswichee Creek	22
2011	Qualification Training Range-QTR				

Low Water Crossings

An estimated 20 new water crossings would be established along the proposed range roads associated with the implementation of Alternative A (see Table 4.10-8). These would include concrete-reinforced tank trail beds established to harden trail paths through water, thus minimizing water quality impacts. Construction of the concrete reinforced tank trails would require diversion of streams during the construction phase. Stream diversion BMPs would be followed during this process (these include side slopes no steeper than 2:1, drainage area not to exceed 1-square mile, as detailed in Section 4.10.3). Up to 35 miles of new tank trails would be constructed. The area potentially affected by the establishment of a new tank trails is estimated at approximately 500 acres.

Table 4.10-8: Low Water Crossings Proposed with Alternative A

Project Title	Number of Low Water Crossings	Water Bodies Crossed
Northern and Eastern Perimeter Tank Trail	12	Dozier Creek; unnamed tributary of Dozier Creek; Randall Creek; Cox Creek; Kendall Creek; Tar River; Upatoi Creek; Kings Mill Creek; Pine Knot Creek; unnamed tributary of Upatoi Creek; and Little Pine Knot Creek
Heavy Maneuver Corridor - South	1	Sally Branch and Hallaca Creek
Existing Tank Trails (not proposed for road construction or upgrade)	4	Ochillee Creek, Upatoi Creek, and Pine Knot Creek
Heavy Maneuver Area - North	3	Unnamed tributaries of Randall Creek

In summary, minor impacts may occur during construction but would be mitigated if the proper measures are undertaken as described above. No adverse impacts are anticipated for operations and maintenance if all applicable management plans are developed; federal, state, and Installation regulations are met; and all necessary permits are obtained. See Section 4.10.3 for mitigation measures if these criteria are not met.

4.10.2.3 Transformation Alternative B (Preferred Alternative)

This section addresses how the potential impacts of Alternative B would differ from those of Alternative A. Refer to Figure 4.10-3 and Table 4.10-9 depicting the Transformation alternatives in context of water resources for Alternative B.

Although implementation of Alternative B has the potential to disturb a greater amount of land during construction (19,012 acres) as compared to Alternative A (10,741 acres), it is anticipated to result in

fewer long-term adverse impacts to waterways within the Installation due to the reduced amount of heavy maneuvering that would occur on highly erosive soils in the Heavy Maneuver Area – North.

Under Alternative B, the Heavy Maneuver Area – North would be used for both light and heavy maneuver training for any Fort Benning units, not just the Armor School. The Heavy Maneuver Area – North would be used to support some of the light maneuver training displaced by re-designating the Good Hope Maneuver Area and existing training. No vegetation clearing would occur in the Heavy Maneuver Area - North. The existing infrastructure would remain unchanged and no low-water crossings would be erected. The effects to Randall Creek and its tributaries in this area would remain unchanged.

The Good Hope Maneuver Area is proposed as a part of Alternative B to support heavy maneuver training for the Armor School. The reinforcement or upgrading of the existing transportation system and use of this area to support heavy maneuvering would potentially impact water resources, specifically Ochillee Creek and its tributaries, Cany Creek, Stevens Branch, and Hitchitee Creek.

Table 4.10-9: Potential Water Source Impacts (Good Hope Maneuver Area)–Alternative B

Project FY	Project Title	Total Potentially Affected Area (in acres)	Potential Direct Impacts to Water Resources	Potential Indirect Impacts to Water Resources	WMUs
South of U.S. Highway 27/280		16.11	Oswichee Creek and its tributaries; Cany Creek; Stevens Branch; Hitchitee Creek; Hewell Creek; Little Hichitee Creek; Shell Creek; and Sand Creek	Oswichee Creek and its tributaries; Cany Creek; Stevens Branch; Hitchitee Creek; Hewell Creek; Little Hichitee Creek; Shell Creek; Smith Branch; Cooks Branch and Sand Creek	20,25
2011	Good Hope Maneuver Area				

As with action Alternative A, the greatest potential for effect to water resources from heavy maneuver training is increased sedimentation. When considering the overall impact to water quality these impacts are not anticipated to be as great in the long term as what can be expected to occur under Alternative A in the Heavy Maneuver Area - North. This is because soils found within the boundaries of the Good Hope Maneuver Area are primarily sandy clay loam and are not as susceptible to erosion as soils found within the Heavy Maneuver Area - North. However, the segment of Hitchitee Creek located south of the Installation boundary adjacent to the proposed Good Hope Maneuver Area, is listed as “water quality limited” (i.e. State of GA 305(b)/303(d) listed) or impaired due to sedimentation. This segment of Hitchitee Creek is listed as partially supporting the designated use of fishing. Prevention of further impairment of Hitchitee Creek and its tributaries may require the development of existing and future state TMDL plans for the establishment and ongoing use and maintenance of the Good Hope Maneuver Area.

The Heavy Maneuver Corridor – South as delineated in Transformation Alternative A would be reconfigured to exclude the use of the bottom finger from Hourglass Road and west to the CACTF. Vehicles and tanks would use existing roads to transit from CACTF to the maneuver corridor east of

Hourglass Road. Cleared areas already identified in corridors east of Hourglass Road would still occur, there would be none west of Hourglass Road. The effect to Ochillee tributaries, Clear Creek, Upatoi Creek tributaries, and Bonham Creek would be less then those anticipated for Alternative A. "Cleared" areas refer to those areas where vegetation and existing structures are removed to prepare a site for new construction or provide necessary line-of-site clearances for training areas.

Implementation of Alternative B would require the establishment of an estimated 24 low water crossings along existing or proposed tank trails. This is four more low water crossings than proposed under Alternative A (Table 4.10-10).

Table 4.10-10: Low Water Crossings Proposed with Alternative B

Project Title	Number of Low Water Crossings	Water Bodies Crossed
Northern and Eastern Perimeter Tank Trail	12	Dozier Creek; Unnamed tributary of Dozier Creek; Randall Creek; Cox Creek; Kendall Creek; Tar River; Upatoi Creek; Kings Mill Creek, Pine Knot Creek; unnamed tributary of Upatoi Creek; and Little Pine Knot Creek
Southern Maneuver Corridor	1	Sally Branch and Hallaca Creek
Existing Tank Trails (not proposed for road construction or upgrade)	4	Ochillee Creek, Upatoi Creek, and Pine Knot Creek
Tank Trail to Good Hope Maneuver Area	1	Mill Creek
Good Hope Maneuver Area	6	Cany Creek, unnamed tributary of Oswichee Creek, and Hewell Creek

The water crossings in the Heavy Maneuver Area – North (potentially affecting various tributaries to Randall Creek) would not be established, but low water crossings in the Good Hope Maneuver Area and along the tank trail accessing the Good Hope Maneuver Area would be required potentially impacting Cany Creek, an unnamed tributary of Oswichee Creek, and Hewell Creek.

The area designated in Alternative A as Basic and Advanced Drivers Training Course and Vehicle Recovery Area would be utilized as an Off-Road Drivers Training Area under Alternative B. The effects to Randall Creek would be less than those anticipated for Alternative A due to a decrease in the total area of heavy and repeated impact to soil in the vicinity of the creek.

Projects in the vicinity of the Harmony Church Cantonment Area under Alternative B would potentially impact tributaries to Ochillee Creek to a greater extent than under Alternative A due to an increase in construction and operation related activities as well as an increase in impervious surfaces. These projects include the establishment of the Vehicle Recovery Area and Basic and Advanced Drivers Training Course as proposed under this Alternative.

In summary, minor impacts may occur during construction but would be mitigated if the proper measures are undertaken as described above. No adverse impacts are anticipated for operations and maintenance if all applicable management plans are developed; federal, state, and Installation regulations are met; and all necessary permits are obtained. See Section 4.10.3 for mitigation measures if these criteria are not met.

4.10.3 Mitigation Measures

Mitigation measures for water resources that would be applied for either alternative are identified for the planning and design phase, construction phase, and operation and maintenance phases below. Implementation of these mitigation measures would ensure that adverse impacts to water resources would not occur. Failure to comply with these mitigation measures would result in adverse impacts during construction as well as during military operations due to increased soil erosion and sedimentation.

Mitigation through Planning and Design and Construction Phase Mitigation

Many of the potential impacts to water resources can be minimized or avoided in the planning, design, and associated permitting processes for proposed projects.

Implementation of proposed projects having the potential to disturb 1 acre or more of land would require coverage under GDNR NPDES Permit GAR 100001, 100002, or 100003. An ESPCP would be developed prior to construction activities as required by the NPDES permit. The ESPCP must be prepared/designed and signed by a design professional with a GA NPDES Level II Training. Personnel qualified through GA NPDES Level 1A training are required to be on site during construction activities.

During the construction phase, an NOI for construction-related storm water discharge must be obtained from the GEPD for those construction activities including infrastructure/linear projects covered under GDNR NPDES General Permits 100001, 100002, and 100003. Operators and contractors must follow and implement all requirements identified in the NPDES permit including the ESPCP during the construction phase. Contractors and operator are required to ensure that permanent or temporary stabilization of previously disturbed soils in place within 14 days of project completion. If the contractor or operator returns to the construction site within the initial 14 days to conduct some additional land disturbing activities the timeframe in which stabilization is required may be extended by 7 days.

Implementation and operation of the proposed project would require compliance with NPDES MS4 Permit conditions and associated SWMP including the monitoring of activities conducted within the Installation boundary. NPDES MS4 and the SWMP help to ensure that illicit discharges are prohibited and that pollutants entering into waterways from construction and maintenance facilities are prevented, reduced, or minimized. SPCC requirements must be adhered to during construction activities as well as during operations of the newly constructed facilities. Proper design of the facilities under SPCC CFR 112 would help to make certain that no illicit discharges from the facility would adversely impact the surface and/or ground water. Failure to comply with the NPDES MS4 permit conditions and SPCC requirements would result in a greater probability of illicit discharges entering into waterway from construction sites. Some of the support facilities with latrines and their associated septic systems and drainage fields may result in the indirect deposition of pollutants (biota) into the groundwater and possibly even the adjacent streams if the latrines are not operating properly. The NPDES construction permit and NPDES MS4 permit would be used to mitigate water resource impacts.

As part of the NPDES permit, Fort Benning would update its existing SWMP to include projects in the planning stages of construction and operation. As the site specific ESPCP for each project is being developed BMPs designated to minimize pollution through source control including rock check dams, rock channels, sediment basins, diversions, and the placement of silt fence and erosion control practices must be considered. The ESPCP is modified in instances of notable change in site design, construction, or maintenance operations. BMPs that may be identified in the NPDES permit include good housekeeping measures to control soil erosion, reduce the amount of runoff, and to prevent or minimize stormwater pollution. These typically include measures such as installation of double row type C silt fencing prior to any land disturbing activities and dust control measurements, off-site vehicle tracking control, proper waste disposal at the site, and site sanitation to be implemented during land disturbance and/or construction activities. The contractor and/or proponent are responsible for the cleanup of any hazardous material/waste or chemical spills. BMPs for land disturbing and or construction activities, including road improvements must:

- Be designed in accordance to the Manual for Erosion and Sediment Control in Georgia;
- Protect all storm water drainages near the work area that would be affected from runoff during storm events;
- Comply with SPCC requirements as outlined in AR 200-1 when handling hazardous materials/waste within a construction site;
- Prevent discharges of wastewater into storm drains; and
- Collect wastewaters for proper disposal, and/or coordinate with CWW to ensure operations would not affect plant operators if wastewaters were discharged into sewer lines.

An application to GEPD for SBV is required to conduct land disturbing activities within state mandated 25-ft stream buffers in accordance with the Erosion and Sedimentation Act of 1975. This requirement includes projects that involve the construction or repair of a structure which by its nature must be located within the buffer; or recreational foot trails and viewing areas. Within 60-days of receipt of a completed buffer variance application, GEPD will either provide written comments to the applicant or propose to issue a variance with approved mitigation.

Applicable management practices that may be used to help reduce and/or maintain the average annual sediment loads include:

- Compliance with the requirements of the Georgia NPDES permit program;
- Implementation of Georgia Forestry Commission BMPs for forestry;
- Natural Resources Conservation Service (NRCS) Conservation Practices;
- Adoption of proper unpaved road maintenance practices;
- Implementation of ESCPs for land disturbing activities; and
- Mitigation and prevention of stream bank erosion due to increased stream flow velocities caused by urban runoff (GEPD 2003a and Fort Benning 2004).

Management practices recommended by GDNR, and followed by Fort Benning, to reduce and/or maintain the average annual fecal coliform is similar to those for sediment loads and include:

- Compliance with NPDES permit limits and requirements;
- Adoption of NRCS Conservation Practices; and
- Application of BMPs appropriate to agricultural or urban land uses, whichever applies (GEPD 2003b).

It is likely that project-specific Section 404 permits would be required for implementation of some of the Transformation projects. The project-specific mitigation measures to reduce or minimize any impacts in water resources and protect waterways would be specified by the USACE as conditions of permit approval. A violation of the Section 404 permit would occur if mitigation measures mandated in the permit are not fulfilled.

Specific requirements would need to be followed if there are any stream buffer variances. Field verification of "state waters" would be required during the design phase of all proposed Transformation projects. Any proposed land disturbing activity within a 25-ft buffer of a "state stream" would require a GEPD SBV. Application for a SBV must include an approved ESPCP. Restrictions on the encroachment of riparian stream buffer apply to project construction and operation activities, as well as for timber removal within the 25-ft buffer.

Management of storm water at industrial facilities includes the implementation of Permit GAR 000000 requirements for industrial facilities and the development and utilization of the SWP3. Surface water resources are subject to contamination from oil spills, pesticide residue, and untreated sewage bypasses. These potential contamination sources are controlled and minimized, however, by implementation of the ISPC and SWP3 (General Permit No. 000000), by sewage bypass reduction efforts, and by the related NPDES permit requirements to prevent sewage bypasses. Installation requirements to comply with the provisions of the Clean Water Act and state regulations to storm water prevention are stipulated in AR 200-1. The SWP3 provides protection for the water sources of Fort Benning by monitoring storm water discharge and implementing BMPs (Fort Benning 2001).

Fort Benning's SPCC Plan applies to new or redesigned facilities such as vehicle maintenance facilities, and facilities used to store hazardous materials in containers larger than 55 gallons and/or the use of underground storage tanks and/or above ground storage tanks. All maintenance and chemical storage areas would require proper design to ensure that no illicit discharges from the facilities would come in contact with surface and/or ground waters. All new storage areas for hazardous materials, chemicals, or wastes should be designed to allow for secure product storage and to provide secondary containment as per AR-200-1 and CFR 112. This would also meet Columbus Water Works (CWW) Ordinance No. 83-101 as well as future Fort Benning NPDES MS4 SWMP requirements.

Management of storm water at the Installation level would be accomplished by implementing Fort Benning's NPDES MS4 permit for military Installations and the SWMP. Construction site run off and post-construction storm water management are Minimal Control Measures (MCM) required under the

MS4 permit (Draft GAGXXXXXX). Installation units would be required to follow MCM under MS4 for all storage areas within industrial areas, living quarters, parking areas, and other day-to-day operations. Under the Phase II NPDES MS4 requirements, activities constructed within the Installation boundary would be monitored to help ensure illicit discharges are prohibited and that pollutants from small construction or maintenance activities are prevented, reduced, and/or minimized to meet Fort Benning standards as per the SWMP. Good housekeeping measures for regular maintenance activities for municipal operation are also addressed by the SWMP. These would prevent and minimize water quality impacts within the Installation and meet NPDES requirements. Fort Benning has been regulated under GDNR NPDES MS4 Phase II since August 2003; however this permit still has not been finalized by GEPD. Basic requirements are being implemented at the Installation level as part of the basic AR 200-1 requirements. Adherence to NPDES requirements ensures that all wastewater from dining/kitchen/bathrooms/shower facilities and other operation requiring potable water are connected to the sanitary sewer system, not the storm water sewer system. Coordination with CWW is required for Sanitary Sewer and Sewage Disposal Ordinance requirements, particularly to meet Ordinance No. 83-101 Section 7 for management of fat, oils, and grease. Good management practices and maintenance of grease/oil collection sumps are to be implemented at all times to prevent or minimize sanitary sewer overflow to meet Fort Benning requirements.

For projects that are not covered under the NPDES GAR 1000001, GAR 1000002, or GAR 1000001 due to the land disturbance threshold of less than 1 acre, it is recommended that a basic ESPCP be designed similar to the one required under GAR 100001 Part IV. Projects that are not subject to NPDES permit would not be covered under a state permit but should protect all water resources from sediment and other pollutions.

Areas where drainage is anticipated to be a problem should be identified during the planning stages of a proposed project. Projects proposed in areas identified as having the potential for drainage issues may require additional requirements during and after maintenance or construction activities to manage storm water runoff outside of the actual project boundary; to include measurements to prevent and minimize water quality impacts after construction ends. These may include but are not limited to: evaluation and design of new and existing drainage systems to ensure proper capacity, Low Impact Development (LID) considerations, storm water runoff watershed protection, and TMDL plans done by the state.

Operation and Maintenance Phase Mitigation

Required: Surface water resources are subject to contamination from soil sedimentation, oil spills, pesticide residue, and untreated sewage bypasses. These potential pollution sources are controlled and minimized, however, by implementation of SPCC, ISCP, and SWP3 (General Permit No. 000000) for industrial facilities, ESPCP and SWMP, NPDES MS4, by sewage bypass reduction efforts, and by the related NPDES permit requirements to prevent sewage bypasses under the CWW NPDES permit for their WWTP and pretreatment facilities. The SWP3 provides protection for the water sources within the Installation by monitoring storm water discharges and implementing BMPs including inspection of the facilities and maintenance vehicles, awareness of potential circumstances for spills, and selection of smart

storage locations. Fort Benning's point of contact regarding specific requirements of the ISCP, SPCC, EPCRA, and NPDES is Mr. Felix Seda; Fort Benning DPW-EMD; 706-545-9879; felix.seda@benning.army.mil.

4.11 GEOLOGY AND SOILS

4.11.1 Affected Environment

Geologic and Topographic Conditions. Most of Fort Benning is located south of the Fall Line, which is defined by the overlap of Coastal Plain strata on top of Piedmont rocks. There is, however, a small area of the Piedmont Province located in the northeastern part of the Installation. Along the Fall Line Sandhills, crystalline rocks of the Piedmont are overlain by marine or fluvial sediments, resulting in varied topography. The sedimentary sequences of the Coastal Plain that overlie the crystalline basement rocks at Fort Benning consist of materials deposited during the Cretaceous, Tertiary, and Quaternary Periods. The Cretaceous Period sediments form the uplands and consist of the five following geologic formations (Fort Benning 2001). Table 4.11-1 below provides a general description of each of these formations.

The topography across the Installation is variable, with generally flat areas along the Chattahoochee River and steeper upland slopes farther inland. Elevations on Fort Benning range from about 170 to 750 ft above mean sea level (Fort Benning 2001).

Table 4.11-1: Geologic Formation Descriptions

Geologic Formation	General Description
Ripley Formation	Fine to very fine, calcareous quartz sand, massive burrowed to bioturbated, greenish-gray, weathers to dusky yellow, contains abundant muscovite, glauconite, and locally abundant carbonaceous debris; local clean quartz sand lenses. Ledge-forming, carbonate-cemented sand beds and calcareous concretions are common in upper part of unit. Thickness ranges from 133 to 250 ft. The Ripley Formation is found only along the southeastern boundary of Fort Benning. This area is also where the highest elevations on the Installation are found.
Cusseta Sand	Medium to coarse quartz sand, pale yellow to light olive gray, thinly bedded to laminated clay, medium olive-gray to brownish-black, and micaceous fine sand, light olive-gray. Formation thickness ranges from 150 to 233 ft.
Blufftown Formation	Fine sand to sandy clay, calcareous, glauconitic, and micaceous, light brownish-gray to olive-gray, interfingers with medium to coarse sand, quartzose, pale yellow. Locally abundant carbonaceous debris, shell beds, and calcareous concretions. Formation thickness ranges from 200 to 433 ft.
Eutaw Formation	Fine to very coarse sand, very pale orange to yellow, and clay, brownish -gray. Thickness of the unit ranges from 100 to 280 ft.
Tuscaloosa Formation	Fine to very coarse sand, pale yellowish-green to pale orange, crossbedded, quartzose and containing abundant potassium feldspar, interbedded with massive sandy clay, pale olive to reddish-brown, locally mottled. Gravelly and poorly bedded deposits at base difficult to distinguish from residuum on underlying crystalline rocks. Thickness ranges from 165 to 500 ft.

Source: Fort Benning 2001

Soils. Soils found within Fort Benning are highly weathered Ultisols, mostly of Coastal Plain origin but with some minor inclusion of alluviums derived from the Piedmont ecological unit, which occur in the northeastern portions of the Installation (Garten and Ashwood 2004). Ultisols are strongly leached, acid

forest soils with relatively low native fertility. They are found primarily in humid temperate and tropical areas of the world, typically on older, stable landscapes. Ultisols have a subsurface horizon in which clays have accumulated, often with strong yellowish or reddish colors resulting from the presence of ferric oxides (USDA 1999). The upland Piedmont soils in this region are typically highly eroded and often only subsoil remains (Fort Benning 2001).

Within the Installation, soils have been categorized into six soil associations. A soil association is a group of related soil series that generally occur in a characteristic pattern of landscapes that have identifiable topographic features, slopes, and parent materials. Soil series is a group of soils that have profiles that are almost alike, except for differences in texture of the surface layer or of the underlying material. All the soils of a series have horizons that are similar in composition, thickness, and arrangement. The major soil associations found within the installation include the Nankin, Orangeburg-Norfolk-Ailey, Riverview-Chewacla-Chastain, Vaucluse-Lakeland, Vaucluse-Orangeburg-Lakeland-Ailey, and Wagram-Troup-Norfolk-Lakeland (Fort Benning 2001).

The northeastern two thirds of Fort Benning and consists largely of light-textured soils on a dissected upper Coastal Plain landscape. Sand hills soils are also found in the southeastern portion of the Installation. Upland soils in the sand hills are loamy sands and sands, and on Fort Benning are found on the Tuscaloosa, Eutaw, and Cusseta geologies. Prominent upland soil series are the Ailey loamy coarse sand, Troup loamy fine sand, and Vaucluse sandy loam on the hilltops and Troup, Vaucluse, and Pelion loamy sand on side slopes (Table 4.11-2). All of these soils have sandy surface horizons and loamy subsoils and are highly permeable, droughty, and low in organic matter (Fort Benning 2001).

Soils of the southwestern third of Fort Benning consist of Thermic Udic Hapludults and are heavier textured and more mesic than soils of the southeastern portion of the Installation. They generally have higher water holding capacity and higher organic matter content. Predominant series include Cowarts loamy sand and Nankin sandy clay loam (Table 4.11-2) (Fort Benning 2001).

Table 4.11-2: Soil Series Descriptions

Soil Series	General Characteristics
Ailey	The Ailey series consists of soils that are deep or very deep to a dense layer. These well drained, slowly permeable soils formed in sandy and loamy marine sediments on uplands, mostly in the upper Coastal Plain. Slopes are 0 to 25 percent. K = 0.15
Riverview	The Riverview series consists of very deep, well drained, moderately permeable soils that formed in loamy alluvium on flood plains. Slopes range from 0 to 5 percent. Near the type location, the average annual temperature is about 66 degrees F and the average annual precipitation is about 58 inches. K = 0.32
Lakeland	The Lakeland series consists of very deep, excessively drained, rapid to very rapidly permeable soils on uplands. They formed in thick beds of eolian or marine sands. Near the type location, the mean annual temperature is about 67 degrees, and the mean annual precipitation is about 52 inches. Slopes are dominantly from 0 to 12 percent but can range to 85 percent in dissected areas. K = 0.10
Chewacla	The Chewacla series consists of very deep, moderately permeable, somewhat poorly drained soils on flood plains. They formed in recent alluvium washed largely from soils formed in residuum from schist, gneiss, granite, phyllite, and other metamorphic and igneous rocks. Slopes range from 0 to 2 percent. Mean annual precipitation is about 48 inches, and mean annual temperature is about 59 degrees near the type location. K =.28
Nankin	The Nankin series consists of very deep, well drained, moderately slowly permeable soils on uplands of the Coastal Plain. They formed in stratified loamy and clayey marine sediments. Slopes range from 0 to 60 percent. K = 0.32
Norfolk	The Norfolk series consists of very deep, well drained, moderately permeable soil on uplands or marine terraces. They formed in marine deposits or fluviomarine deposits. Slopes range from 0 to 10 percent. K = 0.17
Orangeburg	The Orangeburg series consists of very deep, well drained, moderately permeable soils that formed in loamy and clayey sediments of the Coastal Plain. Slopes range from 0 to 25 percent. K = 0.10
Troup	This very deep, somewhat excessively drained soil is on uplands. The subsoil is loamy and extends to a depth greater than 5 ft. Permeability is rapid in the surface and subsurface layers and moderate in the subsoil. Available water capacity is low. K = 0.10
Vaucluse	This very deep, well drained soil is on uplands. The subsoil is loamy and extends to a depth greater than 40 inches. Dense and brittle properties are below a depth of 15 to 35 inches. Permeability is slow and available water capacity is low. K = 0.15
Wagram	The Wagram series consists of very deep, well drained, moderately permeable soil on uplands or marine terraces. They formed in marine deposits or fluviomarine deposits. Slopes range from 0 to 15 percent. K = 0.15

Note: Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) and the Revised Universal Soil Loss Equation (RUSLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter and on soil structure and saturated hydraulic conductivity. Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

Source: USDA 2006a

Based on the available soil survey data, most of Fort Benning's soils are identified as being highly erodible. The degree of erodibility soils exhibit is determined by physical factors such as drainage, permeability, texture, structure, and percent slope (Fort Benning 2001). The rate of erodibility is based on the amount of vegetative cover, climate, precipitation, priority to waterbodies, and land use. At Fort Benning, disruptive land uses (i.e., training exercises) are a primary cause of accelerated erosion, which is

evident throughout the Installation. Disruptive activities accelerate the natural erosion process by exposing these highly erodible soils to precipitation and surface runoff.

Prime Farmland. Prime farmland soils are protected under the Farmland Protection Policy Act (FPPA) of 1981. Prime farmland is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops. The land must also be available for these uses (cropland, pasture land, forestland, or other land, but not water on urban built-up land). Prime farmland has the soil quality, growing season, and moisture supply needed to economically produce sustained high yields of crops when treated and managed, including water management, according to acceptable farming methods (USDA 2006b). Prime farmland does not include land already in or committed to urban development or water storage; however, land utilized or designated for commercial, industrial, or residential purposes is, therefore, categorically excluded from consideration. While there are soils within Fort Benning that can be classified as Prime Farmland soils, no soils on Fort Benning are used for agricultural purposes. As a result, no area within the Installation is regarded as prime farmland, therefore it will not be discussed further.

4.11.2 Environmental Consequences

Impacts would be considered adverse if ground disturbance or other activities would violate applicable federal or state laws and regulations, such as the Georgia ESCA, and the potential for NOVs for the failure to receive applicable state permits, such as a NPDES construction/operation permit under the ESCA, prior to initiating the proposed action under Alternative A or B.

4.11.2.1 No Action Alternative

Geologic and Topographic Conditions. Under the No Action Alternative, no new construction or demolition would occur, and on-going training operations would continue under the Installation's current mission. As a result, no adverse impacts to geologic or topographic conditions would be expected.

Soils. Under the No Action Alternative, no new construction or demolition would occur, and as a result, no impacts to soils resulting from these activities would occur. The Installation would continue conduct training exercises utilizing troops and mechanized vehicles would continue to occur. The types of training and the unit requirements would continue to adversely impact the highly erodible soils found at Fort Benning. Impacts to soils resulting from training would be similar to those discussed under the action alternatives; however, these impacts would only occur on the training ranges under current operation. Impacts to soil that would occur as a direct result of the removal of or damage to vegetation, digging activities, ground disturbance from vehicles, and munitions detonation include compaction, disturbance, and soil erosion. The use of vehicles such as the M1A1 Main Battle Tank and the BFV would disturb soils, which would result in soil erosion and stream sedimentation. These impacts, however, are localized as tank and BFV travel is restricted to existing roads and trails leading to the range and designated areas within the ranges. Impacts to soils also occur as areas are cleared and/or disturbed for bivouac sites, landing strips and pads for fix-winged aircraft and helicopters, and drop zones for airborne training, which also increases the potential for soil erosion.

Training vehicles also have the potential to leak or spill POLs onto the soils, resulting in potential soil contamination concerns. These vehicles, however, are required to have drips pans underneath when parked to minimize POL spills. Military units are also required to utilize secondary containment for the storage of hazardous materials/wastes and during refueling operations. These and other requirements of SPCC would continue to be followed. In addition, routine maintenance of the vehicles would help to identify and repair any conditions that might cause POL leaks. A spill response protocol has been established Post-wide and personnel on the ranges and in the training areas should have adequate spill response supplies on hand.

The Installation would be responsible for the overall operation maintenance of infrastructure, primary roads, tank trails, ranges, and training facilities proposed under this alternative. The Installation would ensure that all laws and regulations concerning environmental and natural resources protection are addressed, that site-appropriate BMPs related to the control of soil erosion and stream protection are used, and that all required protection, conservation, or mitigation actions associated with natural resources are incorporated into their activities. In accordance with federal and state regulations, all necessary permits would be obtained for storm water, including NPDES permits (GAR 1000001, 1000002, 100003) which specifically address construction activities (please refer to mitigations in Section 4.11.3 and 4.10.3 for water resource mitigation). The Range Division is responsible for maintaining access roads, configuring ranges and training areas, and maintaining training areas in usable condition. Range operation and maintenance projects are identified and prioritized by the Range Division. These projects are identified by the Range Division's Range Maintenance Coordinator through use of Department of the Army Form 4283 (Facilities Engineering Work Request). The Range Division manages, supervises, and executes the required work. The use of erosion and sedimentation control BMPs for Fort Benning mission lands are a required part of Range Maintenance's day-to-day operations.

Maintenance activities within ranges and training areas also would continue, resulting in the same level of ground disturbance and the same potential for POL spills from the maintenance vehicles themselves. During range safety and maintenance inspections, personnel would continue to check for areas of erosion, spill, and other environmental concerns and take appropriate actions. Implementation of applicable federal and state laws and regulations, such as erosion control BMPs and spill control measures, would repair or minimize potential effects to soils as a result of this alternative, resulting in temporary, minor adverse potential effects only. Despite, however, the current maintenance schedule that takes place within the training ranges, adverse impacts to soils are unavoidable based on the nature of the training exercises, and evidence of severe erosion has occurred in some areas, such as the areas currently used for heavy maneuver training. The ITAM program is designed to address significant impacts to soils as a result of ongoing training exercises, but impacts are left unabated when funding is lacking for ITAM projects as it has been in recent years.

The Installation currently uses BMPs to control soil erosion and for stream protection, and attempts to minimize impacts associated with training activities through the management and maintenance of the training ranges. BMPs must be properly designed and implemented and range maintenance must fully

address damage to soils to avoid adverse impacts from soil erosion. In addition, Fort Benning has a Memorandum of Understanding with the Natural Resources Conservation Service (NRCS) to control erosion. The NRCS provides contractor bidding services, performs surveys, and prepares and implements erosion control plans. All BMPs utilized within the Installation would be in accordance with the Manual for Erosion and Sediment Control in Georgia. While there could be adverse impacts to the highly erodible soils found at Fort Benning as a result of the day-to-day training operations, if all the proper procedures are followed by the USACE and Range Division, required permits are obtained, and all the proper BMPs and maintenance activities occur to help off-set these impacts, adverse impacts to soils as a result of ongoing and future use of the Installation's training ranges would not occur. If, however, Range Division is unable to keep up with the demands of managing and maintaining the active training ranges, BMPs are not properly implemented, and/or the ranges are not properly designed, adverse impacts to soils would occur.

4.11.2.2 Transformation Alternative A

Geologic and Topographic Conditions. No adverse impacts to geologic or topographic conditions would be expected under Alternative A. Prior to the construction of buildings and other facilities proposed under this alternative, minor leveling and grading would be required to prepare each specific site for building. Training operations would have little if any impacts to geology. Slight impacts to topography could occur as activities associated with range management (i.e. regrading and leveling disturbed areas) could occur over time. However, these impacts would not be considered adverse, as no considerable alterations of the general geologic or topographic character of the site would occur, and all laws and regulations concerning environmental and natural resources protection would be addressed.

Soils. Under Alternative A, the proposed construction of administrative, supply/storage, maintenance, barracks, commercial services, community facilities, medical and dental, and recreation facilities would occur within the four cantonment areas: Main Post, Kelley Hill, Sand Hill, and Harmony Church. The proposed improvements/upgrades to existing ranges and maneuver areas and proposed new ranges have been sited to align with the Installation's existing training assets.

Over the entire Installation, the Transformation projects proposed under Alternative A would introduce 10,741 acres of facility (2,011-acres for buildings, parking areas, motor pools, maintenance areas within the cantonment areas, and required infrastructure) and range construction (8,730-acres for range facilities, maneuver areas, and drivers training courses). In addition, up to 35 miles of new tank trails would be constructed. The area potentially affected by the establishment of new tank trails is estimated at about 500 acres. This includes an area delineated from 60 ft from the centerline, or 120 ft wide, to include berms and erosion control measures. Once the trail is established it is expected that the ongoing average operational width of the road would be 30 ft, including the berms to support the variety of wheeled and tracked vehicles used for Armor School training. Table 4.11-3 provides the soil associations and their respective erodibility factors located within each of the cantonment areas and ranges area that would be affected by Alternative A.

Table 4.11-3: Erodibility of Soils Associated with Transformation Alternative A

Cantonment Areas	Anticipated Soil Disturbances (Acres)	Soil Association(s)	Erodibility (K)* Factor
Harmony Church	1,118	Nankin	0.32
		Vaucluse-Lakeland	0.10
Kelley Hill	85	Nankin	0.32
		Vaucluse-Lakeland	0.10
Main Post	562	Nankin	0.32
		Vaucluse-Lakeland	0.10
Sand Hill	246	Nankin	0.32
		Vaucluse-Lakeland	0.10
Cantonment Area Subtotals	**2,011**		
Ranges			
Northern Range Facilities, Northern Range Maneuver Area, Heavy Maneuver Corridor - South, and Drivers Training Course	8,282	Vaucluse-Lakeland	0.10
		Riverview-Chewacla-Chastain	0.28 – 0.32
		Wagram-Troup-Norfolk-Lakeland	0.10 – 0.15
		Nankin	0.32
Range Facilities South of U.S. Highway 27/280	448	Vaucluse-Lakeland	0.10
Range Area Subtotal	**8,730**		
TOTAL	**10,741**		

Note: *Soil erodibility factor K represents both susceptibility of soil to erosion and the rate of runoff, as measured under the standard unit plot condition
Source: USDA 2003.

Figure 4.11-1 on the following page shows the locations of the actions proposed under both action alternatives A and B in relation to the soil associations found within the Installation.

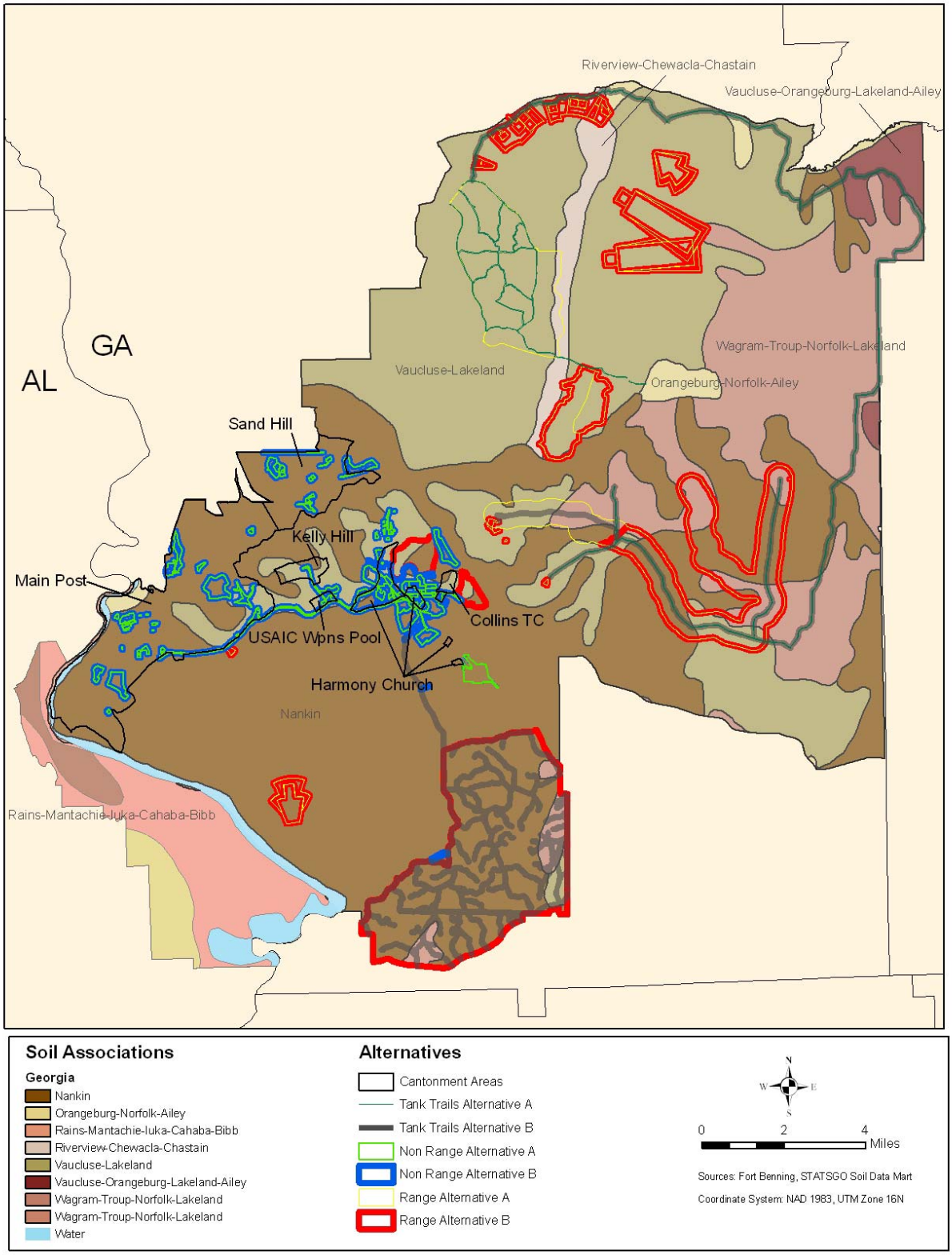


Figure 4.11-1: Soil Associations in Relation to Transformation Actions Alternatives A and B

The physical impacts to soils that would occur as a result of site preparation would include soil compaction, and disturbed and modified soil layers. Soil productivity, (i.e., the capacity of the soil to produce vegetative biomass), also would decline in disturbed areas and be completely eliminated for those areas within the footprint of paved or other hardened areas and new structures. Impacts to soils from construction and/or demolitions activities occurring in areas that are currently or previously developed would be minimal, given the fact that these soils have been previously disturbed or modified and in some areas are already with covered structures, concrete or other appropriate surfaces.

After these initial physical impacts occur however, the rate of soil erosion could differ between areas within the installation, based on differences in soil erodibility (K) between the different soil associations. Soils high in clay have low K values, about 0.05 to 0.15, because they are resistant to detachment. Coarse textured soils, such as sandy soils, have low K values, about 0.05 to 0.2, because of low runoff even though these soils are easily detached. Medium textured soils, such as the silt loam soils, have a moderate K value, about 0.25 to 0.4, because they are moderately susceptible to detachment and they produce moderate runoff. Soils having a high silt content are most erodible of all soils. They are easily detached; tend to crust and produce high rates of runoff. Values of K for these soils tend to be greater than 0.4 (USDA 2003). As presented, the Nankin Association has the largest K factor at 0.32, and thus is the soil with the most potential to be eroded. The Riverview-Chewacla-Chastain association has a K factor of 0.28 to 0.32, and the remaining associations found within the installation have K factors between 0.10 and 0.24. These K factors, however, represent the soils in their natural condition. They do not indicate how past management or misuse of a soil increases a soil's erodibility. In those areas where the subsoil is exposed, the organic matter has been depleted, the soil's structure destroyed or soil compaction has reduced permeability; the K factor would be increased regardless of soil type (USDA 2003). Other factors affecting erodibility include soil slopes, total exposure time, and slope length. Table 4.11-4 below provides a general percentage of the amount of area of the proposed project areas covered by a specific soil association (see Figure 4.11-1).

Table 4.11-4: Coverage of Soil Associations per Total Area of Alternative A Actions

Soil Name	Non-Range Transformation Alternative A	Range Transformation Alternative A
Nankin K = 0.32	76%	5%
Riverview-Chewacla-Chastain K = 0.28 – 0.32	0%	5%
Vaucluse-Lakeland K = 0.10	24%	90%

Activities associated with the construction of new facilities, required utility corridors, and for the line-of-site clearing for the training ranges proposed under Alternative A would be conducted in several phases. During the initial phase, either the site would be cleared of vegetation or existing structures would be removed. Immediately after this phase, soils on the site would be left exposed to the elements and highly susceptible to erosion wind and stormwater runoff. The longer these soils are left exposed, the more soils

would be ultimately be eroded. These impacts would be greater on the Nankin soils and the Riverview-Chewacla-Chastain, than on the other soil associations found within the Installation due to its higher erodibility factor (see Figure 4.11-1).

The necessary maintenance of roads and trails and the construction of approximately 500 acres of new roads needed in response to the actions proposed under this alternative would result in additional ground disturbance. Soil productivity within the footprints of the newly constructed roads would be lost, and there would be increased runoff, which in turn could increase the potential for erosion. Travel to and within ranges and training areas especially as vehicles and equipment exit the training areas and ranges and access the travel routes would result in vehicles potentially disturbing soil on the side of paved or unpaved roads, and equipment disturbing soils in ranges and training areas resulting in exposed disturbed soils and could increase the potential for erosion. Adverse impacts to soils from the proposed construction of roads and buildings and necessary demolition activities would be minimized by the mitigation measures summarized in Section 4.10.3.

Construction and demolition activities may result in the migration of airborne or waterborne soil particles and POLs onto adjacent lands and streams, which could contribute to sedimentation of off-site areas. For POLs, Fort Benning would require use of fueling and maintenance practices as well as spill counter measures to prevent contamination of soil. During the construction process, any construction exits would use existing access roadways to the landings, or the established maintenance/motor pool area, which would result in less earth moving and vegetative removal.

Construction of facilities involving the use and storage of hazardous materials would be designed to meet the SPCC requirements per AR 200-1 and CFR 112, as well as state and federal requirements as applicable. These facilities include, but are not limited to, wash racks, USTs, ASTs, oil/water separators and dining facilities where grease rendering bins are used, maintenance facilities, loading/unloading operations areas, hazardous material and POL storage areas (above/underground facilities), and generators. Design requirements of these facilities could include, among others: secondary containment and/or diversion structures and spill supplies and equipment to mitigate spills and/or releases. These measures would prevent and/or minimize soil contamination from possible discharge of pollutants into the environment. As part of this alternative, the Installation would also be required to develop SWP3 and meet MS4's requirements to minimize adverse impacts to water quality during the operation of these facilities by addressing issues related to both point and non-point source pollution.

Under Alternative A, about 2,011 acres of soils within cantonment areas would potentially be adversely impacted as a result of the construction of new facilities and required utilities corridors, and demolition activities. Prior to construction, all required permits would be obtained, implemented, and applied for; an appropriate ESPCP would be developed and all appropriate site-specific BMPs and mitigation measures would be implemented. As part of the required NPDES permits, an ESPCP for each specific construction area would also be developed describing appropriate site-specific BMPs that would be used to minimize impacts from increased runoff and soil erosion during site construction. Site-specific BMPs would be developed based on proper design, run-off calculation, slope factors, soil type (determined by the Soil

Surveys for Chattahoochee, Marion, and Muscogee Counties and verified by on-site testing), topography, construction activities involved, and proximity to water bodies (see Section 4.11.3 for mitigation measures). Any construction occurring within 25 ft of a stream would be required to consult with the state and secure an SBV (see 4.10.3 for water resources mitigations). In addition, all BMPs utilized within the Installation would be in accordance with the Manual for Erosion and Sediment Control in Georgia. As a result, the overall impacts to soils at Fort Benning would not be considered adverse. If, however, construction starts before all required permits are received, a non-site specific or improper ESPCP is prepared that does not provide for the proper BMPs, or are improperly implemented, and the post-construction sites are not properly maintained, the potential for adverse impacts to the soils from erosion would be great.

Approximately 8,730-acres of soils within the proposed new training ranges would be impacted as a result of range development and ongoing operation and use. The soils within these new ranges would be impacted by the initial site preparation of the proposed range development, mechanized vehicle maneuvers, and the overall increases in the number of tenant units stationed at Fort Benning (and, therefore, increased use of ranges). Future training operations, coupled with the current training schedule, would result in severe impacts to the soils within these ranges. Impacts to soils would occur as a direct result of clearing trees and other vegetation for line of sight, digging activities, ground disturbance from vehicles, and munitions detonation. Impacts to soils include compaction, disturbance, and movement that may result in soil erosion and eventually sedimentation of the Installation's many creeks. The use of vehicles such as the M1A1 tanks and BFVs can produce severe direct impacts to soils and indirect impacts to water quality (See Section 4.10). These impacts are related to soil disturbance which leaves the soil highly disrupted and susceptible to the erosive forces of raindrops, wind, and runoff, and ultimately to stream sedimentation. Table 4.11-4 provides the coverage of the soil associations of the total area of the proposed ranges, and their respective K factor. As these soils become disturbed, the soil erodibility of each of these specific soil associations would likely increase. These direct impacts, however, would localized as most tank and BFV travel is restricted to existing roads and trails leading to the range and to existing lanes and designated areas within the range. Impacts related to vehicular use within these areas would always be greater in the steeper portions (slope greater than 10 percent) of the Installation and in areas previously disturbed. Areas disturbed by vehicle maneuvers on hillsides would erode much faster than on flat ground, as surface run-off would have greater erosive energy as it moves downhill. Impacts to soils would also occur from ongoing training uses as areas are cleared and/or disturbed for bivouac sites, landing strips, and pads for fix-winged aircraft and helicopters, and drop zones for airborne training, which also increases the potential for soil erosion. As the soils within the training ranges continually are disturbed, compacted, and eroded, the overall productivity of the soil decreases inhibiting plant growth (see Section 4.12).

Alternative A would result in a short-term increase in construction vehicles and activity and a long-term increase in training and maintenance vehicles operating within the ranges in training areas. Existing management measures to address the potential to leak or spill POLs onto the soils as described for the No

Action Alternative would apply to these new training operations. During range safety and maintenance inspections, personnel would continue to check for areas of erosion, spill, and other environmental concerns and take appropriate actions. Implementation of applicable federal and state laws and regulations and already-established Installation policies and guidelines, such as erosion control BMPs and spill control measures, would repair or minimize potential effects to soils as a result of this alternative, resulting in minor effects only, resulting in minimal increased potential for contamination concerns.

Also, as with the No Action Alternative, the Installation would continue to be responsible for obtaining all the necessary permits for storm water and erosion control for the development and long-term management of the new training ranges. The Range Division would continue to be responsible for maintaining access roads, configuring ranges and training areas, and maintaining training areas in usable condition. While there would be adverse impacts to the highly erodible soils found at Fort Benning as a result of the proposed training operations that would occur as part of Alternative A, all required permits would be obtained and implemented and all appropriate site-specific BMPs and mitigation measures would be implemented to minimize to non-adverse these impacts (see Section 4.11.3 for mitigation measures). As a result, impacts to soils from on-going and future use of the Installation's training ranges would not be considered adverse.

4.11.2.3 Transformation Alternative B (Preferred Alternative)

Under Alternative B, the proposed construction of administrative, supply/storage, maintenance, barracks, commercial services, community facilities, medical and dental, and recreation facilities in the cantonment areas would be the same as those described under Alternative A. As detailed in Section 3.2.2, Alternative B differs from Alternative A primarily in the areas where heavy maneuver training and drivers training would occur. A greater area of anticipated soil disturbance would occur in association with Alternative B: 19,089 acres as compared to 8,780 acres under Alternative A. Most of this additional disturbance would be with the establishment of the 9,499-acre Good Hope Maneuver Area, where soils are primarily of the Nankin soil association (see Figure 4.11-1). Table 4.11-5 provides the soil associations and their respective erodibility factors located within each of the cantonment areas and ranges proposed under Alternative B.

Table 4.11-5: Erodibility of Soils Associated with Transformation Alternative B

Cantonment Areas	Anticipated Soil Disturbances (Acres)	Soil Association(s)	Erodibility (K)* Factor
Harmony Church	930	Nankin	0.32
		Vaucluse-Lakeland	0.10
Kelley Hill	85	Nankin	0.32
		Vaucluse-Lakeland	0.10
Main Post	562	Nankin	0.32
		Vaucluse-Lakeland	0.10
Sand Hill	246	Nankin	0.32
		Vaucluse-Lakeland	0.10
Cantonment Area Subtotals	**1,923**		
Ranges			
Range Facilities North of U.S. Highway 27/280 and Heavy Maneuver Corridor - South (Northern Range)	5,918	Vaucluse-Lakeland	0.10
		Riverview-Chewacla-Chastain	0.28 – 0.32
		Wagram-Troup-Norfolk-Lakeland	0.10 – 0.15
Range Facilities South of U.S. Highway 27/280, Basic and Advanced Drivers Training Courses, Vehicle Recovery Area	1,213	Vaucluse-Lakeland	0.10
Good Hope Maneuver Area	9,499	Nankin	0.32
		Vaucluse-Lakeland	0.10
		Riverview-Chewacla-Chastain	0.28 – 0.32
Off-Road Drivers Training Area	459	Vaucluse-Lakeland	0.10
		Nankin	0.32
Range Area Subtotal	**17,089**		
TOTAL	**19,012**		

Note: *Soil erodibility factor K represents both susceptibility of soil to erosion and the rate of runoff, as measured under the standard unit plot condition
Source: USDA 2003

Soils. As with Alternative A, adverse impacts to soils from the proposed construction activities would be minimized by appropriate site-specific BMPs and mitigation measures detailed within each site-specific ESPCP and in accordance with the Manual for Erosion and Sediment Control in Georgia (see Section 4.11.3 for mitigation measures).

The physical impacts to soils resulting from the preparation and future use of training ranges proposed under this alternative would be similar to those described under Alternative A. Under Alternative B, however, approximately 17,000 acres of soils within the proposed new training ranges would be impacted as a result of range development and ongoing operation and use. Table 4.11-6 provides a general percentage of the amount of area of the proposed project areas covered by a specific soil association.

Table 4.11-6: Coverage of Soil Associations per Total Area of the Alternative B Actions

Soil Name	Non-Range Transformation Alternative B	Range Transformation Alternative B
Nankin K = 0.32	76%	58%
Orangeburg-Norfolk-Ailey K = 0.10	0%	0%
Riverview-Chewacla-Chastain K = 0.28 – 0.32	0%	1%
Vaucluse-Lakeland K = 0.10	24%	29%
Wagram-Troup-Norfolk-Lakeland K = 0.15	0%	12%

As these soils become disturbed, the soil erodibility (K factor) of each of these specific soil associations likely would increase. Impacts resulting from erosion would be greater under Alternative B as compared to Alternative A because the proposed 9,499-acre Good Hope Maneuver Area, located within the southern portion of the Installation, is located almost entirely within the Nankin soil association, which has a K factor of 0.32, and is considered highly erodible. These direct impacts would be widespread as tank travel would not be restricted to existing roads and trails leading to the range and to existing lanes and designated areas within the range. Impacts related to vehicular use within these areas would always be greater in the steeper portions of the Installation (slopes greater than 10 percent) and in areas previously disturbed. Areas disturbed by vehicle maneuvers on hillsides would erode much faster than on flat ground, as surface run-off would have greater erosive energy as it moves downhill.

Impacts to soils would also occur from ongoing training uses as areas are cleared and/or disturbed for bivouac sites, landing strips, and pads for fix-winged aircraft and helicopters, and drop zones for airborne training, which also increases the potential for soil erosion As the soils within the training ranges continually are disturbed, compacted, and eroded, the overall productivity of the soil decreases, inhibiting plant growth (see Section 4.12). Under Alternative B, the Heavy Maneuver Area – North (soil association Vaucluse-Laekland with a K factor of 0.10) would not be exclusively used for heavy maneuver activity in support of the Transformation actions (as it would under Alternative A), but would continue to support heavy maneuver activity similar to levels that presently occur in this area, plus increased infantry training displaced from the proposed Good Hope Maneuver Area.

As with the No Action Alternative and Alternative A, impacts to soils as a result of on-going and future use of the Installation's training ranges would not be considered adverse because all required permits would be obtained and implemented and all appropriate site-specific BMPs and mitigation measures would be conducted in accordance with the Manual for Erosion and Sediment Control in Georgia (see Section 4.11.3 for mitigation measures).

Impacts to soils from POLs from construction/demolition activities and the use and maintenance of the Installation's training ranges would be similar to those described under Alternative A; however, these impacts would affect approximately 8,359 additional acres. All mitigations and protocols to minimize these impacts would be the same as described for Alternative A.

4.11.3 Mitigation Measures

The following management regimes are currently being implemented to help minimize and mitigate adverse impacts to soils and would be used under the Transformation proposal:

- Facilities involving the use and storage of hazardous materials would be designed to meet the Spill Prevention Control and Countermeasures (SPCC) requirements under Army Regulation (AR) 200-1. Actions required under the SPCC include:
    a. Training vehicles are required to have drips pans underneath when parked to minimize POL spills.
    b. Military units are required to utilize secondary containment for the storage of hazardous materials/wastes and during refueling operations.
    c. Routine maintenance of the vehicles would help to identify and repair any conditions that might cause POL leaks.
    d. A spill response protocol has been established Post-wide and personnel on the ranges and in the training areas should have adequate spill response supplies on hand.
- During range safety and maintenance inspections, personnel would continue to check for areas of erosion, spill, and other environmental concerns and take appropriate actions.
- As part of the required NPDES permits, an erosion, sedimentation, and pollution control plan (ESPCP) for each specific construction area with the potential to disturb more than one acre of land would also be developed describing appropriate site-specific BMPs that would be used to minimize impacts from increased runoff and soil erosion during site construction. Site-specific BMPs would be developed based on proper design, run-off calculation, slope factors, soil type, topography, construction activities involved, and proximity to water bodies. Examples of BMPs that could be utilized at Fort Benning include, but are not limited to:
    - erosion control matting;
    - channel stabilization;
    - silt fencing;
    - brush barriers;
    - storm drain outlet protection;
    - stone check dams;
    - rock filter dams;
    - construction exits;
    - temporary and permanent seeding; and
    - application of mulch.

The application of any or all of these BMPs depends upon precise, specific ground conditions in the areas disturbed by construction. All BMPs utilized within the Installation would be in accordance with the Manual for Erosion and Sediment Control in Georgia.

4.12 BIOLOGICAL RESOURCES

Biological resources include native or naturalized plants and animals and the habitats within which they occur. The dominant plant species make up plant communities, which in turn define the vegetation of an area. Habitat is defined as the area or environment where the resources and conditions are present that cause or allow a plant or animal to live there (Hall *et al.* 1997).

Related construction activities for actions identified in this section and the following subsections would be subject to the requirements of all applicable laws, regulations, and permits that may be required for construction. These may include, but not necessarily be limited to, NPDES and MS4 permits, which are described in more detail in Sections 1.6.2 and 4.10.1.1.

4.12.1 Affected Environment

The ROI for biological resources is identified within each resource section. Biological resources for this EIS include vegetation, aquatic habitats and wetlands, fish and wildlife, special status species, and UEAs potentially affected by demolition, construction, training, or operational activities associated with the proposed Transformation of Fort Benning. Each category is described in detail below.

4.12.1.1 Vegetation

Vegetation includes all terrestrial plant communities. The affected environment for vegetation includes those areas subject to demolition and construction ground disturbance, as well as training areas.

The vegetation of Fort Benning reflects its location astride the "Fall Line," which extends from western Georgia to the Carolinas and divides the Atlantic and Gulf Coastal Plain from the Piedmont Plateau. The Fall Line is a band of transitional habitat which runs directly through the Fort Benning Region. Vegetation at the Installation includes two broadly defined ecological units or subsections. The northern portion of the Installation is part of the Sand Hills subsection, while the southern portion is part of the Upper Loam Hills subsection. The transitional area between the regional ecological units along the Fall Line is a band of deep, sandy soils and rolling hills (the picture to the right provides an illustration of such habitat). The Sand Hills ecological unit is characterized by sandy surface soils and loamy subsoils. Longleaf pine (*Pinus palustris*) is a characteristic plant species whose dominance is maintained by frequent fires. Relatively open woodland vegetation is common on upland areas while lowland areas more often support dense forest. In the absence of fire, the vegetation becomes dominated by oaks and hickories (GDNR 2005).

The Upper Loam Hills cover most of the southwestern area of Fort Benning. Soils in this subsection are heavier textured with higher water holding capacity and higher organic matter content than soils of the Sand Hills. Characteristic vegetation includes oak-hickory forest, with post oak (*Quercus stellata*), blackjack oak (*Quercus marilandica*), southern red oak (*Quercus falcata*), white oak (*Quercus alba*), pignut hickory (*Carya glabra*), mockernut hickory (*Carya tomentosa*), and sand hickory (*Carya pallida)*. These hardwoods become dominant in landscapes without frequent fires. A frequent fire regime favors fire-tolerant species, leading to longleaf pine forests and woodlands (Fort Benning 2001, 2003c).

Fort Benning is located within the Longleaf Pine Ecosystem, which once covered over 90 million acres of the southeastern United States. The upland areas were historically dominated by longleaf pine with a mixture of other pine species within the stands. Oaks and other less fire tolerant species dominated the drains and areas that were not subject to natural wildfires. As a result of changes in agricultural and forestry practices and of land ownership through the past 150 years, the original vegetative cover has been modified to a predominantly coniferous/deciduous mixture (Fort Benning 2001, 2003c).

There are more than 1,275 species of plants on Fort Benning. Vegetated acreage on Fort Benning consists of approximately 16,000 acres of lawn and grassed areas, approximately 4,000 acres of open land and old fields (shrubs and herbaceous plants), and approximately 163,000 acres of woodland (includes ordnance impact areas and excludes approximately 1,000 acres of water bodies). Loblolly (*Pinus taeda*) and longleaf pine are the principal conifers on the reservation and make up approximately 54,000 acres of the woodlands. The remaining 109,000 acres of woodland consist of approximately 55,000 acres of mixed pine and hardwoods and 54,000 acres of hardwood forest (Fort Benning 2001, 2003c).

In 2001, the Nature Conservancy (TNC) created a map of general forest stand types by interpreting 1999 aerial color imagery. Forest stands at Fort Benning were divided into seven categories, as described below.

- **Hardwood**: Dominant overstory is composed of hardwood species, with few to no large pine individuals. Includes the Dry-Mesic Hardwood ecological group (see below).
- **Hardwood/Pine**: Dominated by hardwoods, but mixed pine species also present.
- **Longleaf Pine**: Dominated by longleaf pine, may contain scrub oak and shrubby understory.
- **Longleaf Pine Plantation**: Longleaf pine planted for timber management or ecosystem restoration. Longleaf pine plantations are replacing some areas formerly planted with loblolly and slash pine (*Pinus elliottii*).
- **Mixed Pine/Longleaf Pine**: Dominated by longleaf pine, but contains a representative community of other pine species.
- **Pine/Hardwood**: Dominated by longleaf and other pines, some hardwoods present in the understory and occasional hardwoods present in the canopy.
- **Pine**: Mixed pine species, longleaf pine is not dominant.

Terrestrial and aquatic communities were further divided into 14 ecological groups (Fort Benning 2001, 2003c). Ecological groups delineated in the INRMP are derived from Phase I of the Vegetation

Characterization Project (Pyne 2001). Eight of the ecological groups are primarily aquatic habitats and are addressed in section 4.12.1.2. The remaining six ecological groups are upland plant communities described below, based on descriptions in the 2001 INRMP and draft revisions in 2002 and 2003. Table 4.12-1 lists the six ecological groups and the estimated acreage of each that occurs at Fort Benning. Figures 4.12-1 and 4.12-2 depict the coverage of the ecological groups across the Installation.

Table 4.12-1: Acreage of Upland Vegetation (Ecological Groups) at Fort Benning

Ecological Group	Existing Acres at Fort Benning
Mesic hardwood forests	1,145
Dry-mesic hardwood and dry-mesic mixed hardwood / pine forests	15,420
Longleaf pine loamhills	17,597
Longleaf pine sandhills	69,095
Plantations	20,172
Other altered areas	17,643
Successional upland deciduous or mixed forests	10,516
Total	**151,588**

Mesic Hardwood Forests

This is a hardwood community that is not dominated by oak species. Beech (*Fagus grandifolia*), ash (*Fraxinus* spp), sweetgum (*Liquidambar styraciflua*), southern magnolia (*Magnolia grandiflora*), red oak (*Quercus rubra*), white oak, and bitternut hickory (*Carya cordiformis*) are common canopy species. Sub-canopy species include flowering dogwood (*Cornus florida*), American hornbeam (*Carpinus caroliniana*), witch hazel (*Hamamelis virginiana*), and red bay (*Persea borbonia*). Shrubs and ground cover species include titi (*Cyrilla racemiflora*), mountain laurel, fetterbush (*Lyonia lucida)*, wild grape (*Vitis* spp.), partridge berry (*Mitchella repens*), wild sarsaparilla (*Smilax pumila)*, Virginia creeper (*Parthenocissus quinquefolia*), and poison ivy (*Rhus radicans*). Additionally, several drainage systems on the Installation support mountain laurel (*Kalmia latifolia*), perfoliate bellflower (*Uvularia perfoliata*), American ginseng (*Panax quinquefolium*), and sanicle (snakeroot) (*Sanicula* spp.), species that are more typically associated with northern habitats. Special status plant species in this community include American ginseng and croomia (*Croomia pauciflora*) (see section 4.12.1.3) (U.S. Army 2001, 2003).

Mesic hardwood forests are generally found on the Installation in the bottoms of cool, shady ravines. Because of the associated topography and landscape position of these communities, fire return intervals are likely relatively long. Growing season fires or fires that are too intense can damage these sensitive mesic plant communities (U.S. Army 2001, 2003). Mesic hardwood forests are not common at the Installation, but are most prevalent in the southeastern portion, near the proposed southern Maneuver corridor.

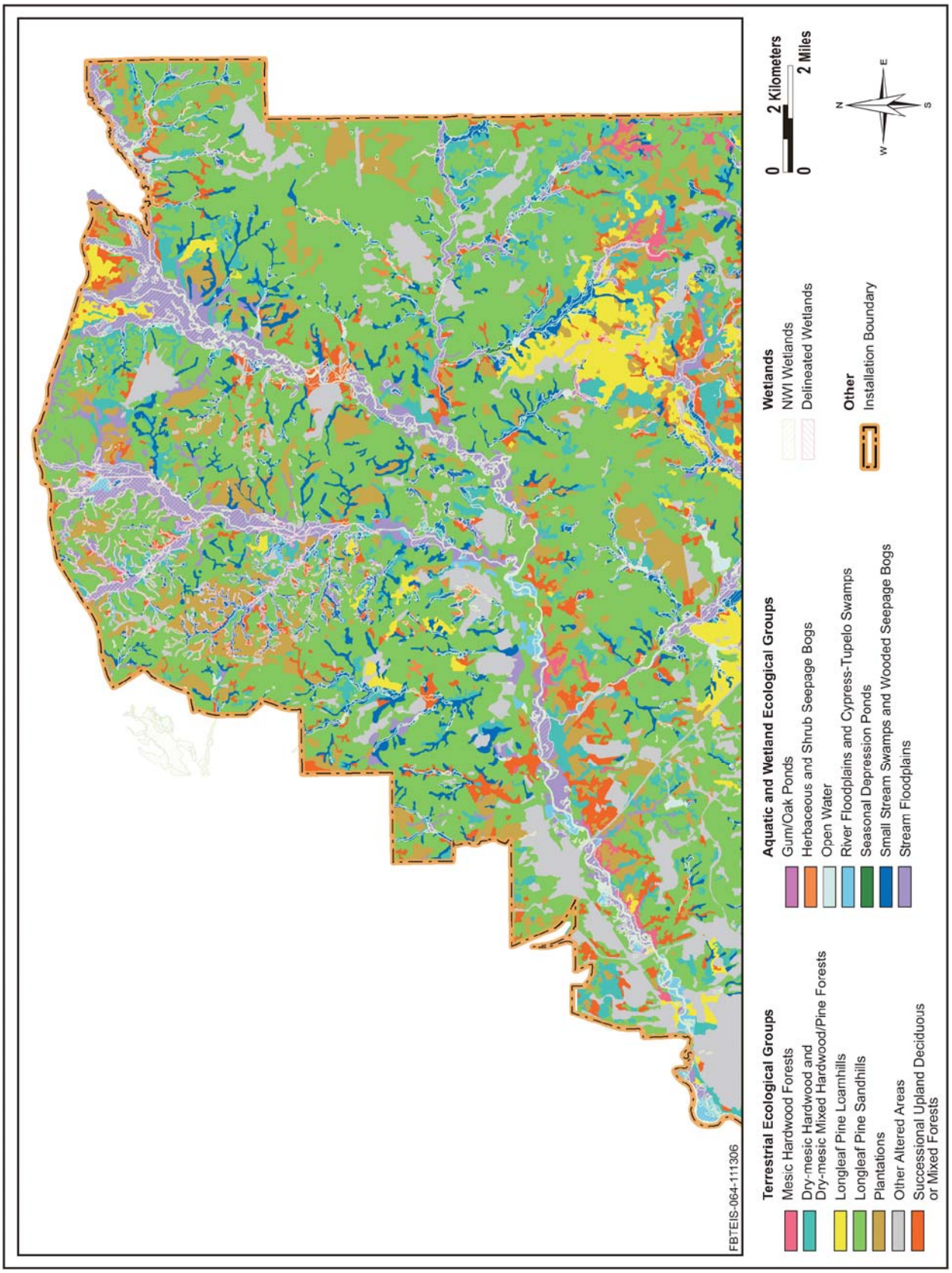


Figure 4.12-1: Ecological Groups – Northern Installation

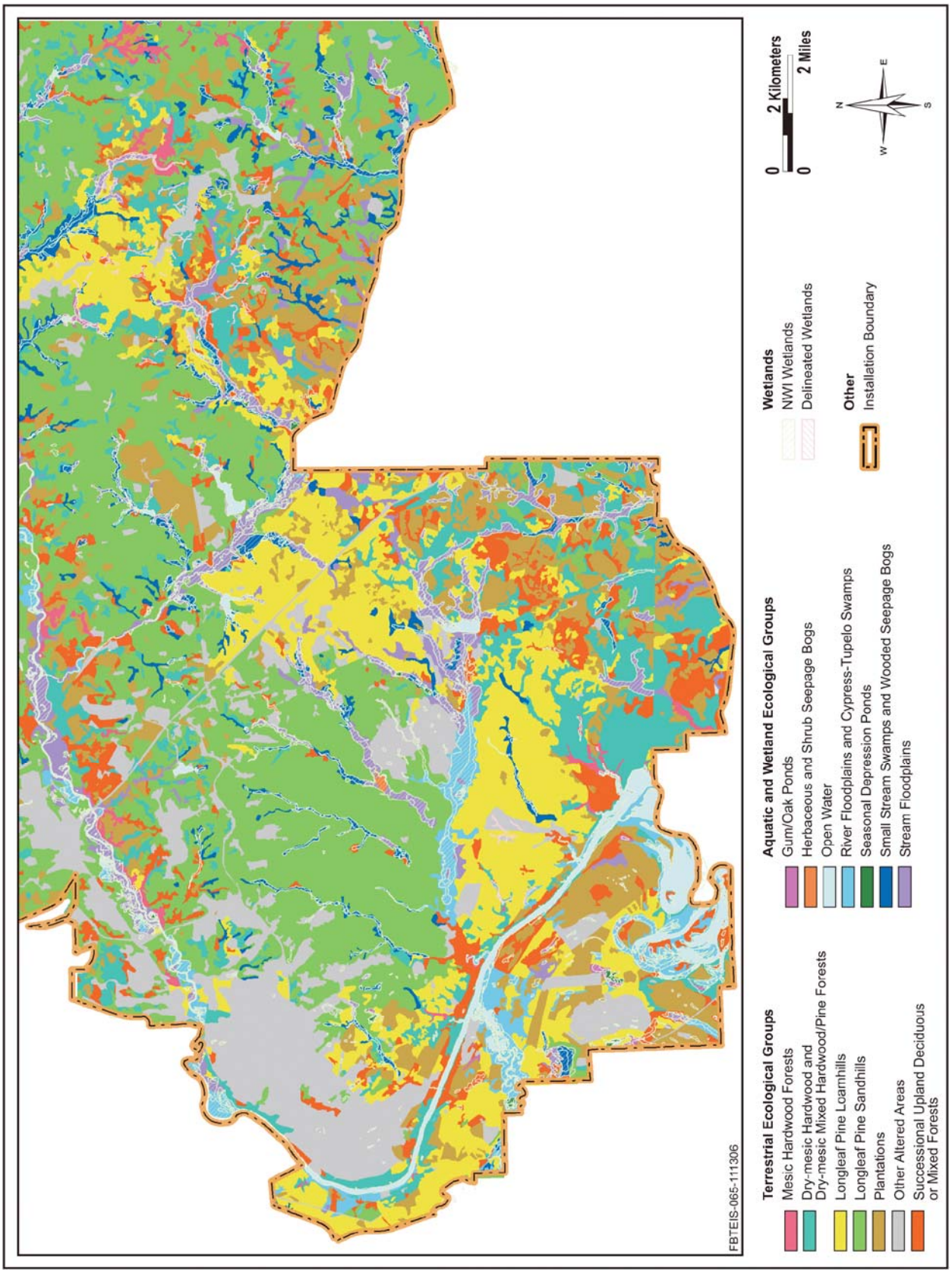


Figure 4.12-2: Ecological Groups – Southern Installation

Dry-mesic Hardwood and Dry-mesic Mixed Hardwood / Pine Forest

These forests are quite variable on the Installation and occur in the ecotone between the dry ridge tops and the mesic bottoms. Common species found in these areas include white oak, red oak, water oak, sweetgum, loblolly pine, shortleaf pine (*Pinus echinata*), tuliptree (tulip-poplar) (*Liriodendron tulipifera*), American holly (*Ilex opaca*), pignut hickory, southern red oak, and post oak. Sourwood (*Oxydendrum arboreum*), farkleberry/tree sparkleberry (*Vaccinium arboretum*), red maple (*Acer rubrum*), flowering dogwood, chalk maple (*Acer leucoderme*), redbud (*Cercis canadensis*), and American hornbeam are common mid-canopy species. Common shrubs include sassafras (*Sassafras albidum*), deer berry, and littlehip-haw (*Crataegus spathulata*). Woody vines include greenbrier (*Smilax* spp.), rattan vine (*Berchemia scandens*), cross vine (*Bignonia capreolata*), and yellow jessamine (*Gelsemium sempervirens*). Herbaceous species include arrowleaf (ginger) (*Hexastylis arifolia*), partridge berry, and several grasses. Indian olive (*Nestronia umbellula*) is a special status species found within this ecological group (see Section 4.12.1.3).

This forest community appears in a patchy distribution throughout the Installation and is most prevalent in the Good Hope area at the southern edge of the Installation.

Longleaf Pine Loamhills

The stands are often a mix of loblolly, shortleaf, and longleaf pine over loamy soils. Common understory species include post oak, blackjack oak, flowering dogwood, and juvenile pines. Shrubs include deer berry (*Vaccinium* spp.), inkberry/gallberry (*Ilex glabra*), farkleberry, wax myrtle (*Morella cerifera*), and sassafras. Common herbaceous species typically include a variety of native legumes, native grasses, including little bluestem (*Schizachyrium scoparium*), and bracken fern (*Pteridium aquilinum*). More disturbed areas may contain broomsedge (*Andropogon virginicus*) and Japanese honeysuckle (*Lonicera japonica*) (U.S. Army 2001, 2003).

Depending on the mix of pine species in the stand, slope position, and size of the natural fire compartment, natural fire-return intervals area variable. Fire-return intervals for some stands are frequent, in part because of the many ordnance-induced wildfires that occur within or adjacent to these stands.

The Longleaf Pine Loamhills community occurs throughout the Installation, but is more prevalent in the southern portion than in the northern portion. The Longleaf Pine Woodland, a subtype of the Longleaf Pine Loamhills ecological group, is a major target for restoration by Conservation and Land Management

staff. Fort Benning's goal is the restoration and maintenance of 90,000 acres of this plant community across the Installation (U.S. Army 2001, 2003).

Longleaf Pine Sandhills

The Longleaf Pine Sandhills are characterized by relatively open stands of longleaf pine, frequently with an understory of scrub oak, on sandy soils. Longleaf pine maintains stronger dominance here than in the loamhills; loblolly and shortleaf pine are less able to compete successfully in the deep sandy and dry soils. Scrub oaks that are a common component of these stands include bluejack (*Quercus incana*), sand post oak (*Quercus margarettiae*), and turkey oak (*Quercus laevis*). Sassafras, farkleberry, and hawthorn (*Crataegus* spp.) are common shrub species. Grasses and legumes are diverse and common in the ground layer.

Despite stronger longleaf pine dominance, the Sandhills stands are generally less dense overall than the Loamhills stands. Because of lower fuel conditions on average as compared with the loamhills, the natural fire return interval is longer in the sandhill. A regular, consistent burning schedule (i.e., always the same season) may reduce the understory plant diversity of the Longleaf Pine Sandhills.

The Longleaf Pine Sandhills ecological group is the dominant plant community on the Installation, although it transitions to Loamhills in the southern Good Hope area.

Plantations and Other Altered Areas

Plantations and other altered areas represent habitat that had been substantially modified by silviculture, urban development, training exercises, or other human activity. Plantations are present on Fort Benning in stands of various age classes. About 16,000 acres of loblolly and slash pine were planted on Fort Benning from 1962 to 1994. In 1976 and 1977, 60 acres of longleaf pine were planted each year and from 1988 to 1999 a total of about 7,000 acres was planted with longleaf pine. Some of the acreage planted in longleaf in recent years has replaced some earlier loblolly and slash plantations that were damaged by southern pine beetles (*Dendroctonus frontalis*). In recent years, forest management goals have shifted from wood production to ecosystem restoration. Loblolly and slash pine plantations that are damaged by southern pine beetles and littleleaf disease are being replaced with longleaf pine in sites where historically longleaf would have been the dominant species. Abandoned wildlife openings also are being converted to longleaf pine where appropriate (U.S. Army 2001, 2003).

Other altered areas include shrub and grassy areas that are a result of range construction and maintenance activities. The current shrub alliances are defined poorly and require further study and classification to determine which communities are present. Hawthorn and plum (*Prunus* spp.) dominated areas occur in the downrange areas of several of the major live-fire ranges, located in the northern part of the Installation. Some unused grassy areas are currently scheduled for longleaf pine reforestation where appropriate (U.S. Army 2003).

Plantations and other altered areas are distributed throughout the other ecological groups at the Installation, with particular concentration near rivers and waterways.

Successional Upland Deciduous or Mixed Forests

This ecological group was not included in the 2001 INRMP, but was addressed in 2002 and 2003 revisions, based on Pyne (2001). The community describes previously disturbed or open areas that have been recolonized by woody vegetation. Characteristic species includes broad-leaved deciduous and both broad- and needle-leaved deciduous trees. Examples of these communities include early successional deciduous or mixed vegetation dominated by "opportunistic" hardwoods and loblolly pine. Loblolly pine was formerly extensively planted on the Installation and has proliferated into upland areas during a period of extended fire return times and general fire suppression on parts of the Installation. Other "opportunistic" hardwoods such as sweetgum, tuliptree, and water oak (*Quercus nigra*) have increased in abundance and distribution across the lands of Fort Benning.

These "semi-natural" or early successional communities likely occupy sites that would not have been dominated by these fire-intolerant hardwood species under a regime of frequent fire (U.S. Army 2001, 2003). Such sites are dispersed throughout the Installation, particularly near water bodies and along the borders of former plantations.

Trees and other plants are important for many reasons, including shade, erosion control, wildlife habitat, timber products, medicinal products, and realistic training scenarios. The current management of the Installation is focused on restoration. Management practices and recommendations are in place to re-establish fire-climax forests and fire-maintained lowlands. Areas are managed to encourage recovery from previous disturbance due to agriculture and timber harvest. Management plans for federally-listed species, such as RCW, also guide vegetation management policies. Various controls are in place to protect plant life, but some consumptive use is authorized. For example, hardwoods, underbrush, and grass may be cut and used for camouflage inside RCW clusters, consistent with the RCW Endangered Species Management Plan (ESMP). Thinning of the understory is conducted in some stands. Cutting of trees and live limbs in training areas cannot occur without prior approval of Directorate of Public Works (Conservation Branch) through the NEPA process (see Section 2.4). Harvest of firewood is allowed by permit from the USACE. USAIC Regulation 210-4 (Range and Terrain Regulation) and USAIC Regulation 210-5 (Garrison Regulation) address these issues in more detail.

4.12.1.2 Aquatic Habitats

Aquatic habitats include the waters and substrates of lakes, ponds, rivers, and streams. Certain portions of any of the aquatic habitats at Fort Benning "may qualify as jurisdictional wetlands." Wetlands are transitional between aquatic and terrestrial environments and are defined under the CWA as 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. Wetlands generally include swamps, marshes, bogs, and similar areas" (33 CFR 328.3). Jurisdictional wetlands are specifically protected under Section 404 permitting process and are discussed in more detail in Section 4.10.

Within the area potentially affected by the Transformation actions, wetland and aquatic habitats occur in the Drivers Training Areas; road crossings at Pine Knot Creek; the Multi-purpose Machine Gun Ranges/Qualification Training Range in the southern range areas, both Tank/Fighting Vehicle Stationary Gunnery Ranges, Northern and Southern Maneuver Corridors; and several of the proposed northern range facilities near Randall Creek. NWI data show wetlands in cantonment areas within the sites affected by the following proposed Transformation actions: Museum Operations Support Building (Main Post), AT/FP Access Control Points (various locations), and Hospital Replacement (Main Post).

Aquatic habitats and wetlands at Fort Benning include 7 of the 14 ecological groups described in the INRMP and draft revisions in 2002 and 2003. The eight habitat types, along with characteristic plant and animal species, are described below, based on INRMP descriptions. Table 4.12-2 lists the seven ecological groups and the estimated acreage of each that occurs at Fort Benning. Figures 4.12-1 and 4.12-2 show the occurrence of these habitats at Fort Benning.

Table 4.12-2: Acreage of Aquatic Habitats at Fort Benning

Freshwater Aquatic Habitat	Existing Acres at Fort Benning
Gum / oak ponds	217
Open water (Impounded and Flowing)	2,504
River floodplains and Cypress-Tupelo swamps	3,825
Seasonal depression ponds	163
Small stream swamps and wooded seepage bogs	10,022
Stream floodplains	13,666
Total	**30,397**

Open Water

Water impoundments at Fort Benning are the result of human activity and beaver dams. Flowing water habitats include rivers, creeks, and intermediate streams. These areas are mostly unvegetated or exhibit only submerged vegetation or plant life along the shoreline.

At Fort Benning, flowing water includes streams of either Piedmont or Coastal Plain origin. Piedmont streams flow into the Installation from the north and flow generally in a southerly direction. Large rocks, pebbles, and sand are characteristic of the substrate of these streams. Piedmont streams are higher in fish and mussel diversity than Coastal Plain streams. Piedmont streams include Dozier, Cox, Randall, Kendall, Upatoi, Uchee, and Baker Creeks, as well as the Chattahoochee and Tar rivers (the Tar is a tributary of Upatoi Creek). The Upatoi Creek watershed is the main drainage of Fort Benning. Its headwaters are in Chattahoochee, Talbot, and Marion Counties.

Coastal Plain streams (e.g., Pine Knot and Little Pine Knot Creeks) generally flow into the Installation from the east. Coastal Plain streams have more stable water levels and are more acidic than Peidmont streams. Coastal Plain streams also exhibit lower fish and mussel diversity.

Common plants found in open water habitats include white water lily (*Nymphaea odorata*), watershield (*Brasenia schreberi*), pondlily (*Nuphar lutea*), buttonbush (*Cephalanthus occidentalis*), smooth alder (*Alnus serrulata*), and wax myrtle. Special status species that use impounded water sites include lax water-milfoil (*Myriophyllum laxum*). Common inhabitants of impounded water communities include American alligators (*Alligator mississippiensis*), beavers (*Castor canadensis*), waterfowl, game and nongame fish, and wading birds. Many other game and nongame species use these ponds for drinking water. The larger managed ponds provide recreational fishing opportunities to Installation personnel. The Pine Knot Creek system is designated as a UEA (see section 4.12.1.5).

Major rivers and open water bodes would not be used for military training under the Transformation alternatives, but smaller creeks and tributaries appear in the range areas and heavy maneuver corridors.

River Floodplains and Cypress/Tupelo Swamps

This aquatic community is a frequently inundated alluvial outwash that appears adjacent to larger creeks and rivers. Plant communities here are dominated by flood tolerant species, such as swamp tupelo (*Nyssa biflora*), blackgum (*Nyssa sylvatica*), sweetgum, sycamore (*Platanus occidentalis*), river birch (*Betula nigra*), and water oak. Loblolly pines are scattered along the banks of the river. Common understory species include red maple, ash, elms (*Ulmus* spp.), flowering dogwood, hackberry (*Celtis* spp.), hornbeam, and various oaks. Vines, understory grasses, and herbaceous plants are common and varied.

The Chattahoochee River floodplain, and its associated backwaters and tupelo swamps, is found in the southwestern portion of the Installation. The floodplain areas provide abundant recreational opportunities to Installation personnel and the general public; military use of the Chattahoochee River floodplain is minimal. Threats to the area and its wildlife include water pollution, water level manipulation, sedimentation, and disturbance of nesting migratory bird species. The proposed Transformation alternatives do not occur in the river floodplain, but several non-range construction projects within the Main Post cantonment area are proposed adjacent to the river floodplains.

Stream Floodplains

Stream floodplains at Fort Benning are extensive and the associated plant communities change composition somewhat with geographic location on the Installation. Oaks, hickories, sycamore, beech, ash, and elms dominate the riparian plant communities. Loblolly, shortleaf and spruce pines (*Pinus glabra*) are scattered throughout these communities. Common understory species include red maple, flowering dogwood, hawthorn, sourwood, silverbells (*Halesia* spp.), witchhazel, redbud, American holly, and black cherry (*Prunus serotina*). Relict trillium (*Trillium reliquum*), a federally endangered plant, occurs in at least five populations on the stream floodplains (Section 4.12.1.3). Over 50 species of birds have been documented using these areas. Stream floodplains at Fort Benning often exhibit wetland characteristics and may fall under regulatory jurisdiction of the CWA.

Current military training in the stream floodplains is minimal and a large portion of these areas has been proposed for management as UEAs. The proposed Transformation alternatives overlap stream floodplains in some of the range areas and heavy maneuver corridors.

Small Stream Swamps and Wooded Seepage Bogs

Wooded seepage bogs are depressional areas fed by side-slope seepage from the surrounding uplands. Standing water may be present during some parts of the year. The tree bases are usually buttressed, ground-cover diversity is low, and ferns are a common component. Dominant tree canopy species include sweetbay (*Magnolia virginiana*), blackgum, sweetgum, water oak, and willow oak (*Quercus phellos*). Sub-canopy species include holly, farkleberry, red bay, poison sumac (*Toxicodendron vernix*), viburnum (*Viburnum* spp.), and red maple. Understory shrubs include titi, bayberry (*Myrica heterophylla*), leucothoe (*Leucothoe axillaris*), and fetterbush. Understory herbaceous species are sparse, but may include netted chain fern (*Woodwardia areolata*), cinnamon fern (*Osmunda* cinnamomea), and southern lady fern (Athyrium asplenioides). Stream swamps and wooded seepage bogs at Fort Benning often exhibit wetland characteristics and fall under regulatory jurisdiction of the CWA.

The braided streams that are characteristic of this group are found scattered across the northern half of the Installation. Current military use of these areas is minimal, usually limited to foot traffic. These habitats are not specifically managed as individual UEAs; however, small steam swamps and seepage bogs may appear as part of other UEAs.

Seasonal Depression Ponds

Seasonal Depression Ponds include several seasonally flooded wetland areas across the Installation. Plant species include smooth alder in deciduous shrubland, rushes (*Juncus* spp.) and sedges in grassland areas, cattails (*Typha* spp.), *Panicum* spp, and *Polygonum* spp. The vegetation and wildlife in these habitats depends on the surrounding environmental conditions, degree and frequency of flooding, and adjacent vegetative community. These small ponds appear infrequently and sporadically across the Installation, typically interspersed with the surrounding ecological community.

Gum / Oak Ponds

Gum / oak ponds are usually small and isolated and usually are found in upland areas where small depressions hold water for long periods of time. They are not filled by running water or seepage; instead, they hold rainwater, and the water levels change with the season. Sweetgum, blackgum, water tupelo (*Nyssa aquatica*), willow oak, laurel oak (*Quercus laurifolia*), and water oak are often dominant species. The midstory is variable and changes with the amount of water the ponds retain, but American holly, sweet-pepperbush (*Clethra alnifolia*), leucothoe, and dwarf palmetto (*Sabal minor*) commonly are present. Mesic species such as buttonbush and wax myrtle are common in more open areas of the ponds, and in some ponds sedges and ferns are the most common herbaceous species present. Mosses and orchids also may be present. Gum / oak ponds are dispersed in low volume over the Installation, but are not common in any of the areas subject to the Transformation alternatives.

Herbaceous and Shrub Seepage Bogs

The switch cane and pitcher plant bogs within the Malone Impact Area are the best example of this ecological group on Fort Benning. Woody species common to these bogs include switch cane

(*Arundinaria gigantea* ssp. *tecta*), inkberry/gallberry, wax-myrtle, sourwood, and greenbriers. Herbaceous species include sweet pitcherplant (*Sarracenia rubra*), sphagnum mosses, and various ferns. These areas burn frequently and fire is a necessary component for maintaining these bog systems. A smaller, lower quality bog located in military training compartment O14 has been invaded by woody species due to fire suppression. These bogs are subject to little military use other than the influence of ordnance-related wildfires.

4.12.1.3 Fish and Wildlife

Fort Benning is inhabited by more than 350 species of fish and wildlife, including 154 species of birds, 47 species of mammals, 48 species of reptiles, 25 species of amphibians, 67 species of fish, and 9 species of mussels, as well as numerous insect and other invertebrate species that have not been systematically enumerated (Fort Benning 2001, 2003c). Commonly encountered animals include American alligators, turtles, water snakes, wading birds, migratory waterfowl, beaver, white-tailed deer (*Odocoileus virginiana*), feral swine (*Sus scrofa*), wild turkey (*Meleagris gallopavo*), gray squirrel, raccoon, rabbits (*Sylvilagus* spp.), other small mammals, and a wide variety of songbirds. The Seminole bat (*Lasiurus seminolu*), southeastern myotis (*Myotis austroriparius*), and Brazilian free-tailed bat (*Tadarida brasiliensis*) are known to occur at Fort Benning, Herpetofauna found on the Installation includes eastern coachwhip (*Masticophis flagellum flagellum*), eastern diamondback rattlesnake (*Crotalus adamanteus*) Florida pinesnake (*Pituophis melanoleucus mugitus*), southern hognose snake (*Heterodon simus)*, eastern tiger salamander (*Ambystoma tigrinum*), and other species of the Longleaf Pine Ecosystem.

Fort Benning supports a high diversity of native freshwater fishes, including both game and non-game species. Native non-game fishes include many species of shiners, darters, shad, and minnows, as well as the southern brook lamprey (*Ichthyomyzon gagei*) (Fort Benning 2001, 2003c). Fishing occurs throughout the installation within the Chattahoochee River and several major streams, including Upatoi, Ochillee, Oswichee, Randall, Big Pine Knot, and Uchee, numerous oxbows off the Chattahoochee, Upatoi, and Uchee Creeks, beaver ponds, and 14 man-made ponds. The fish ponds are in fair to poor condition due to infrastructure problems and lack of resources to conduct management. Fishing by boat is feasible in Upatoi and Uchee Creeks, in the Chattahoochee River and its backwaters, and in the fish ponds and larger oxbows. Fishing access on the Installation is open to active duty military, retirees, reservists, and DOD civilians and their guests. The most popular fish species sought by fishermen include: largemouth bass (*Micropterus salmoides*), bluegill (*Lepomis macrochirus*), redear or shellcracker (*Lepomis microlophis*), black crappie (*Pomoxis nigromaculatus*), channel catfish (*Ictalurus punctatus*), white bass (*Morone chrysops*), and hybrid white bass (*Morone chrysops saxatilis)* (Fort Benning 2001, 2003c).

Insect communities, crustaceans, and other invertebrates are not well-documented at Fort Benning, but the region is typically rich in invertebrate biodiversity. Common insects in stream systems include larval and adult stages of stoneflies, mayflies, midges, and caddis flies. A wide variety of crayfish, mussels, isopods, snails, and amphipods occurs in Georgia habitat, although specific distribution and habitat preferences are not well known (GDNR 2006b). Soil insects, beetles, weevils and wood borers, and exotic insects are also common in the forests of Georgia (The Bugwood Group 2006).

Fort Benning lies within the native range of approximately 18 species of native mussels, including four federally listed species. None of the federally listed species has ever been found on Fort Benning (Abbott 2006). Eight native mussels and one introduced clam were found in a 1997 survey of Fort Benning streams that included 10 streams as well as the Chattahoochee River and Victory Pond. Mussels were found in Uchee, Cox, Shell, and Oswichee Creeks and in the Chattahoochee River (Fort Benning 2001, 2003c; Abbott 2006). Freshwater mussel surveys, which were conducted again in 2006 at 27 sites, in 11 different streams where road crossings exist or are planned, found only two native species, the eastern elliptio (*Elliptio complanata*), found in Dozier and Cox Creeks, and the little spectaclecase (*Villosa lienosa*), found in Cox Creek (Abbott 2006).

Wildlife has many values including outdoor recreation, aesthetics, environmental monitoring, ensuring proper function of the ecosystem, and providing sources of domestic stock. State and/or federal laws protect most species of wildlife, to varying degrees. Hunting on the installation is allowed for 10 species of resident game mammals: white-tailed deer, Eastern cottontail rabbit (*Sylvilagus floridanus*), swamp rabbit (*Sylvilagus aquaticus*), gray squirrel (*Sciurus carolinensis*), fox squirrel (*Sciurus niger*), bobcat (*Lynx rufus*), gray fox (*Urocyon cinereoargenteus*), red fox (*Vulpes fulva*), Virginia opossum (*Didelphis virginiana*), and raccoon (*Procyon lotor*). There are two species of resident game birds: northern bobwhite quail (*Colinus virginianus*) and eastern wild turkey. Nineteen species of migratory game birds (at least 16 of which are waterfowl) are present: mourning dove (*Zenaida macroura*), common snipe (*Gallinago gallinago*), American woodcock (*Scolopax minor*), Canada goose (*Branta canadensis*), mallard duck (*Anas platyrhynchos*), wood duck (*Aix sponsa*), ring-necked duck (*Aythya collaris*), gadwall (*Anas strepaera*), wigeon (*Anas americana*), Northern pintail (*Anas acuta*), American black duck (*Anas rubripes*), green-winged teal (*Anas crecca*), blue-winged teal (*Anas discors*), canvasback (*Aythya valisineria*), redhead (*Aythya americana*), bufflehead (*Bucephala albeola*), hooded merganser (*Lophodytes cucullatus*), Northern shoveler (*Anas clypeata*), and lesser scaup (*Aythya affinins*). Additionally, hunting is allowed for three nongame animals: coyote (*Canis latrans*), feral swine (*Sus scrofa*), and crows (*Corvus* spp). Feral swine are considered a nuisance species and liberal hunting regulations are in effect. Deer and wild turkey are the most sought after species by hunters. Harvest of game species, such as white-tailed deer, wild turkey, bobwhite quail, and rabbits; and sport fish such as catfish (*Ictalurus* spp.), and largemouth bass (*Micropterus salmoides*), is regulated by Installation personnel, GADNR, AL Department of Conservation and Natural Resources, and the USFWS. Federal and state laws regarding hunting and fishing are addressed in USAIC Regulation 200-3 (Hunting and Fishing Regulation). Specific requirements for protection of some species of wildlife on Fort Benning (such as the RCW and gopher tortoise) are contained in USAIC Regulation 210-4 (Range and Terrain Regulation) and in Fort Benning's ESMPs. Other recreational opportunities, such as bird-watching and hiking, also occur on the Installation and are discussed in more detail in Section 4.2.2.

Migratory birds. Except for resident game birds, most of the birds on Fort Benning are protected under the Migratory Bird Treaty Act (MBTA). This Act implements various treaties and conventions between the US and Canada, Japan, Mexico, and former Soviet Union for the protection of migratory birds.

Conservation of migratory birds by federal agencies and their consideration in the NEPA process is also mandated by EO 13186. On 31 July 2006, a Memorandum of Understanding (MOU) was finalized between the Department of Defense and USFWS identifying measures to enhance migratory bird conservation on U.S. military Installations. Consistent with this MOU, Fort Benning manages and conserves migratory bird species through its INRMP and considers effects to migratory birds in any proposed action via the NEPA process.

There are approximately 150 species of birds protected under the MBTA present on the Installation either seasonally or year round. Most of these species are breeding residents or neotropical migrants for which the typical breeding season is spring through summer. Fort Benning is currently cooperating with federal, state, and private organizations in gathering information on many migratory bird species in this region. Fort Benning personnel are dedicated to making sound ecological management decisions while at the same time providing for the needs of the military to accomplish its mission.

Feral Swine. Feral swine are widespread across the Installation in stream floodplain forests and are considered a pest species for many reasons. A primary concern is the extensive damage that occurs due to their feeding habits and their characteristic "rooting" behavior. Their rooting style of feeding behavior can cause damage to vegetation and soil surface. Feral swine can jeopardize the establishment of ground cover and are destructive to native vegetation, which can result in environmental degradation and sedimentation of streams. Impacts of feral swine include soil disturbance, direct mortality of pine and hardwood trees, competition with native wildlife species, habitat disturbance, and direct mortality of threatened and endangered species. In 1997, three of the seven populations of the federally endangered relict trillium on Fort Benning were fenced to prevent further damage due to feral swine (Fort Benning 2001, 2003c). Feral swine can also uproot and damage cables, wiring, targetry, bivouac sites, and other military assets. Current management for this species on the Installation focuses on controlling the population by establishing liberal hunting regulations such as no bag limit and expanded season lengths. In addition, trapping is conducted at specific locations to minimize damage to military assets and sensitive plants. The focus is to control feral swine in selected areas. These high priority areas include threatened and endangered species habitat and UEAs. The Piedmont Interface UEA (see Section 4.12.1.4) and streambank habitats are particularly susceptible to disturbance due to feral swine.

4.12.1.4 Special-Status Species

Special-status species include species listed as threatened, endangered, or proposed as such by the USFWS or the State of Georgia, and other species of conservation concern. The federal Endangered Species Act (ESA) protects federally listed, threatened, and endangered plant and animal species. State listed species are not protected under the federal ESA; however, they are protected on state land under Georgia's Wildflower Preservation Act and Georgia's Endangered Wildlife Act. Installations cooperate with state authorities in efforts to conserve these species. Other species of conservation concern include state species of special concern, rare species, unusual species, or a watch-list species. These species are not protected by the ESA; however, they could be considered for listing in the future and are afforded special management attention in Fort Benning's INRMP.

The focus of the analysis in this document is on the federally and state listed or candidate threatened and endangered species, per Army NEPA regulation (32 CFR 651). The area potentially affected by the Transformation action is confined to the Georgia portion of Fort Benning; therefore, the analysis of state-listed species does not include species listed by Alabama. Federally listed species in Alabama are addressed. Other species of conservation concern are addressed, but are not analyzed to the same level of detail as the species listed by USFWS or State of Georgia as threatened or endangered.

Six federally listed or candidate species occur on Fort Benning. These are the red-cockaded woodpecker (Endangered), wood stork (Endangered), bald eagle (Threatened), American alligator (Threatened for similarity in appearance), Georgia rockcress (Candidate), and relict trillium (Endangered). The bald eagle has been proposed for delisting. (USFWS 1999a.) Species listed by Georgia as Threatened or Endangered include the gopher tortoise (Threatened), Barbour's map turtle (Threatened), alligator snapping turtle (Threatened), and bluestripe shiner (*Cyprinella callitaenia*) (Threatened) and 11 plant species. Other animal species of conservation concern include various bird, reptile, fish, amphibious, mussel, insect, and plant species. Known occurrences of federally and state-listed species other than the RCW on the Installation are shown in Figures 4.12-3 and 4.12-4. Figures 4.12-3 and 4.12-4 illustrate known occurrences for certain species only and do not represent comprehensive survey data for all species or the entire Installation. Figures 4.12-5 and 4.12-6 show the overlap of RCW clusters by Alternative A and B, respectively.

AR 200-3 (Natural Resources—Land, Forest and Wildlife Management) implements within the Army the requirements of the ESA. The regulation requires ESMPs for listed and proposed species and critical habitat, a 100 percent inventory of suitable habitat for listed and proposed species that may occur on the Installation, and an initial thorough inventory of plants, fish, wildlife, and habitats on the Installation lands.

Special Status Plant Species

One federally listed plant species, relict trillium, eleven plant species listed by the State of Georgia as threatened or endangered, and more than 30 other species of conservation concern occur at Fort Benning (Fort Benning 2003d). Figures 4.12-3 and 4.12-4 depict the known occurrence of federally and state-listed species on the Installation. Table 4.12-3 lists these plant species, their conservation status, habitat preferences, and any known occurrence on Fort Benning. Species with federal status or listed by the State of Georgia as threatened or endangered are described in more detail below.

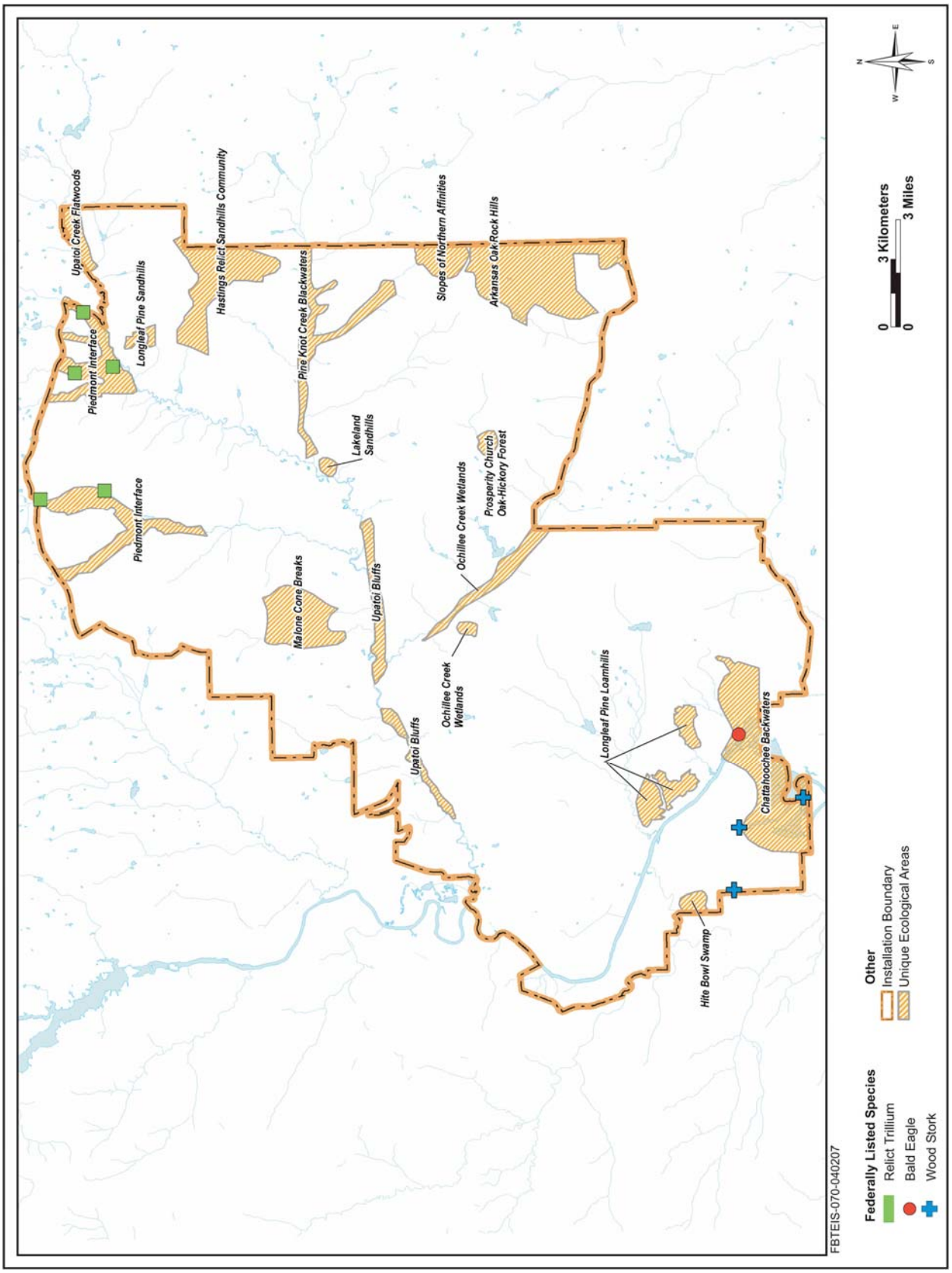


Figure 4.12-3: Known Occurrence of Federally Listed Species and Unique Ecological Areas

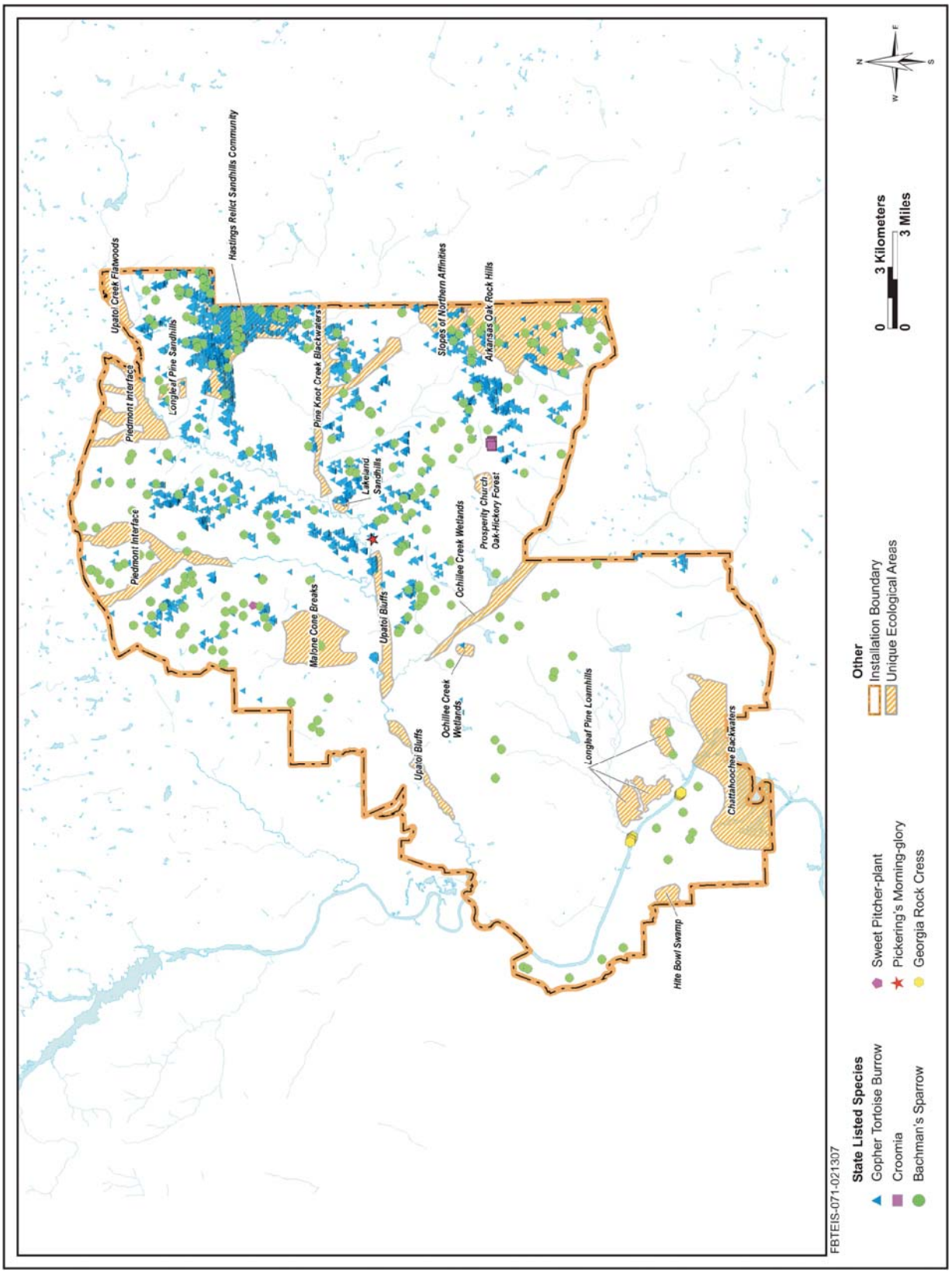


Figure 4.12-4: Known Occurrences of State Listed Species and Unique Ecological Areas

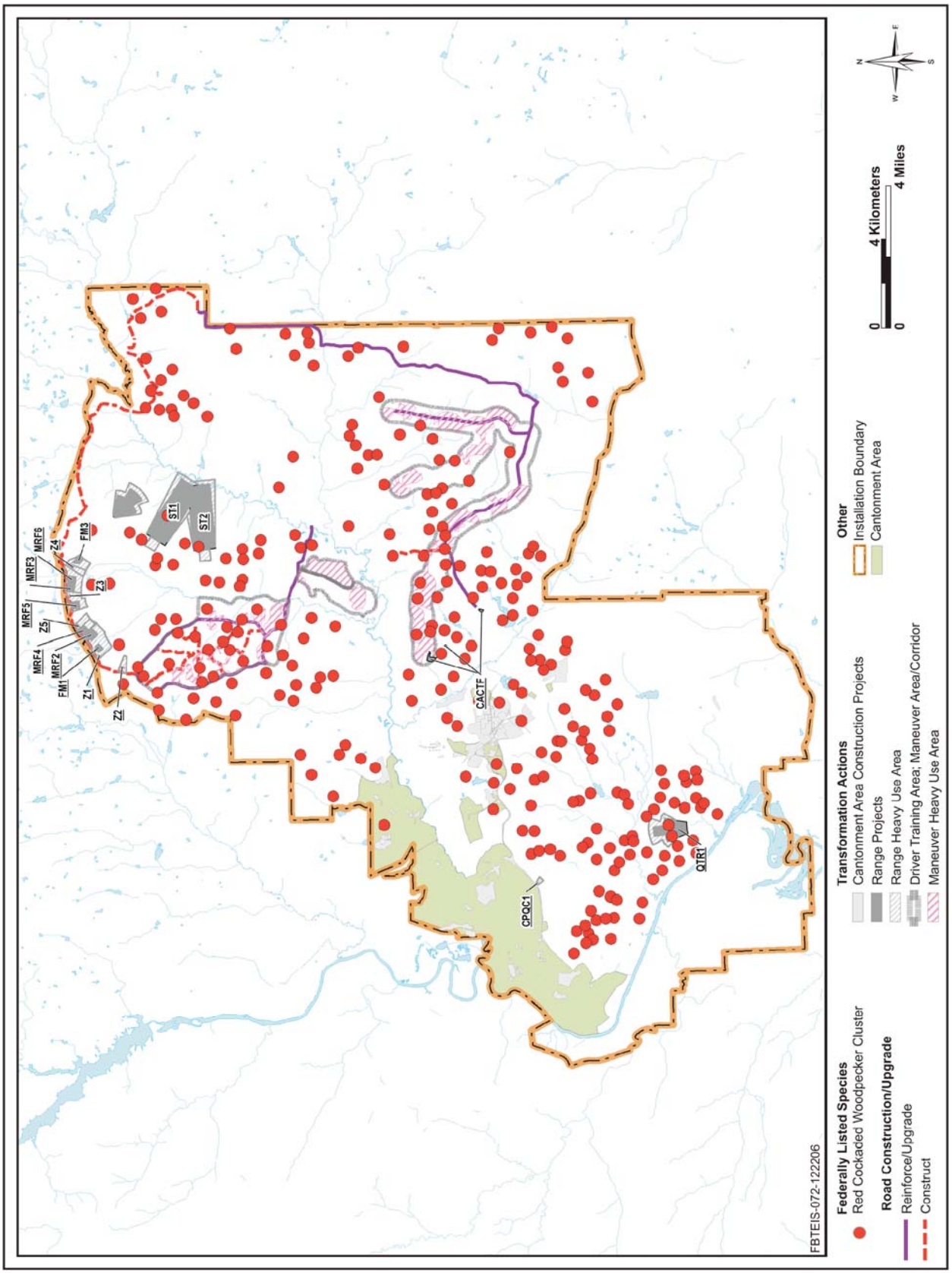


Figure 4.12-5: Red-cockaded Woodpecker Clusters Under Transformation Alternative A

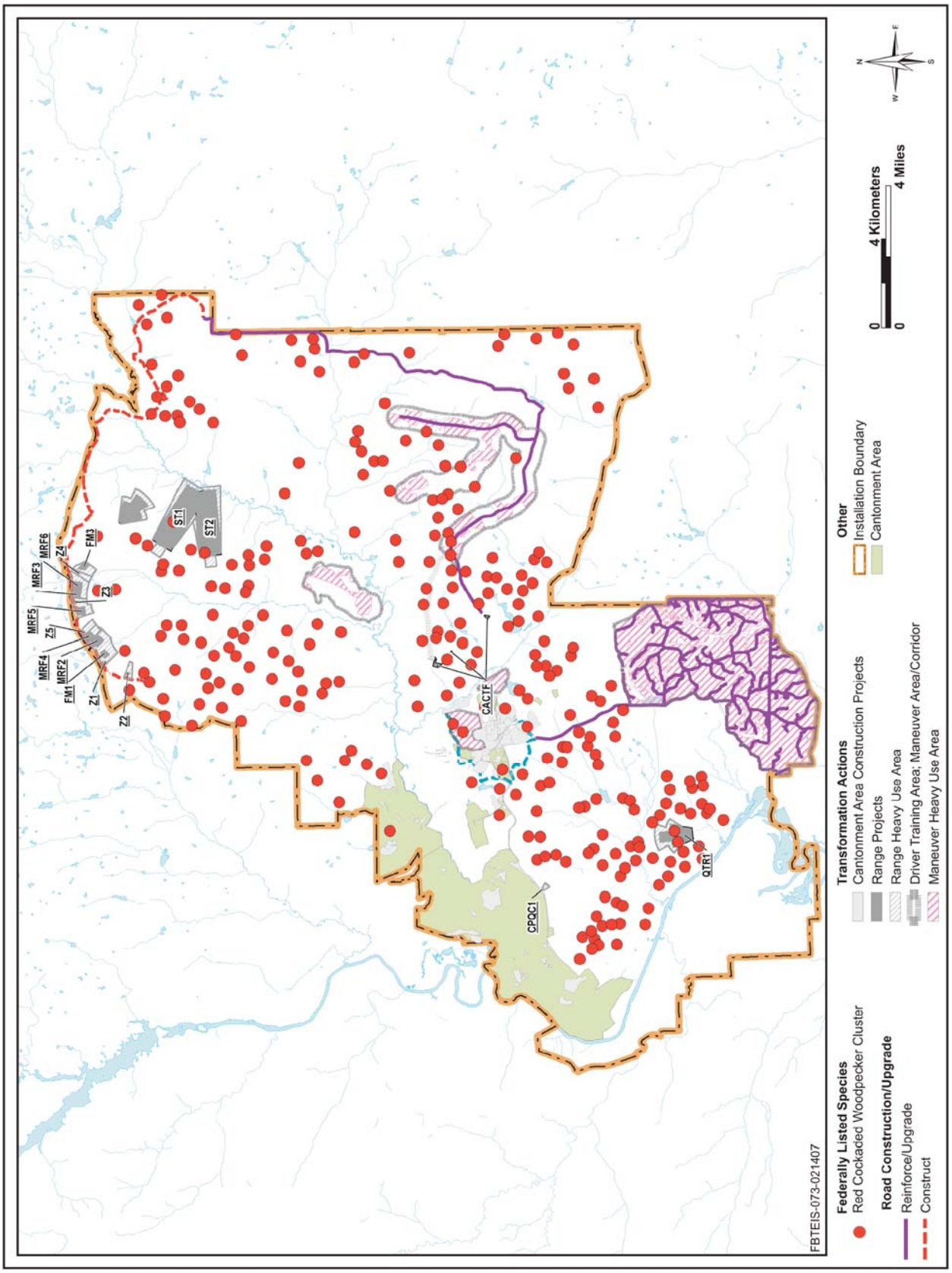


Figure 4.12-6: Red-cockaded Woodpecker Clusters Under Transformation Alternative B

Table 4.12-3: Plant Species of Conservation Concern at Fort Benning

Scientific Name	Common Name	Federal Status*	Georgia Status*	Habitat Preference, Occurrence on Fort Benning (# Mapped Locations, where available)
Federally Listed (Threatened/Endangered)				
Trillium reliquum	Relict trillium	E	E	Shaded, undisturbed sites in moist hardwood forests; 5 populations plus 2 isolated individuals mapped on the northeastern part of Installation; 2 suspected populations in compartments CC3 and P1 (7)
State Listed (Threatened/Endangered)				
Arabis georgiana	Georgia rockcress	C	T	Rocky bluffs, slopes and streambanks on sandy soils; Chattahoochee River (15)
Croomia pauciflora	Croomia		T	Moist deciduous woodlands, river channels, riparian areas; Upatoi Bluffs UEA and the Prosperity Church Oak-Hickory Forest UEA.
Myriophyllum laxum	Lax water-milfoil		T	Shallow, clear-water ponds, bogs, sinkholes and streams; Arkansas Oak Rock Hills and Upatoi Creek Flatwoods UEAs (6).
Nestronia umbellula	Indian olive		T	Open areas in dry-mesic hardwood and pine forests; occurrence unconfirmed.
Sarracenia rubra	Sweet pitcherplant		E	Open sites in moist woodlands, seeps, and wetland margins; Malone Cane Breaks UEA and northward in area O14**.**
Stylisma pickeringii pickeringii	Pickering's morning-glory		T	Open scrub-woodland habitat on sandy soils in the Fall Line; Lakeland Sandhills UEA.
Sedum nevii	Nevius' stonecrop		T	Thin frantic, limestone, or shale soils; Chattahoochee River bluffs; occurrence unconfirmed
Sedum pusillum	Granite rock stonecrop		T	Granitic outcrops among mosses; occurrence unconfirmed.
Schisandra glabra	Bay star-vine		T	Twining over understory trees and shrubs or trailing over the ground in forested bottomlands and adjacent lower slopes; occurrence unconfirmed
Rhododendron prunifolium	Plumleaf azalea		T	Moist soils of rich hardwood ravines; occurrence unconfirmed.
Hymenocallis coronaria	Shoals spider-lily		E	Rocky shoals and cracks in bedrock along river and stream courses; occurrence unconfirmed.
Other Species of Conservation Concern				
Aesculus parviflora	Bottlebrush buckeye		SC	Rocky longleaf pine forests. Arkansas Oak Rock Hills UEA (7).
Agrimonia incisa	Incised agrimony		SC	Sandhills and pine scrub. Piedmont Interface, Pine Knot Creek Blackwaters, Prosperity Church Oak-hickory Forest, Arkansas Oak Rock Hills, Longleaf Pine Sandhills UEAs.
Baptisia megacarpa	Apalachicola wild indigo		SC	Riparian slopes, floodplain forests; occurrence unconfirmed.
Buchnera americana	Bluehearts		SC	Seepage bogs. Malone Cane Breaks UEA (10).
Carex lupuliformis	Hop sedge		SC	Wetlands, floodplain forests (7)

Table 4.12-3: Plant Species of Conservation Concern at Fort Benning

Scientific Name	Common Name	Federal Status*	Georgia Status*	Habitat Preference, Occurrence on Fort Benning (# Mapped Locations, where available)
Carex stricta	Tussock sedge		SC	Wetlands. Ochillee Creek Wetlands UEA (8).
Chrysoma pauciflosculosa	Woody goldenrod		W	Sandy soil, scrub oak woodland, Lakeland Sandhills (14),
Cirsium virginianum	Virginia thistle		SC	Wet ecotones, longleaf pine (3).
Gymnopogon brevifolius	Broad-leaved beardgrass		SC	Dry clay loam soils, relict prairies Hastings Relict Sandhills Community, Longleaf Pine Sandhills UEAs (8).
Helenium brevifolium	Bog sneezeweed		SC	Seepage bogs. Pine Knot Creek Blackwaters, Malone Cane Breaks; occurrence unconfirmed.
Helianthemum canadense	Canadian frostweed		SC	Dry, sandy scrub and longleaf pine forest (3).
Helianthus smithii	Smith's sunflower		SC	Stream floodplains. Hastings Relict Sandhills Community (3).
Hexastylis shuttleworthii var. *harperi*	Harper's Wild ginger		U	Floodplain forests, wetland edges (4).
Hypericum canadense	Canada St. John's wort		SC	Wet, sandy soils, open woodlands meadows, wetland edges (10).
Iris brevicaulis	Lamance iris		SC	Seepage bogs (4).
Isoetes melanopoda	Black-footed quillwort		SC	Low woods, seepage bogs (2).
Melanthium latifolium	Broadleaf bunchflower		SC	Mesic hardwoods. Slopes of Northern Affinities UEA (8).
Oldenlandia boscii	Bosc's Mille graines		SC	Wetlands and pond margins (1).
Panax quinquefolium	American ginseng		SC	Mesic hardwoods. Upatoi Bluffs, Prosperity Church Oak-hickory Forest UEA (8).
Phaseolus polystachios sinuatus	Sandhills bean		SC	Dry pine sandhills; occurrence unconfirmed.
Plantago sparsiflora	Pineland plantain		SC	Openings in wet pine woods, seeps; occurrence unconfirmed.
Quercus arkansana	Arkansas oak		SC	Longleaf pine rocky ridges. Arkansas Oak Rock Hills UEA (8).
Quercus georgiana	Georgia oak		W	Stone outcrops, slopes, and knolls; locations unmapped.
Quercus prinoides	Dwarf chinkapin oak		SC	Longleaf pine rocky ridges. Arkansas Oak Rock Hills UEA (7).
Rhynchospora scirpoides	Bullrush baldrush		SC	Wet sandy soils, stream banks; occurrence unconfirmed.
Rhynchospora stenophylla	Narrow-leaved beakrush		SC	Wet depressions and seeps; occurrence unconfirmed.
Spiranthes ovalis	October ladies-tresses		SC	Wet woodlands and seeps (1).
Trepocarpus aethusae	Trepocarpus, White nymph		SC	Floodplains, swamps. Chattahoochee Backwaters UEA (10).
Triadenum tubulosum	Broadleaf marsh St. John's wort		SC	Wetlands, seeps (1).
Tridens carolinianus	Carolina redtop		SC	Dry, open mixed pine woods (3).
Trillium decipiens	Mimic trillium		W	Moist woods, bluffs and slopes; occurrence unconfirmed.
Trillium underwoodii	Dwarf mottled trillium		W	Oak/hickory forest understory; occurrence unconfirmed.

Note: * *E = Endangered; C = Candidate; T = Threatened; SC = Special Concern; U = Unusual; W = Georgia Plant Watch List (Plants needing additional documentation to determine conservation status).*
Sources: Fort Benning 2001, 2003c, GDNR 2006a, 2006b; Patrick et al. 1995.

Relict Trillium (Federal Endangered)

Relict trillium is an herbaceous member of the lily family. Relict trillium is characterized by sessile flowers, curved stems, and prolonged, beaked stamen (USFWS 1990, Patrick *et al.* 1995). The spring flowers range in color from yellow to green and browning purple. The fruit is a round capsule that develops in early summer. Trillium plants die back to underground rhizomes after fruit maturation in summer and reemerge in spring.

Relict trillium grows in moist hardwood forests with little to no recent disturbance. This species is threatened by habitat loss due to residential and industrial development, roads and utility corridors, logging, agricultural conversion, and fires. The species is adapted to shaded conditions; thus, timber harvests or forest clearing can be detrimental to this species. Introduced species may also threaten relict trillium. Japanese honeysuckle and kudzu (*Pueraria lobata*) are aggressive invasive vines that encroach into hardwood habitat and replace native plant species. Feral swine can damage relict trillium by trampling, uprooting, and destabilizing soil.

There are five monitored populations of relict trillium in the northeastern-most areas of the Installation (Figure 4.12-3; Biological Assessment, Appendix F). Two new populations may be present in training compartments CC3 and P1, respectively (Biological Assessment, Appendix F). Population areas range up to several acres in size and in some cases contain several thousand individuals. These areas are critical to the recovery of the relict trillium population. Populations at Fort Benning are essential for the continued viability of this species (Fort Benning 2001, 2003c). Current management activities for this species consist of surveys, monitoring efforts, and protection of sensitive areas. Management strategies on Fort Benning for this species are defined in an ESMP and consist of the following practices:

- placing signs around relict trillium populations;
- prohibiting digging and driving within and adjacent to known populations**;**
- monitoring and control of kudzu and Japanese honeysuckle;
- prohibiting timber harvest within 200 ft of known populations;
- prohibiting prescribed burning within the boundaries of populations;
- fencing to protect populations from feral swine; and
- conducting additional surveys for unknown populations.

Georgia Rockcress (Federal Candidate, Georgia Threatened)

Georgia rockcress is listed as a threatened species in the state of Georgia and is a candidate for federal listing. In 2006, its priority status was upgraded from 11 to 8 in response to increasing level of threat to this species (USFWS 2006a). Georgia rockcress is a tall herbaceous plant with an erect stem and several basal leaves. White flowers bloom from May to June in a cluster at the end of the stem (Patrick *et al.* 1995). This species is found in dry areas, on rocky bluffs and slopes along watercourses, as well as along sandy, eroding stream banks. This species is able to populate thin soils and pioneer sites (USFWS 2005).

Georgia rockcress is a light-loving species and will not tolerate prolonged shaded conditions (USFWS 2006a).

Threats to this species include various forms of habitat degradation and disturbance. Timber harvest and road building can directly modify potential habitat. Ground disturbance also encourages encroachment by exotic plant species. Invasive plants, particularly Japanese honeysuckle, overtake populations of Georgia rockcress. An increased threat from invasive plants was cited by USFWS in support of the candidate priority upgrade (USFWS 2006a).

On Fort Benning, Georgia rockcress can be found along both banks of the Chattahoochee River, which is generally outside of the area potentially affected by the Transformation action.

Indian Olive (GA Threatened)

Indian olive is a small, colonial shrub found primarily in dry, open, upland forests of mixed hardwood and pine. The species is dioecious, producing different flower types on male and female plants. Female flowers are solitary while male flowers occur in small clusters. Indian olive is known from about 16 locations in Georgia and is rare throughout its range, having sustained considerable habitat loss due to the clearing of forestland (McDonald 2006). Many of the remaining populations are of only a single sex, able to reproduce only asexually through root sprouting, and are therefore especially vulnerable to fragmentation of their habitat (Patrick *et al.* 1995). Management for Indian olive on Fort Benning is focused on forestry operation. The species may occur on the Installation in the ecological groups Dry-Mesic Hardwood and Dry Mesic Mixed Hardwood/Pine Forest. All known plants on Post are flagged prior to any timber harvests to prevent the plants from being disturbed by the use of heavy equipment.

Lax water-milfoil (GA Threatened)

Lax water-milfoil is a feathery, aquatic herb with emergent and submerged leaves. Leaf shape is extremely variable, with submerged leaves deeply incised and thread-like (Patrick *et al*. 1995). Lax water-milfoil grows in shallow freshwater ponds, bogs, sinkholes, and streams. The plant prefers clear water or spring-fed pools rather than pooling runoff with lower water quality. Lax water-milfoil occurs on Fort Benning in impounded water habitats in the Arkansas Oak Rock Hills UEA and Upatoi Creek Flatwoods UEA. The species is threatened by activities that alter the water table or degrade water quality/water clarity (Patrick *et al*. 1995).

Sweet Pitcherplant (GA Endangered)

The sweet pitcherplant (*Sarracenia rubra*) (Georgia Endangered) is a carnivorous plant that grows in moist woodlands, seepage areas, and wetland margins (see Figures 4.12-3 and 4.12-4). It is found usually in areas exposed to full sun or light shade, and it may be crowded or shaded out by invading shrub and tree species unless an opening is maintained by manual thinning or periodic fire. The species is endangered in Georgia because of wide-scale habitat destruction. Mechanical site disturbances, such as drainage or logging, tend to destroy populations. An appropriate fire regime is also important in

maintaining suitable habitat for this species. Recently, pitcherplant collection for the floral arrangement industry is posing a new problem (Fort Benning 2001, 2003c).

The sweet pitcher plant is found on Fort Benning in the Malone Cane Breaks UEA and northward in training compartment O14 where clay pans under the soil surface have created favorable growing conditions (Fort Benning 2001, 2003c). Management efforts include eliminating invading woody vegetation and yearly population surveys. TNC developed recommended management plans for each of Fort Benning's populations of the sweet pitcherplant (Streich and Kemp 1994a, b). The Malone Cane Breaks UEA contains most of Fort Benning's pitcherplants. None of the proposed Transformation projects are in this area. Sweet pitcherplant occurs in the proposed Heavy Maneuver Area - North and associated road construction projects in area O14 (Fort Benning 2001, 2003c).

Croomia (GA Threatened)

Croomia is a leafy perennial herb growing from rhizomes in intertwined patches. Croomia is found in moist deciduous woodlands, river channels, and riparian areas (Patrick *et al.* 1995). It is rare throughout its range and has sustained substantial habitat loss due to the clearing of forests for conversion to agriculture or pine plantations (Figures 4.12-3 and 4.12-4) (Fort Benning 2001, 2003c). Exotic invasives, such as Japanese honeysuckle, may also encroach into croomia habitat. The species is found in dry-mesic hardwood forest at two sites on Fort Benning: the Upatoi Bluffs UEA and the Prosperity Church Oak-Hickory Forest UEA. The proposed Heavy Maneuver Corridor – South is partially within the Prosperity Church Oak-Hickory Forest UEA. No Transformation activity is proposed within the Upatoi Bluffs UEA, but construction, range activities, and the driver training area are within close proximity to this region.

Pickering's Morning Glory (GA Endangered)

Pickering's morning glory is a perennial, creeping vine. The stems sprawl over the ground from a central crown, and branch extensively, forming an intertwined network of trailing stems. The leaves are held upright, with the base tapering to a short leafstalk (Fort Benning 2001, 2003c; Patrick *et al*. 1995). The flowers are white and funnel shaped. The species is found in coarse, white sands on sandhills near the Fall Line. These are scrub habitats with scant litter accumulation, sparse ground cover, and a thin canopy of scattered oaks and pines. The species is in decline due to habitat destruction. Fort Benning's management strategy for this species is to control encroachment of woody vegetation through prescribed burning and timber thinning, which should be beneficial to this light-loving plant (Patrick *et al*. 1995).

The largest known concentrations of Pickering's morning glory on Fort Benning are found in the Lakeland Sandhills UEA (Figures 4.12-3 and 4.12-4) (Fort Benning 2001, 2003c). Pickering's morning glory habitat does not occur in the area potentially affected by the Transformation actions.

Shoals spider-lily (GA Endangered)

This species is an emergent wetland plant that grows along streams, rivers, rocky shoals and cracks in bedrock. Alterations in stream flow and degradation in water quality are threats. The species is also

sensitive to sediment and turbidity (Patrick *et al*. 1995). Surveys for plant species of concern were conducted in 2006 over the areas potentially affected by the Transformation alternatives. Shoals spider-lily was not detected (USFS 2006).

Plumleaf Azalea (GA Threatened)

This deciduous shrub produces bright flower clusters. It grows in moist soils of hardwood ravines and may be found in the Piedmont Interface UEA. Disturbance due to logging and horticultural collection are threats to this species (Patrick *et al*. 1995). Plumleaf azalea was not detected in the areas potentially affected by the Transformation alternatives (USFS 2006).

Bay Star-vine (GA Threatened)

Bay star-vine grows on slopes and bottomlands in rich forest. It is a sprawling or climbing vine that grows over understory trees and shrubs. Invasion by exotic species is a threat to this plant (Patrick *et al*. 2005). Bay Star-vine was not detected in the areas potentially affected by the Transformation alternatives (USFS 2006).

Granite Rock Stonecrop (Sedum pusillum) (GA Threatened)

This species grows over granitic outcrops in the shade of taller vegetation or rock structures. It often appears in association with eastern red cedar. Invasion by exotic weeds is the most notable threat to the granite rock stonecrop (Patrick *et al*. 1995). Granite Rock Stonecrop was not detected in the areas potentially affected by the Transformation alternatives (USFS 2006).**Nevius' Stonecrop (GA Threatened)**

Nevius' stonecrop grows in shallow soil over granite substrate. It appears on steep bluffs along Chattahoochee River. As with other native plants, exotic weeds are a threat (Patrick *et al*. 1995). Nevius' Stonecrop was not detected in the areas potentially affected by the Transformation alternatives (USFS 2006).

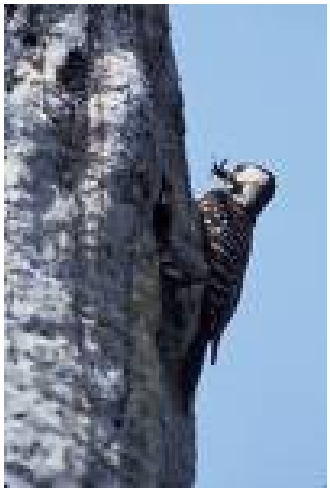
Special Status Animal Species

Table 4.12-4 lists the special status animal species and their conservation status. Habitat preference and species occurrence at Fort Benning is included where data are available. Detailed discussion is provided for federally-listed species and state-listed species.

Red-cockaded Woodpecker (RCW) (Federal Endangered)

The RCW was listed as endangered in 1970 due to its rarity, documented declines in local populations and reductions in available nesting habitat. Although populations have become more fragmented and isolated, the RCW is still found in all southern and southeastern coastal states from eastern Texas into southern Virginia, and small interior populations are found in southeastern Oklahoma and southern Arkansas, and until recently, southeastern Kentucky. The largest populations are in the coastal plain forests of the Carolinas, Florida, Georgia, Alabama, Mississippi, Louisiana, eastern Texas, and in the Sandhills forests of the Carolinas (USFWS 1999).

RCWs are non-migratory residents, with a social structure that involves a breeding pair and helpers that assist with cavity excavation and maintenance, egg incubation, feeding young, and defending the group's territory. Nesting generally occurs from April through June with some re-nesting attempts observed as late as August. Groups of RCWs nest in an aggregation of cavity trees called a cluster that is surrounded by contiguous foraging habitat. RWC clusters are typically defined as "active", "inactive," or "captured." An active cluster is an aggregation of trees with fresh cavities that are currently used by RWC. An inactive cluster is comprised of old or unused cavity trees. Inactive clusters can be managed or restored to provide habitat for recolonization. A captured cluster contains cavity trees that do not support a breeding group, but are used by a neighboring group of RCW (USFWS 2003). Discrete cluster sites are typically located where mature pine trees are more than 60 years old. Foraging habitat however, is more variable with timber taking on increasing value as the stands age past 30 years. Both nesting and foraging habitat can be characterized as open stands of pine with a scarce to moderate midstory. As the midstory becomes dense or reaches the height of cavities, cluster abandonment and decreased foraging value results.



Fort Benning has one of the largest RCW populations in the southeastern United States. The RCWs are well dispersed over the Installation, except that no active clusters are located on the Alabama portion of the Installation. RCW is known to occur in several vegetation types within the project areas, including longleaf pine sandhills, longleaf pine loamhills, and plantations, other altered areas, and Longleaf Pine Loamhills UEA (Fort Benning 2006k). In September 1994, the USFWS issued a (Jeopardy) Biological Opinion (BO) determining that the ongoing military training and related activities at Fort Benning jeopardized the continued existence of the Installation's RCW population. Since that time, intensive

Table 4.12-4: Special Status Animal Species Occurring at Fort Benning

Class	*Scientific Name*	Common Name	Federal Status*	GA Status*	Habitat Preference, Occurrence at Fort Benning (# Mapped Locations)
Federally Listed					
Bird	*Haliaeetus leucocephalus*	Bald eagle	T	E	Forested edges of lakes, estuaries, and large rivers. River Floodplains and Cypress/Tupelo Swamps. Chattahoochee Backwaters UEA (2).
Bird	*Mycteria americana*	Woodstork	E	E	Marshes, river swamps, shrub wetlands; nests in cypress or dead hardwoods. Known in vegetation and aquatic communities: River Floodplains and Cypress/Tupelo Swamps. Chattahoochee Backwaters and River Floodplains and Cypress/Tupelo Swamps UEA (3).
Bird	*Picoides borealis*	Red-cockaded woodpecker	E	E	Open mature pine woodlands, pine savannahs. Nests in mature pine with low understory vegetation. Known in vegetation communities: Longleaf Pine Sandhills, Longleaf Pine Loamhills, and Plantations and Other Altered Areas. Hastings Relict Sandhills Community, Longleaf Pine Sandhills, Lakeland Sandhills, Longleaf Pine Loamhills, Malone Cane Breaks UEAs (see Figures).
Reptile	*Alligator mississippiensis*	American alligator	T (S/A)	SC	Fresh and brackish marshes, ponds, lakes, and rivers. Known in vegetation and aquatic communities: Impounded Water, River Floodplains and Cypress/Tupelo Swamps, Chattahoochee Backwaters UEA.
State Listed					
Bird	*Aimophila aestivalis*	Bachman's sparrow		R	Open pine or oak woodlands, old fields, mature old growth pine woodland with frequent fires. Known in the following vegetation communities: Dry-mesic hardwood and dry-mesic mixed hardwood/pine forest, longleaf pine loamhills, longleaf pine sandhills, plantations and other altered areas, small stream swamps and wooded seepage bogs, Hastings Relict Sandhills Community UEA, Longleaf Pine Sandhills UEA, Longleaf Pine Loamhills UEA (272).
Reptile	*Gopherus polyphemus*	Gopher tortoise		T	Sandy soils in pine forest and grassy understory. Known in vegetation and aquatic communities: Dry mesic Hardwood and Dry-mesic Mixed hardwood/Pine Forest, Longleaf Pine Loamhills, Longleaf Pine Sandhills, Plantations and Other Altered Areas, Successional Upland Deciduous Mixed Forest, Small Stream Swamps and Wooded Seepage Bogs. Hastings Relict Sandhills Community, Longleaf Pine Sandhills, Lakeland Sandhills, Slopes of Northern Affinities, Pine Knot Creek Blackwaters UEAs (2661).
Reptile	*Graptemys barbouri*	Barbour's map turtle		T	Low-gradient rivers and swamps in the Apalachicola River system. Chattahoochee Backwaters UEA (2).

Table 4.12-4: Special Status Animal Species Occurring at Fort Benning

Class	*Scientific Name*	Common Name	Federal Status*	GA Status*	Habitat Preference, Occurrence at Fort Benning (# Mapped Locations)
State Listed (Continued)					
Reptile	*Macrochelys temminckii*	Alligator snapping turtle		T	Rivers, lakes, and ponds near vegetated wetlands. Chattahoochee Backwaters and River Floodplains and Cypress/Tupelo Swamps UEA (12).
Fish	*Cyprinella callitaenia*	Bluestripe shiner		T	Medium to large rivers; undisturbed but unvegetated areas (19).
Other Species of Conservation Concern					
Bird	*Egretta caerulea*	Little blue heron		SC	Herbaceous wetland and surrounding forested areas. Unknown distribution at Fort Benning.
Bird	*Elanoides forficatus*	Swallow-tailed kite		R	Vegetated wetlands, pine woodlands. Unknown distribution at Fort Benning.
Bird	*Falco sparverius paulus*	Southeastern American kestrel		SC	Open pine woodlands with dead snags; cleared areas, burned areas. Known in vegetation communities: Longleaf Pine Sandhills, Plantations and Other Altered Areas, and Successional Upland Deciduous Mixed Forest. Lakeland Sandhills UEA (25).
Bird	*Lanius ludovicianus migrans*	Migrant loggerhead shrike		SC	Open woods, field edges, scrub/scrub with scattered trees. Known in vegetation communities: Plantations and Other Altered Areas (7).
Bird	*Nyctanassa violacea*	Yellow-crowned night heron		SC	Herbaceous woodland and forested wetlands. Unknown distribution at Fort Benning.
Bird	*Nycticorax nycticorax*	Black-crowned night heron		SC	Herbaceous wetlands, wooded streams and rivers. Unknown distribution at Fort Benning.
Bird	*Pandion haliatus*	Osprey		SC	Herbaceous wetlands, riparian areas, snags and hollow trees near water. Chattahoochee Backwaters and River Floodplains and Cypress/Tupelo Swamps UEAs (1).
Reptile	*Eumeces anthracinus*	Coal skink		SC	Mesic forests near bodies of water. Unknown distribution at Fort Benning.
Reptile	*Eumeces egregius*	Mole skink		SC	Pine, hardwood, and mixed woodlands in sandy soils. Unknown distribution at Fort Benning.
Reptile	*Crotalus adamanteus*	Eastern diamondback rattlesnake		SC	Mixed pine successional woodland, old fields, longleaf pine, favors areas with abundant cover. Hastings Relict Sandhills Community UEA (17).
Reptile	*Micrurus fulvius*	Eastern coral snake		SC	Burrows and fallen logs, riparian pine, hardwood, and mixed woodlands (2).

Table 4.12-4: Special Status Animal Species Occurring at Fort Benning

Class	*Scientific Name*	Common Name	Federal Status*	GA Status*	Habitat Preference, Occurrence at Fort Benning (# Mapped Locations)
Other Species of Conservation Concern (Continued)					
Reptile	*Heterodon simus*	Southern hognose snake		SC	Fallow fields and scrub pine woodlands, well drained riparian and xeric flatwoods. Hastings Relict Sandhills Community UEA (2).
Reptile	*Pituophis melanoleucus mugitus*	Florida pinesnake		SC	Burrows and fallen logs, pine and mixed woodlands; uses gopher tortoise burrows. Known in vegetation communities: Longleaf Pine Sandhills and Plantations and Other Altered Areas. Hastings Relict Sandhills Community UEA (38).
Fish	*Lepisosteus oculatus*	Spotted gar		SC	Creeks, rivers, forested wetlands; quiet pools and heavily vegetated backwaters (22).
Fish	*Ameiurus serracanthus*	Spotted bullhead		R	Medium to large rivers; deep holes with rock, sand, or mud substrate (2).
Fish	*Etheostoma parvipinne*	Goldstripe darter		R	Springs, seepage creeks; vegetated benthos.
Fish	*Pteronotropis euryzonus*	Broadstripe shiner		R	Brownish water creeks and pools; near vegetation or debris (263).
Fish	*Etheostoma swaini*	Gulf darter		SC	Creeks, high-gradient streams; shallow riffles and benthos (12).
Fish	*Ichthyomyzon gagei*	Southern brook lamprey		SC	Small rivers and creeks; pool/rifle reaches with moderate gradient and gravel or sand substrate (75).
Amphibian	*Rana capito sevosa*	Dusky gopher frog		SC	Pine scrub in sandhills, near water; uses gopher tortoise burrows. Hastings Relict Sandhills Community.
Amphibian	*Desmognathus apalachicola*	Apalachicola salamander		SC	Stream floodplains, small stream swamps and seepage bogs. Unknown distribution at Fort Benning.
Amphibian	*Eurycea longicauda guttolineata*	Three-lined salamander		SC	Hardwood forest floodplains and wetlands. Unknown distribution at Fort Benning (1).
Mammal	*Myotis austroriparius*	Southeastern myotis		SC	Pine, hardwood, and mixed forest; dead snags and hollow trees. Unknown distribution at Fort Benning (1).
Mammal	*Neotoma floridana* ssp *haematoreia*)	Eastern woodrat		SC	Mature lowland hardwoods, riparian forests, brushy or wooded wetlands. Unknown distribution at Fort Benning.
Mammal	*Neotoma floridana* ssp. *illinoensis*	Southern Appalachian woodrat		SC	Mature lowland hardwoods, riparian forests, brushy or wooded wetlands. Unknown distribution at Fort Benning.

Table 4.12-4: Special Status Animal Species Occurring at Fort Benning

Class	*Scientific Name*	Common Name	Federal Status*	GA Status*	Habitat Preference, Occurrence at Fort Benning (# Mapped Locations)
Mammal	*Tadarida brasiliensis*	Brazilian free-tailed bat		SC	Dead snags, hollow trees, abandoned buildings, caves, culverts, and bridges. Unknown distribution at Fort Benning.
Mussel	*Anodonta heardi*	Apalachicola floater		SC	Streams; not known from potentially affected areas.
Insect	*Onthophagus polyphemi*	Tortoise commensal scarab		SC	Gopher tortoise burrows in sandy forest soils. Unconfirmed occurrence at Fort Benning.
Crustacean	*Cambarus sp.* *Procambarus sp.*	Crayfish Species		SC	Aquatic benthos - Unknown distribution at Fort Benning

Note: * *E = Endangered; C = Candidate; T = Threatened; S/A = Similarity of Appearance; SC = Special Concern; R = Rare*
Sources: Fort Benning 2001, 2003c, GDNR 2003, 2006a, 2006b; NatureServe 2006; USFWS 2006b-e.

efforts have been made to enhance management activities as outlined in the Reasonable and Prudent Alternatives section of the USFWS' 1994 Jeopardy BO. On September 27, 2002, the USFWS approved Fort Benning's ESMP for the RCW and issued a BO that included specific management activities. This relieved Fort Benning of the 1994 Jeopardy BO and allowed the implementation of the "1996 Management Guidelines for the RCW on Army Installations." Fort Benning is also one of 13 primary core locations selected by the USFWS to manage for a RCW recovery population (451 clusters for Fort Benning). The 2003 Recovery Plan (USFWS 2003) recommends an annual increase of 5 percent in the total number of active clusters.

The management and current status of RCWs on Fort Benning, and of clusters in areas potentially affected by the proposed Transformation, were evaluated in 2006 as described in the Biological Assessment contained in Appendix F. As of August 2006, there were 308 managed clusters, consisting of 254 potential breeding groups, 7 solitary RCWs, 5 captured clusters (used by neighboring groups), and 42 inactive clusters (see Appendix F for more detail). Figures 4.12-5 and 4.12-6 show the distribution of clusters on the installation with respect to Alternatives A and B. Whereas a large number of clusters occur in vicinity of the Maneuver Area proposed under Alternative A, no clusters are known from the Good Hope Maneuver Area proposed under Alternative B, although that area contains potential foraging habitat.

Wood Stork (Federal Endangered)

Wood storks are seasonal visitors to Fort Benning, seen mainly in gum/oak ponds on the Alabama portion of the Installation during late summer. Usually, 1 to 20 birds are seen each year. They use shallow water ponds or Chattahoochee River backwaters depending on available food supplies and appropriate water levels. In 1996, USFWS personnel discovered a roost in military training compartment X5, which was the first known occurrence on Fort Benning (Fort Benning 2001, 2003c). Over the next several weeks, Natural Resource Management Branch and USFWS personnel sighted several individuals on the Alabama portion of Fort Benning, in compartments X3, X5, Z1, and Z4. No wood storks were observed in 2005, whereas three were seen in compartment X5 in 2006. Wood storks were not observed in 2006 surveys of areas affected by proposed Transformation Alternative A (Biological Assessment, Appendix F), nor have wood storks been documented in other areas potentially affected by Alternative B.

The management strategy for the wood stork on Fort Benning, detailed in an ESMP, consists of maintaining the current transient population and protecting the habitat in which they temporarily live and feed. Current management activities consist of surveys, monitoring efforts, and protection of sensitive areas (Fort Benning 2001, 2003c; Biological Assessment, Appendix F).

Bald Eagle (Federal Threatened)

A pair of bald eagles' nest on the southern edge of the Installation, near the Chattahoochee River in the Chattahoochee Backwaters UEA. The eagles have produced successfully at least one fledgling since the first nest was discovered in 1992. In 2006, a pair of bald eagles successfully fledged two nestlings from the nest in compartment A14. A former nest site in CC2 is no longer present (Biological Assessment,

Appendix F; personal communication, Thornton). The active nest is located in training compartment A14. Activities in compartments A14, A21, and CC2 are restricted from 1 December through 31 May to protect the nest site.

Management strategy on Fort Benning for the bald eagle is detailed in an ESMP and consists of maintaining the integrity of their habitat and feeding sources in order to eventually increase the number of nesting pairs from one to two. Current management activities consist of surveys, monitoring efforts, and protection by limiting potentially disturbing activities within primary (1,500 ft) and secondary (one mile) buffer zones around nest sites (Fort Benning 2001, 2003c). Proposed Transformation Alternative A would not affect either buffer zone, whereas the Good Hope Maneuver Area under Alternative B would barely overlap the one-mile buffer of the active nest site in A14, and overlap the one-mile buffer of the former nest site in CC2 to a greater degree (Figure 4.12-3).

Bachman's Sparrow (GA Rare)

The Bachman's sparrow (*Aimophila aestivalis*) is a small bird with a streaked brown back, a white underbelly, and a pale bill. It is a year-round resident and lives in the open pinewoods indicative of the northern portion of the Installation. During the USFWS Terrestrial Survey (USFWS 1999), 272 male Bachman's sparrows were identified by calls in training areas throughout the Installation. Habitat quality for this species is good and abundant on Fort Benning due mainly to the widespread use of prescribed fire, which promotes the open pine forests in which this species thrives. Avian habitat evaluations performed at Fort Benning suggest that Bachman's sparrow may be more common in recently burned sites (Duncan *et al.* 2004).

Known populations of Bachman's sparrow exist in the project areas in Pine Knot Creek Blackwaters UEA and Hastings Relict Sandhills Community UEA, and in the following vegetation community types: dry-mesic hardwood and dry-mesic mixed hardwood, longleaf pine loamhills, longleaf pine sandhills, plantations, other altered areas, and small stream swamps and wooded seepage bogs (Fort Benning 2006k). Bachman's sparrow is not known in any non-range construction project areas but it does inhabit the Heavy Maneuver Area - North, Southern Maneuver Corridor, Tank/Fighting Vehicle Stationary Gunnery Range 2, and Tank/Fighting Vehicle Stationary Gunnery Range 2 (Fort Benning 2006k).

American Alligator (Federal Threatened for Similarity in Appearance)

The American alligator was first listed on March 11, 1967. In 1987, the USFWS pronounced the American alligator fully recovered and it was removed from the endangered species list. However, the alligator is still listed as Threatened due to "Similarity in Appearance", because some related species (several species of crocodiles and caimans) still need protection. For this reason, the USFWS regulates legal trade in alligator skins and products made from alligators in order to protect crocodile and caiman species that have skin that is similar in appearance (USFWS 2006f).

Fort Benning is located on the extreme northern limit of the American alligator's range. Large adults up to 13 ft have been observed. Habitat available to the alligator is limited and consists of fishponds and beaver ponds and the backwaters, sloughs, and creeks of the Chattahoochee River (Fort Benning 2001,

2003c). Known occurrences include compartment X-5 on the Alabama side of the river and Averett's Kings, Twilight, and Clear Creek ponds (Biological Assessment, Appendix F) on the Georgia portion of the Installation. None of these areas are potentially affected by the proposed Transformation (Biological Assessment, Appendix F).

Fort Benning has an ESMP for the American alligator. Basic management for this species consists of maintaining a stable population and maintaining the habitat in which it lives and feeds. Current management activities consist of surveys, monitoring efforts, and protection and maintenance of alligator habitat (Fort Benning 2001, 2003c).

Gopher Tortoise (GA Threatened)

The gopher tortoise occurs in the sandy soil habitats found only in the northern two thirds and southeastern tip of the Installation. A dry land turtle, the gopher tortoise (tortoise) has a high, domed shell with shell lengths of up to 15 inches. They have stubby, elephant-like hind feet and flattened front feet with large toenails for digging. They favor dry, sandy ridges with open stands of longleaf pine, turkey oak, and other scrub oaks. They also frequent open areas around road shoulders, food plots, and rights-of-way, which have well drained sandy soil. The tortoises dig long sloping burrows up to 30 ft long and extending up to 9 ft below the surface. These dens are used as shelter by tortoises, as well as by a variety of other sandhill residents, including the eastern diamondback rattlesnake, dusky gopher frog, and commensal scarab (*Onthophagus polyphemi*). They feed on grasses and other plant material near the ground. Feeding trails are often visible leading from the den's sandy apron to foraging areas. Eggs are laid in or near the den apron in May, June, and July and hatch in about 80-100 days. Young tortoises are about the size of silver dollars and are very vulnerable to predation by crows, raccoons, opossums, foxes, skunks, and other animals. Over 8,200 tortoise burrows have been documented to date on Fort Benning.

Gopher tortoise management on Fort Benning consists of burrow and habitat protection. In areas with high vehicular traffic, "Sensitive Area" signs are posted around known active and inactive tortoise burrows, totaling 150 acres, and the burrows are also marked. These sites are located primarily in mechanized training areas. Digging activities and vehicles are required to stay 50 ft away from the burrows to protect the integrity of the burrow area (Fort Benning 2004b). Based on surveys by the U.S. Forest Service (USFS), the gopher tortoise is present throughout the Installation, with a substantial number of active burrows (535 active burrows). Active gopher tortoise burrows were observed in scrub oak and sandy open stands throughout the action areas for Transformation Alternative A and B. Burrows were also found to a lesser extent in upland pine stands, usually with an open canopy and sandy or sandy loam soils. As expected, Gopher tortoise burrows were typically not found when canopy density was high or when the composition of the soil was

predominantly clay. The gopher tortoise burrows found within the action areas were primarily adult burrows. Juvenile burrow were less prevalent (USFS 2006b).

The gopher tortoise is known to occur in mesic hardwood forests, dry-mesic hardwood and dry-mesic mixed hardwood/pine forest, longleaf pine loamhills, longleaf pine sandhills, plantations, other altered areas, and successional upland deciduous or mixed forest (Fort Benning 2006k). They are also known in the following UEAs: Hastings Relict Sandhills Community, Longleaf Pine Sandhills, and Pine Knot Creek Blackwaters (Fort Benning 2006k). Known tortoise locations in proposed project areas include: Battle Command Training Center (Harmony Church 2012), Drivers Training Area, Heavy Maneuver Area North, Southern Maneuver Corridor(2007-2010), Tank/Fighting Vehicle Stationary Gunnery Range 2, and Tank/Fighting Vehicle Stationary Gunnery Range 1 (Fort Benning 2006k).

Other Reptiles

The alligator snapping turtle and Barbour's map turtle are aquatic reptiles identified as Threatened by the State of Georgia. Primary habitat is in Chattahoochee Backwaters UEA, this area is adjacent to the area affected by the Alternative B Transformation activities for the Good Hope Maneuver Area.

Bluestripe Shiner (GA Threatened)

The bluestripe shiner is a small (7 cm) member of the minnow/carp family. It is endemic to the Chattahoochee River basin and is listed as a threatened species by the State of Georgia. This species inhabits medium and large streams and rivers with moderate gradient and little to no aquatic vegetation. Bluestripe shiners spawn in summer months, laying eggs in crevices on the river bed (NatureServe 2006). In the Chattahoochee River system, sensitive fish species including shiners have been shown to prefer pristine, undisturbed stream segments and were not found in degraded headwaters (Holcomb 2005).

Dusky Gopher Frog (GA Species of Concern)

The dusky gopher frog is one of four amphibian species of concern occurring at Fort Benning (Fort Benning 2001, 2003c) (Table 4.12-4). None of the four is federally or state listed, but the dusky gopher frog is of particular interest because a distinct population segment of this subspecies is federally listed as endangered in Alabama, Mississippi, and Louisiana (USFWS 2001). The INRMP describes management strategies for this species because the population is regionally unique and may become a candidate for federal listing (Fort Benning 2001, 2003c).

A population of dusky gopher frogs occurs on Fort Benning in the pine scrub and sandhills habitat within training compartments K14, K15, and K17. The dusky gopher frog shares this type of habitat with the gopher tortoise, a Georgia threatened species. The frogs may use gopher tortoise burrows during the day for shelter, emerging at night to feed (NatureServe 2006). The dusky gopher frog is primarily terrestrial, but is found in association with shallow breeding ponds and wetland areas. Threats to this species include habitat loss/fragmentation, disease, and periods of dry weather. The population of dusky gopher frogs at Fort Benning is extremely isolated on the Installation, and may be the only sub-population in existence in the Upper Coastal Plain (Fort Benning 2001, 2003c). As such, the population may be vulnerable to local

and regional disturbances. Tracking studies of the population at Fort Benning indicated that dusky gopher frogs show strong site fidelity and are centered in the K14 and K17 training compartments. Ongoing training in K15 and Hastings Range does not appear to negatively affect the species (Fort Benning 2001, 2003c).

Apalachicola Floater

The USFWS' aquatic resource survey documented six native and one introduced mussel species on Fort Benning (Fort Benning 2001, 2003c). Four mussels of "Conservation Concern" are listed in the INRMP: Apalachicola floater (*Anodonta heardi*), eastern elliptio (*Elliptio complanata*), little spectaclecase (*Villosa lienosa*), and southern rainbow (*Villosa vibex*). The Apalachicola floater is a species of conservation concern in Georgia, and the remaining three species are identified as species of special concern only in Alabama (Federal Threatened)..

In 2006, surveys for freshwater mussels were conducted at stream crossings that would be modified as part of the proposed Transformation actions. Stream crossings were sampled at Pine Knot Creek, Little Pine Knot Creek, Sally Creek (tributary), Randal Creek (and tributaries), Kendall Creek (and tributaries), Upatoi Creek (and tributaries), and Ochillee Creek. No special-status mussel species were detected.

4.12.1.5 Unique Ecological Areas (UEAs)

In accordance with DoD Instruction 4715.3, Fort Benning and several conservation partners identified UEAs that represent the best examples on Fort Benning of a particular habitat or plant community type. UEAs were chosen based on characteristics of their biotic and abiotic features and in many cases contain remnant native plant communities that have experienced minimal disturbance relative to other similar communities (refer to Figures 4.12-3 and 4.12-4). As a result, such areas can serve as reference sites for the biodiversity and ecological processes associated with natural communities. Designation of UEAs is designed to ensure proactive management and long-term land-use planning and training activities that account for their presence and their preservation requirements (Pentecost 1999, Fort Benning 2001, 2003c). The management emphasis for UEAs is on communities and ecosystems, rather than individual species.

Designation of a UEA does not entail any restrictions in land use. However, since UEAs represent some of the rarest or highest quality areas on Fort Benning they receive priority for management activities and monitoring efforts, as identified in the INRMP. In some cases, no "active" management is required, although these areas are still monitored for unauthorized disturbances and surveyed for threatened and endangered species. Some UEAs receive active management in the form of timber harvest. Although no permit is required to cut trees in this area based on their status as a UEA, special consideration is given to these areas in the Installation's training compartment timber harvest plan. UEAs also receive priority for soil erosion projects, invasive species control, longleaf pine reforestation, road closures, and strict adherence to Best Management Practices.

Conservation of the UEAs is subject to consistency with the military mission and would be reassessed if the military needs of the Installation change during proposed Transformation action. Further

development of the UEA concept will include a determination of the conservation significance of these areas, better-defined boundaries and buffers, and a specific management plan for each UEA.

In total, including designated buffer zones for the Piedmont Interface area, the existing UEAs encompass almost 21,400 acres and 15 separate sites. The boundaries and acreages are approximate and are refined as the areas are further studied. Each UEA was identified initially by Fort Benning staff or by USFWS, TNC, or GA Natural Heritage staff, who evaluated their condition in the field and made a preliminary determination that each area deserved consideration as an area of conservation significance. Those UEAs proximate to sites affected by the proposed Transformation activities are listed in Table 4.12-5 and described below; descriptions are based on the INRMP (Fort Benning 2001, 2003c).

Longleaf Pine Loamhills UEA

This UEA, located within the southwest portion of the Installation, is characteristic of the Longleaf Pine Loamhills Ecological Group. It represents one of the best longleaf pine stands on the Installation in regard to both quality and size. Species of conservation concern that are present include the RCW and short-leaved skeleton-grass. Part of the management strategy for this area is to include a large reference area (potentially the western portion) in which the only active management will be prescribed burning. Such a reference area can be used to track the natural progression of a longleaf stand and may be valuable in evaluating uneven-aged forestry management techniques. The rest of the area will be managed in accordance with applicable Forest Management Operational Plans for longleaf pine. Longleaf pine restoration in the Minter Hill live-fire range is part of the management for this UEA. Longleaf pine seedlings have become naturally established in the area since 2001. Future management will include prescribed burning and thinning as necessary.

The Longleaf Pine Loamhills UEA is partly overlapped by proposed Transformation actions at the qualification training range in the southern range area.

Table 4.12-5: Fort Benning Unique Ecological Areas Potentially Affected by Transformation

Name	Military Training Compartments	Proposed Transformation Actions	Compatibility Issues
Longleaf Pine Loamhills	Portions of A14, A15, A16, A17	Qualification training range	Forest Management Operational Plans, RCW
Ochillee Creek Wetlands	Portions of C1, C2, C3, E1, E7, R2, T1, T2, T6, and T7	Rail Car Storage/Tracks, cantonment area construction	Wetlands
Piedmont Interface	All or portions of K5, K6, O4, O5, O6, O7, O8, O10, and O11	Road construction/reinforcement, Oscar Range Complex development	Relict trillium populations
Prosperity Church Oak-Hickory Forest	Portion of E5	Southern Maneuver Corridor	Siting of the heavy maneuver corridor
Hastings Relict Sandhills Community	Portions of K11, K12 (minus Hastings Range), K13, K14, and K17	Road upgrade/ reinforcement	Gopher tortoise, RCW, Bachman's sparrow; off-road vehicles
Pine Knot Creek Blackwaters	Portions of D1, D2, D3, K15, K17, K18, K19, K20, K21, K22, and K23	Road upgrade/ reinforcement	Wetlands and stream crossings; Bachman's sparrow, gopher tortoise
Arkansas Oak Rock Hills	All or portions of F4, F5, G5, G6, and H2	Adjacent to road upgrade/ reinforcement	None
Upatoi Bluffs	Portions of AA, BB1, BB2, J1, J3, J4, J5, L6, M3, M4, P1, and P2	Adjacent to Drivers Training Area and cantonment area construction	None
Chattahoochee Backwaters	All or portions of A14, CC2, X5, Z1, Z3, and Z4	Adjacent to Alt. B Good Hope Maneuver Area	Bald eagle nest site
Hite Bowl Swamp	Portions of X1 and Y1	None	Not applicable
Lakeland Sandhills	Portions of D14 and J7	None	Not applicable
Longleaf Pine Sandhills	Portions of K8 and K13	None	Not applicable
Malone Cane Brakes	Central portion of M6	None	Not applicable
Slopes of Northern Affinities	Southern portion of K20	None	Not applicable
Upatoi Creek Flatwoods	Northern portion of K10	None	Not applicable

Ochillee Creek Wetlands UEA

The Ochillee Creek Wetlands UEA is located within the central portion of the Installation and generally runs between two railroad lines that bisect the Installation. This area is a high-quality forested wetland along Ochillee Creek that is characteristic of the Mesic Hardwood Forests Ecological Group. Common species that are present include loblolly pine, white oak, water oak, magnolia, beech, tuliptree, American holly, and swamp chestnut oak (*Quercus michauxii*). This UEA contains Fort Benning's Champion loblolly pine. Species of conservation concern include a large disjunct population of tussock sedge. The area is used by the military for dismounted training; however, training does not usually occur in the wetlands. The area is intended to be managed passively.

The Ochillee Creek Wetlands UEA is partly within the site proposed for the Rail Car Storage/Tracks, and is adjacent to several development projects in the Harmony Church cantonment area.

Piedmont Interface UEA

This UEA is located within the northeastern part of the Installation. This area is characteristic of the Stream Floodplain Ecological Group. Although this area occurs within the Fall Line transition between the Piedmont and the Coastal Plain Physiographic Regions, some of its geologic and vegetative features are not characteristic of the Fall Line Sandhills. The area contains seven streams that flow out of the Piedmont, generally from north to south, and that are characterized by extensive floodplains with high-quality hardwood stands. The area also contains the largest granite rock outcrop on Fort Benning in training compartment O7, which extends for a quarter mile along a bluff above the old Randall Creek channel. Characteristic flora of the area consists of Shumard oak, white oak, cherrybark oak (*Quercus pagoda*), swamp chestnut oak (*Quercus michauxii*), ash, loblolly pine, sweetgum, sycamore, hickory, elm, maple, and flowering dogwood. Relict trillium occurs in at least seven separate populations in this area**.** All seven populations were confirmed present in a 2006 survey (Biological Assessment, Appendix F). Cox Creek in the northeast portion of the Installation contains the most diverse mussel fauna on Fort Benning, including several Alabama special concern species. Georgia-protected species in the area include Sandhills bean, Smith's sunflower, incised agrimony (cut-leaf harvest lice) (*Agrimonia incisa*), and wide-leaved bunchflower (*Melanthium latifolium*). The single greatest disturbance and threat to this area is feral swine due to their rooting style of feeding behavior.

Portions of the Piedmont Interface UEA are covered by proposed Ranges MRF2 and FM1; road construction and reinforcement, and the Modified Record Fire Range (non-range construction FID 47). The Heavy Maneuver Area - North is adjacent to the Piedmont Interface UEA.

Prosperity Church Oak-Hickory Forest UEA

This UEA, located within the southeastern portion of the Installation, is the largest and best example on Fort Benning of an oak-hickory upland forest. The area is characteristic of the Dry-mesic Hardwood and Dry-mesic Mixed Hardwood / Pine Forest Ecological Group, but it is distinct from other vegetation in the group because it is found on a dry hilltop in addition to a mid-slope location. Common species that are present include white oak, cherrybark oak, rock (mountain) chestnut oak (*Quercus prinus* [= *montana*]),

hickory, tuliptree, sweetgum, flowering dogwood, chalk maple, eastern red cedar (*Juniperus virginiana*), farkleberry, black cherry, and a few scattered loblolly pine and ash trees. Shrubs include American holly, hawthorn, and sassafras. Special status species include croomia and American ginseng. The surrounding area is used by the military for mechanized training. Appropriate management prescriptions, such as the use of prescribed fire, remain to be determined (Fort Benning 2001, 2003c). The area is overlapped by the proposed Southern Maneuver Corridor and an existing tank trail bisects the area.

Hastings Relict Sandhills Community UEA

This UEA, located within the northeast part of the Installation, is characteristic of the Longleaf Pine Sandhills Ecological Group. The deep sands of this UEA are subject to erosion. Loblolly pines are scattered throughout some areas, but longleaf pine dominates the overstory vegetation. Mixed upland oaks (turkey, bluejack, and sand post oaks) and common persimmon (*Diospyros virginiana*) are co-dominants in the overstory and dominate the midstory. Common herbaceous species include common yellow false foxglove (beardgrass) (*Aureolaria pectinata*), prickly pear cactus (*Opuntia compressa*), goat's rue (*Tephrosia virginiana*), legumes, pineland silkgrass (*Heterotheca graminifolia*), and other perennials. Some portions of the area have only grasses, herbs, and small shrubs due to removal of longleaf pine and subsequent disturbance by tracked vehicles and frequent fire. The dominant soils are Lakeland sand and Troup loamy sand. Isolated clay pockets and ephemeral ponds occasionally lie close to the surface.

The deep sands of this UEA contain the densest population of gopher tortoises on the Installation. Many other special status wildlife species (see Table 4.12-4) also occur in this UEA. The dusky gopher frog is found only in this area on Fort Benning. Other species found here include the eastern diamondback rattlesnake, eastern tiger salamander, southern hognose snake, Florida pine snake, eastern coachwhip, southeastern pocket gopher, Bachman's sparrow, common ground dove, RCW, and incised agrimony.

Road improvements and upgrades as part of the proposed Transformation actions would occur partly within the Hastings Relict Sandhills Community UEA.

Pine Knot Creek Blackwaters UEA

This area is located within the east-central portion of the Installation. This area is characteristic of the Small Stream Swamps Ecological Group and represents the best example of a Coastal Plain stream on the Installation. It encompasses Pine Knot Creek and Little Pine Knot Creek. Unique hydrologic characteristics of a Coastal Plain blackwater stream include relatively constant flow and temperature, high acidity, low sediment load, and low fish diversity. Vegetation is typical of a hardwood bottom in the sandhills.

A proposed upgrade for a tank trail crosses the Pine Knot Creek Blackwaters UEA.

Arkansas Oak Rock Hills UEA

This UEA, located within the southeastern corner of the Installation, is characterized by longleaf pine on steep rocky ridges that run east to west. It also contains unusual plants in addition to numerous relatively undisturbed drains of varied steepness. Characteristic flora includes longleaf and shortleaf pine, post oak, southern red oak, and blackjack oak. Species of conservation concern include bottlebrush buckeye (*Aesculus parviflora*), Arkansas oak (*Quercus arkansana*), dwarf chinkapin oak (*Quercus prinoides*), lax water-milfoil, and incised agrimony. The military uses the area primarily for dismounted training. Cut-to-length logging is used where feasible for harvesting the pine species.

Road improvements and upgrades as part of the proposed Transformation actions would occur adjacent to the Arkansas Oak Rock Hills UEA.

Upatoi Bluffs UEA

This UEA occurs within the west-central portion of the Installation along the eastern side of Upatoi Creek and consists of steep topography and the bluff forests on the east / south sides of Upatoi Creek. The bluffs are characteristic of the Mesic Hardwood Forests Ecological Group. Special status plant species (Table 4.12-3) that occur here include croomia, American ginseng, and Carolina silverbell (*Halesia tetraptera*). The area is intended to be managed passively. This area is rarely used for military training. When used for training, it is used only for foot traffic.

The Upatoi Bluffs UEA is adjacent to proposed Transformation action areas at the Drivers Training Course area and construction projects at the Sand Hill and Kelley Hill cantonment areas.

Chattahoochee Backwaters

This UEA encompasses the backwaters of the Chattahoochee River, primarily within the Alabama portion of the installation. It is a diverse mix of islands, peninsulas, sloughs, bays, and wetlands and includes riparian areas and adjacent upland hardwood / pine forests. The area is also called River Bend because of the 90-degree bend made here by the Chattahoochee River. The area contains extensive hardwoods and the largest water tupelo (*Nyssa aquatica*) forest on the installation. River birch (*Betula nigra*), loblolly pine, red maple, sweetgum, and Spanish moss (*Tillandsia usneoides*) also are found here. The area is characteristic of the River Floodplains and Cypress / Tupelo Swamps Ecological Group. Typical fauna of the backwater area includes waterfowl, wading and water birds, and many varieties of turtles and amphibians.

Species of conservation concern found here include: one breeding pair of bald eagles (*Haliaeetus leucocephalus*), breeding osprey (*Pandion haliaetus*), wood stork (*Mycteria americana*) feeding and roosting sites, the highest concentration on the installation of American alligators (*Alligator mississipiensis*), alligator snapping turtle (*Macroclemys temminckii*), Barbour's map turtle (*Graptymys barbouri*), a wading bird rookery, Allegheny chinquapin (*Castanea pumila*), white nymph (*Trepocarpus aethusae*), and serrate crownbeard (*Verbesina aristata*).

Within the main channel of the river in this area, a number of fish species of conservation concern occur. These include the spotted bullhead (*Ameiurus serracanthus*), bluestripe shiner, and spotted gar (*Lepisosteus oculatus*).

The backwaters area is used rarely by the military. If training occurs at all, it is dismounted training. Recreational fishermen and hunters, however, heavily use the area. The hardwoods in the area are intended to be managed passively in accordance with applicable Forest Management Operational Plans. Additionally, pines will be managed to produce tall dominant trees for possible future nesting trees for the bald eagle. During the bald eagle nesting season, December 1 to June 1, certain restrictions are placed on activities that could occur around the bald eagle nest. These include flight, training, and recreational restrictions (Fort Benning 2001, 2003c). The Chattahoochee Backwaters UEA would not be modified under Transformation Alternative A, but does coincide with portions of the Good Hope Maneuver Area that would be used for heavy equipment training under Transformation Alternative B

4.12.2 Environmental Consequences

Impacts on biological resources would be considered adverse if one of more of the following conditions would result:

- Substantial loss or degradation of habitat or ecosystem functions (natural features and processes) essential to the persistence of native plant and animal populations;
- Substantial loss or degradation of a sensitive habitat, including wetlands and UEAs that support high concentrations of special status species or migratory birds;
- Disruption of a federally listed species, its normal behavior patterns, or its habitat that substantially impedes the Installation's ability to either avoid jeopardy or conserve and recover the species (including violating section 9 of the ESA); or
- Substantial loss of population or habitat for a state-protected or non-listed but special status species, increasing the likelihood of federal listing action to protect the species in the future.

The definition of "substantial" is dependent on the species and habitats in question and the regional context in which the impact would occur. Impacts may be considered more adverse if the action affects previously undisturbed habitat or if the impact would occur over a large portion of available habitat in the region. Mitigation measures are identified for all adverse impacts. For mitigation for potential adverse impacts to wetlands, refer Section 4.10.3 and Appendix G, Mitigation and Monitoring Plan.

4.12.2.1 No Action Alternative

If no action were taken, there would be no change to biological resources from current conditions. Existing uses of the land as well as conservation measures to sustain biological resources on the Installation training and range areas would continue.

This alternative would not result in adverse impacts to vegetation, freshwater aquatic habitats, UEAs, and species of special concern from ongoing operation, training, and maintenance. All practices and BMPs listed in the INRMP and ESMPs would continue to be implemented. Adherence to the Installation's

existing ESMP for the RCW would minimize potential effects, including suppressing wildfires that may adversely impact RCW cavity trees and habitat, replacing active cavities with artificial cavity inserts (if tree mortality results in the loss of a cavity tree, for example), shifting clusters to suitable locations if/when adverse effects in the area occur, and routine application of prescribed burns to maintain habitat. Overall, the possible loss of habitat in these clusters due to existing training and operations may lead to minor adverse effects on RCWs. No additional mitigation is proposed.

4.12.2.2 Transformation Alternative A

This section describes the impacts of Alternative A on biological resources. For each resource a determination is made of the impacts' significance and whether mitigation measures have been identified to reduce the impact. Mitigation measures are described in Section 4.12.3.

Upland Vegetation

Implementation of Alternative A would involve many construction, development, and maintenance projects, resulting in clearing or other disturbance of up to 9,844 acres of upland vegetation (Table 4.12-6). The construction areas used in these calculations represent a disturbance envelope, including the development footprint, as well as areas used for construction staging, foot traffic, vehicle storage, range impacts, and incidental ground disturbance. Construction in the cantonment areas would result in localized impacts within areas that are already extensively developed. Buildings and roadways would involve clearing of vegetation and substantial ground disturbance within the proposed project footprints. Generally, the direct impacts of range projects including training and heavy maneuver areas would be less severe than impacts resulting from non-range projects (e.g., buildings and roadways), but the impacts would be dispersed over large areas and may occur in undisturbed habitats. Range projects and heavy maneuver areas would require clearing or excavation of only a portion of the project footprint, while the remaining area would be used for vehicle traffic, foot traffic, and ordnance impact. Of the potentially disturbed area, 5,791 acres contain natural or semi-natural vegetation (non-plantation and non-altered areas) (Table 4.12-6).

Table 4.12-6: Vegetation Impacted by Transformation Alternative A

Vegetation Type (Existing acreage)	Range Impacts (Acres)	Range Impacts (%)	Non-Range Impact (Acres)	Non-Range Impact (%)	Total Impacts (Acres)	Total Impact (%)
Mesic Hardwood Forest (1,145)	23	2.0%	4	0.4%	27	2.4%
Dry-Mesic Hardwood and Dry-Mesic Mixed Hardwood/Pine Forest (15,420)	558	3.6%	102	0.7%	660	4.3%
Longleaf Pine Loamhills (17,597)	639	3.6%	255	1.5%	895	5.1%
Longleaf Pine Sandhills (69,095)	4,148	6.0%	694	1.0%	4,842	7.0%
Plantations (20,172)	834	4.1%	150	0.7%	985	4.9%
Other Altered Areas (17,643)	1,171	6.6%	795	4.5%	1,965	11.1%
Successional Uplands (10,516)	422	4.0%	47	0.4%	470	4.5%
Total (151,588)	***7,796***	**5.1%**	***2,048***	**1.4%**	***9,844***	**6.5%**

A majority of the impact would involve the disturbance or conversion of forested areas to range sites or developed areas. The amount of impacted vegetation through time is illustrated in Table 4.12-7. The heavy maneuver areas and drivers training area would be implemented from 2007 to 2010, with most training impacts realized in 2009; therefore, these impacts are included with 2009 calculations.

Table 4.12-7: Yearly Acres of Upland Vegetation Affected by Transformation Alternative A

Project Year	Vegetation Affected (Acres)
2007	1,835
2008	1,256
2009	5,449
2010	178
2011-2013	1,126

Tree removal within 25 ft of state waters (Section 4.10, Water Resources) would require a Stream Buffer Variance. Of the removed vegetation, merchantable timber would be sold via a timber sale contract controlled by Fort Benning's Land Management Branch. Any remaining non-commercial vegetative debris would be cleared and disposed under a separate slash removal contract in accordance with all applicable federal, state, and local rules and regulations.

Training in the proposed ranges and heavy maneuver areas would result in potential effects to vegetation due to vehicular traffic and clearing to maintain line-of-sight requirements. The loss of the existing native vegetation during the construction, operation, and maintenance of the Transformation projects would result in a change in both species composition and abundance. Plant species that typically thrive in the forested area, for example, would diminish and species that thrive in more open areas would flourish. Invasive weeds would also increase in the affected areas. Construction projects would primarily be developed in or near existing cantonment areas. Ranges, heavy maneuver areas, roads, and the driver training course would be dispersed across the Installation, contributing to habitat fragmentation. Edge effects may encroach into adjacent habitats and isolate large tracts of undisturbed land.

Construction-related disturbance and loss of ground cover would increase soil erosion. Soils at Fort Benning are typically sandy, with a high potential for erosion during rainfall (see Section 4.11, Geology and Soils). Maintenance of targets, roads, trails, and vehicles would also occur, resulting in more potential ground disturbance and POL spills. In addition, vehicular travel to and range usage will result in the disturbance to soil on the side of either paved or unpaved roads, resulting in potential fugitive dust emissions (discussed in more detail in Section 4.8, Air Quality).

The Transformation actions may affect the fire regime, depending on the type and nature of the proposed activity. Ranges and associated SDZs would likely experience more frequent fires due to the discharge of additional ordnance and an increased operational tempo. Wildfires in these areas are usually allowed to burn due to safety concerns. Under a more rapid fire interval, the intensity of each fire is expected be lower due to smaller fuel load. Increases in the fire frequency would affect the plant community, favoring fire-tolerant species (longleaf pine communities) over oak-hickory and hardwood communities (Fort Benning 2001, 2003c).

Conversely, the fire frequency near buildings, roads, cantonment areas, and facility compounds may decrease due to a decrease in vegetative cover and additional fire-protection strategies that would be employed to protect property and additional personnel. Under either Alternative A or B, controlled burns and wildfires would be contained at smaller sizes because of the additional roadways and facilities distributed throughout the Installation. Within the proposed heavy maneuver areas and drivers training course, prescribed burns would be more difficult to schedule and execute due to increased training usage. A decreased fire frequency would favor oaks, hickories, and other encroaching hardwoods.

Alternative A would result in potential adverse effects to vegetation. A substantial amount of native habitat would be lost, and disruption of ecosystem function in the disturbed areas would occur. Conversion to roads and buildings would remove vegetation entirely and range projects may affect the ecological fire regime. The impacted acreage would be distributed over the Installation rather than isolated in a single large impact zone. Stands of natural vegetation would become more fragmented and subject to edge effects due to runoff/erosion and non-native plant species invading from adjacent disturbed sites. Ecological processes such as nutrient cycling and succession would also be impacted by soil disturbance and limitations on seed dispersal and colonization between more isolated patches of habitat. Non-range projects would impact approximately 1.4 percent of the existing vegetative

communities at Fort Benning. Range projects would impact a larger area, covering approximately 5.1 percent of the existing vegetative communities. The persistence of each ecological group at the Installation would not be threatened; although some forest groups would lose up to 7 percent of their existing cover. Based on the impacted area compared with existing area, Longleaf Pine Sandhills and Longleaf Pine Loamhills would be the most extensively impacted ecological groups aside from existing disturbed areas (Table 4.12-6).

Mitigation measures listed in Section 4.12.3 would help minimize the effects of this alternative; however, the potential for adverse effects to vegetation would still remain. Permanent large-scale loss of vegetation and habitat fragmentation across the Installation are not amenable to mitigation measures and would represent a substantial loss or degradation of habitat.

Aquatic Habitats

Impacts to several of the aquatic and wetland habitat types identified in Section 4.12.1.2 would occur as a result of either Transformation alternative. Impacts to these habitats may include direct disturbance due to drainage, excavation and filling to support buildings and pavement, low water crossings, clearing for AT/FP setbacks, construction staging areas, vehicular traffic, and/or foot traffic. Table 4.12-8 lists the acreage of impacted habitats for Alternative A. Indirect impacts may occur downstream due to sedimentation, erosion, channelization, contamination, increased runoff, storm water diversion, and changes in fire regime. Herbaceous and shrub seepage bogs are dependent on a regular fire regime. A decrease in fire frequency would lead to encroachment of woody species; however, the Transformation Alternative is not expected to reduce the fire frequency in this freshwater aquatic habitat.

The amount of impacted aquatic habitats through time is illustrated in Table 4.12-9. Range projects include the proposed ranges, heavy maneuver corridors, and driver training areas. Non-range projects are the proposed cantonment projects, housing, and administrative facilities. The heavy maneuver areas and drivers training area would be implemented from 2007 to 2010, with most training impacts realized in 2009; therefore, these impacts are included with 2009 calculations.

The acreage of wetlands affected by Alternative A is listed in Table 4.12-10. Wetlands in the range and training areas were identified from the 2006 wetland delineation (Fort Benning 2006j) while wetland data for the non-range cantonment areas were taken from NWI databases (USFWS 2006g) further delineation of cantonment area would need to be undertaken. The INRMP estimates that Fort Benning contains approximately 16,926 acres of jurisdictional wetlands across the Installation (Fort Benning 2001, 2003c).

Table 4.12-8: Aquatic Habitats Potentially Impacted by Transformation Alternative A

Habitat Type (acres)	Range Impacts (Acres)	Range Impacts (%)	Non-Range Impacts (Acres)	Non-Range Impacts (%)	Total Impacts (Acres)	Total Impact (%)
Herbaceous and Shrub Seepage Bogs (440)	74	16.8%	0	0.0%	74	16.8%
Gum / Oak Ponds (217)	0	0.0%	0	0.0%	0	0.0%
Impounded/Flowing Water (2504)	27	1.1%	0	0.0%	27	1.1%
River Floodplains and Cypress-Tupelo Swaps (3825)	26	0.7%	13	0.3%	39	1.0%
Small Stream Swamps and Wooded Seepage Bogs (10,022)	338	3.4%	22	0.2%	360	3.6%
Seasonal Depression Ponds (163)	0	0.0%	0	0.0%	0	0.0%
Stream Floodplains (13,666)	500	3.7%	7	0.1%	508	3.7%
Total (30,837)	**964**	**3.1%**	**43**	**0.1%**	**1,007**	**3.3%**

Table 4.12-9: Wetlands Potentially Affected by Transformation Alternative A

Project Type	Wetland Area Impacted (Acres)	Percent Impacted *of 16,926 existing acres*
Range Projects	343	2.1
Non-range Projects	18	0.1
Total	**361**	**2.2**

The impacted acreage in Table 4.12-9 comprises a disturbance envelope defined by the construction, the boundaries of the proposed ranges, and potentially disturbed areas within the heavy maneuver areas, as well as areas used for construction staging, foot traffic, vehicle storage, and incidental ground disturbance. Within the construction footprints and disturbance envelope, wetland areas would be avoided wherever feasible; the entire area would not be disturbed or developed. However, in many cases, wetlands and freshwater aquatic habitats would require alteration for road crossings, line-of-sight requirements, or construction projects.

Transformation activities would include removing tree stumps and grubbing in some wetlands and filling some wetland areas to construct low water crossings and other structures. There are no adverse wetlands impacts when cutting trees for line-of-sight if a low-impact method of tree removal is utilized to minimize soil disturbance and when stumps and roots can be left in place, according to the USACE Regulatory office, Savannah District (Fort Benning 2004b). In construction areas, however, the trees, including stumps and roots, would need to be removed. Trees and other vegetation along streams provide shade that moderates water temperatures, provide woody debris necessary for aquatic ecosystem health, and provide natural filtration of sediment and other pollutants. Removal of streamside vegetation would

result in an adverse impact to wetlands. Some aquatic wildlife species such as fish, salamanders, frogs, and turtles may be directly impacted during construction, as streams are temporarily diverted during emplacement of culverts for maintenance roads and construction of low-water stream crossings. Tree removal along streambanks may have an indirect impact to aquatic species due to increase in temperature from the loss of tree canopy. There would also be a potential loss of feeding, and nesting areas for migrating waterfowl and wading birds, in addition to a reduction in spawning, feeding and nursery habitat for fish and other aquatic species and a temporary fragmentation of their habitat during construction of low water crossings.

A number of creeks would be crossed by road construction and upgrade projects. The Railcar Storage project would cross and be located adjacent to a tributary to Ochillee Creek. The development of the Oscar Range Complex would potentially affect Randall Creek, Dozier Creek, and small tributaries. The two Tank/Fighting Vehicle Stationary Gunnery Ranges and Multipurpose Machine Gun Range 1 are proposed over several small tributaries to Upatoi Creek. The proposed Qualification Training Range, located in the southern portion of the Installation, overlaps tributaries to the Chattahoochee River. Several road crossings would be constructed or upgraded at locations on Upatoi Creek tributaries, Kendall Creek, Randall Creek, Pine Knot Creek, Little Pine Knot Creek, and Sally Creek Tributaries. Stream segments in the heavy maneuver areas also would be impacted by vehicle crossings. The impacts of road crossing and construction projects include, but are not limited to, loss of vegetative cover, sedimentation, channelization, turbidity, and degradation of water quality (see Section 4.10, Water Quality, for additional discussion). Erosion and sedimentation would occur on disturbed soils and would adversely affect aquatic organisms and habitat quality in Fall Line streams (Fort Benning 2001, 2003c). Aquatic habitats near the cantonment areas could be affected by the increased area of impervious surface that would result from Alternative A. New buildings, roads, and parking areas would alter the storm water flow regime and increase the discharge into surface waters during storm events.

Alternative A would result in adverse effects to aquatic and wetland habitats, including streambanks. Construction, demolition, road upgrades, and range projects included in the Transformation Alternative would directly impact up to 1,007 acres of aquatic and wetland habitats. Up to 2.7 percent of existing freshwater aquatic habitats would be disturbed and disruption of ecosystem function in the disturbed areas would occur. Range and non-range projects would impact approximately 3.3 percent of the existing wetland area at Fort Benning. The affected aquatic and wetland habitats would not necessarily be eliminated, but their functions and values would be degraded by direct or incidental filling, vegetation removal, alteration of hydrology, and inputs of sediment and pollutants.

Mitigation measures listed in Section 4.12.3 would reduce the extent and severity of impacts, but the residual impacts to aquatic habitats and wetlands would still be adverse. Mitigation measures would not avoid or alleviate adverse impacts to all aquatic and wetland habitats, particularly in range areas that cannot be configured to avoid wetlands. Heavy use impact areas associated with targets, stream crossings, sedimentation, and erosion would degrade natural features and processes of aquatic communities. A substantial area of wetland communities would be lost or decreased, degrading

ecosystem functions that include the maintenance of water quality and associated fish and wildlife populations.

Fish and Wildlife

Under Alternative A, adverse impacts would result from the construction and subsequent use of the new facilities and infrastructure within the identified footprints of ranges, construction projects, driver training areas, and heavy maneuver areas. Although exact facility placement and construction area requirements have not been determined, each site footprint is large enough to accommodate the facilities and all the necessary work areas, including construction staging and materials stockpiling that would be required. Standard BMPs would control erosion and sedimentation, limiting the potential for offsite effects and degradation of surrounding habitat. However, within the identified footprints, the loss or severe degradation of existing fish and wildlife habitats is likely and is assumed for this analysis. Furthermore, indirect effects of the Transformation Alternative would affect populations of fish and wildlife in surrounding habitat beyond the footprints.

As discussed previously, Alternative A would result in the loss or degradation of 27 acres of aquatic habitats and 980 acres of wetland habitats, most of which occur adjacent to water bodies (Table 4.12-8). An estimated 361 acres of wetlands would be affected (Table 4.12-10). Populations of fish and other aquatic wildlife in streams would experience degradation of their habitats at stream crossings, and generally where new training and ground disturbance result in land clearing and erosion in watershed areas, especially in wetland habitats that are in close proximity to streams. In addition to increasing sedimentation and turbidity, land disturbance and the removal of vegetation along streams could result in some stream segments becoming inhospitable to native aquatic species, thereby interfering with dispersal and utilization of up- or downstream areas that are not otherwise affected. Native fish species could be affected by construction projects that impact freshwater aquatic habitats. Construction impacts may include sedimentation, channelization, erosion, and reduction in water quality. Indirect impacts, such as invasive species and alterations of the fire regime may also have an effect on aquatic habitats.

Mitigation measures described in Section 4.12.3 would reduce the loss and degradation of aquatic and wetland habitats and the resulting effects on fishes and other aquatic wildlife. Considering the Installation as a whole, a relatively small percentage of each aquatic or wetland habitat type would be affected. In addition, with continued protection and management of these habitats and monitoring of aquatic species in accordance with the INRMP, it is expected that in the long term populations of native fishes and other aquatic species on the Installation would persist, although they would likely be diminished.

Construction activities associated with Alternative A would displace upland wildlife from suitable habitat in the immediate vicinity of the construction footprints in the short term. Displacement would occur due to soil disturbance, removal of vegetation, vehicle traffic, range impacts, and incidental human activity. Noise and activity during construction would result in disturbance to wildlife primarily within the site footprints, but habitat fragmentation and edge effects would extend into adjacent habitat. Alternative A is expected to be detrimental to wildlife species that inhabit forest and woodland areas, but may to some

degree benefit species of more open grassland or ruderal settings, as well as forest and woodland species that are able to utilize edge habitats.

Reptiles and amphibians that occur in the affected areas would be especially vulnerable to mortality and displacement during construction and use of the areas. Animals that are displaced or flee would be vulnerable to vehicle traffic while searching for new territory. Unless suitable habitat is nearby, the displaced individuals are unlikely to survive.

Although a relatively small percentage – roughly 6 percent – of the available habitat would be directly affected, additional areas would experience more diffuse impacts of use by a larger number of Installation personnel. The total acreage of wildlife habitat subject to removal and disturbance would be substantial and expected to result in reduced wildlife populations, particularly among interior forest and woodland species. Some species are likely to disappear from local habitat patches that become too small, disturbed, or isolated to sustain them.

With the increase in noise and activity there would be a corresponding increase in potential disturbance to wildlife. As described in Section 4.7, Noise, ambient and impulse noise levels would increase over large areas of the Installation and in adjoining off-post areas to the north and northeast. Increased activity within already disturbed areas (i.e. developed areas, ranges, training areas, and established roads) would not adversely affect biological resources given the ongoing activity to which they are exposed. An increase in noise around existing firing points and within impact areas is not expected to adversely affect wildlife already subject to similar impacts within those areas.

New sources of noise and activity would be concentrated and most intense within the footprints of removed and degraded habitats described above. Hence the impact on wildlife populations is largely accounted for by the affected acreage. The extent to which noise originating from distant sources would impact wildlife through startle responses, interference with communication, and short- to long-term hearing impairment, in otherwise unaltered habitat areas is difficult to estimate, but would presumably be minor due to the rapid attenuation of sound with distance from the source and the masking effect of the vegetation and topography (Larkin 1996). Wildlife that reside immediately adjacent to new sources of noise and activity to which they are unaccustomed are most likely to be affected, and could abandon those areas. In the long term, however, wildlife in the surrounding areas can be expected to coexist with military noise as long as other important habitat features are retained; no adverse long-term impacts are anticipated.

Activities will be conducted in accordance with USAIC 210-4 (Range and Terrain Regulation), guidelines and restrictions stated in the INRMP (Fort Benning 2001, 2003c), the RCW ESMP, and the terms and conditions of the USFWS BO on the effects of the Transformation on federally protected species (Appendix F). These procedures and requirements will help ensure the compatibility of training activities with the sensitive biological resources of the Installation.

Overall, Transformation Alternative A would result in potential adverse effects to wildlife (including migratory birds), fish, and aquatic species. Individuals would be directly killed by construction activity

and range impacts. Plant communities and aquatic habitats would be removed and degraded. Longleaf Pine Sandhills and Loamhills habitats would be substantially altered and wildlife would be displaced from these areas. Migratory birds and waterfowl in wetlands and aquatic habitat would be similarly disturbed. Habitat fragmentation across the Installation would impair species dispersal and would reduce the amount of undisturbed habitat available to wildlife.

Special Status Species

Plant Species

Relict Trillium (Federal Endangered)

Potential direct impacts to relict trillium include damage to the plants by clearing from a proposed new road that will impact the Randall Creek North population. Affected plants may be relocated to a recipient site on Fort Benning or to a site on GDNR property in order to establish or enhance off-post relict trillium populations (Biological Assessment, Appendix F). Potential indirect impacts on this species could arise where weed and hog control efforts by the Installation's natural resource managers are impeded by new training requirements. Increases in ground disturbance and the movement of vehicles and personnel may promote the spread of weeds into habitats that support relict trillium. Mitigation measures to reduce adverse effects on relict trillium are included in Section 4.12.3.

The U.S. Army is currently in Section 7 consultation with the USFWS regarding these likely adverse effects (Biological Assessment, Appendix F). Through the consultation, necessary and sufficient measures will be determined to ensure that the proposed Transformation does not jeopardize the continued existence of the species. Implementation of these measures would ensure that the proposed Transformation has no long-term adverse impact on relict trillium.

State-Listed Plant Species

Species not known to occur on Fort Benning include shoals spider lily, plumleaf azalea, Nevius' stonecrop, granite stonecrop, and bay star-vine (McDonald 2006). A slight possibility exists that habitats supporting previously unknown populations may be affected, but continuing adherence to INRMP policies and practices (Fort Benning 2001, 2003c) and mitigation measures for special status species identified in Section 4.12.3 would minimize adverse impacts. No adverse impacts would result since the action would not jeopardize the future existence of the species or be likely to lead to trigger federal listing.

No known populations of Indian olive are likely to be affected (McDonald 2006). Alternative A would result in the direct loss or disturbance of up to 660 acres, 4.3 percent of the Installation acreage, of Dry-Mesic Hardwood and Dry Mesic Mixed Hardwood/Pine Forest, the ecological group most likely to support this species. Since not all potentially affected areas have been surveyed, there is a slight possibility the Transformation actions would impact a previously unknown population, through clearing, thinning, or ground disturbance. Such an impact would not be adverse as it would not jeopardize the future existence of the species or be likely to lead to trigger federal listing. Continuing implementation of

the INRMP and mitigation measures listed in Section 4.12.3 would further minimize adverse impacts and help ensure the persistence of this species on the Installation.

Six localities for lax water-milfoil are known on Fort Benning, but none would be directly impacted by Alternative A (McDonald 2006). However, there is some possibility that previously undiscovered locations in freshwater habitats that support this species could be affected. Range-related impacts in the Arkansas Oak Rock Hills UEA may affect downstream locations supporting this species by clearing vegetation, trampling individual plants, altering surface water distribution, or degrading water clarity through turbulence and sedimentation. Impacts in this UEA would be minimal, occurring in only 0.1 percent of the designated acreage (see below). Individuals may be trampled or disturbed, but the impact would be minor and would not jeopardize the future existence of lax water-milfoil or be likely to lead to the Federal listing of the species. Therefore, the impact would not be adverse. Continuing implementation of the INRMP and mitigation measures listed in Section 4.12.3 would further minize impacts and help ensure the persistence of this species on the Installation.

No known populations of sweet pitcherplant would be affected within cantonment areas (McDonald 2006). The largest populations of sweet pitcherplant on Fort Benning are found in the Malone Cane Breaks UEA, which would not be disturbed or modified by Alternative A. This species is also present in moist woodlands, seepage areas, and wetland margins in the proposed Heavy Maneuver Area – North and training compartment O14. Road crossings, vehicle traffic, and habitat modification in these areas could possibly affect habitats of this species. Proposed activity outside of the tank trails in the Heavy Maneuver Area – North would not involve construction projects, grading, or paving. The impacts would not jeopardize the future existence of sweet pitcherplant or be likely to lead to the federal listing of the species, and therefore would not be adverse. Continuing implementation of the INRMP and mitigation measures listed in Section 4.12.3 would further minimize impacts and help ensure the persistence of these species on the Installation.

No known populations of croomia would be directly affected (McDonald 2006). Croomia occupies moist habitats in the Upatoi Bluffs UEA and Prosperity Church Oak-Hickory Forest UEA. Range construction, heavy maneuver training, and the drivers training area are adjacent to the Upatoi Bluffs UEA and may indirectly affect habitat through habitat fragmentation, erosion, sedimentation, invasive species, and alterations in the fire regime. These potential impacts would not jeopardize the future existence of croomia or lead to the federal listing of the species; hence they would not be adverse. Continuing implementation of the INRMP and mitigation measures listed in Section 4.12.3 would further lessen impacts and help ensure the persistence of this species on the Installation.

No known populations of Pickering's morning glory would be directly affected (McDonald 2006). The largest known concentration of Pickering's morning glory inhabits the Lakeland Sandhills UEA, adjacent to the DMPRC. No Transformation projects are proposed in this UEA. Smaller population areas elsewhere on the Installation could be affected by construction projects and ranges, but the impact would not be adverse because they would not jeopardize the future existence Pickering's morning glory or lead to the federal listing of the species. Continuing implementation of the INRMP and mitigation measures

listed in Section 4.12.3 would further lessen impacts and help ensure the persistence of this species on the Installation.

No known populations of Georgia rockcress would be directly affected (McDonald 2006). Construction projects at the Main Post and Qualification Training Range in the southern range area are proposed near habitat occupied by Georgia rockcress. Indirect impacts may include erosion, sedimentation, and the spread of invasive plants. The stream bank ESPCP includes a buffer area along the stream bank which would help to protect Georgia rockcress along the Chattahoochee River. In any case, Alternative A would not jeopardize the future existence of Georgia rockcress or in any case lead to substantial loss of the species, and therefore would not be adverse. Continuing implementation of the INRMP and mitigation measures listed in Section 4.12.3 would further lessen impacts and help ensure the persistence of this species on the Installation.

Other Plant Species of Conservation Concern

A small fraction of the known or potential habitat for these species would be affected by proposed Alternative A (Tables 4.12-3, 4.12-6 and 4.12-8). Known affected locations include:

- Carolina redtop (1 out of 3 known locations affected)
- Needle palm (*Rhapidophyllum hystrix*) (1 out of 66 known locations affected)
- Sandhills bean (8 out of 55 known locations affected)
- Smith's sunflower (1 out of 3 known locations affected)
- White four-o'clock (*Mirabilis jalapa*) (3 out of 11 known locations affected)

These species are not listed as threatened or endangered and their status is more secure than species discussed previously. Most of the known and potential habitat for these species would not be affected by the proposed Transformation (Tables 4.12-6 and 4.12-8), and it is unlikely that impacts would be of sufficient magnitude to jeopardize the species or trigger listing. Therefore, adverse impacts on these species would not occur. There is a small likelihood that these and other species of concern could be present in previously unsurveyed or undiscovered locations affected by Alternative A. Continuing adherence to INRMP policies and practices (Fort Benning 2001, 2003c) and general mitigation measures for special status species identified in Section 4.12.3 would minimize potential short-term and long-term adverse impacts.

Animal Species

Federally Listed Animal Species that Would Not Be Affected

Alternative A would have no effect on federally-listed American alligator, wood stork, and bald eagle due to the absence of these species from areas of potential impact (Biological Assessment, Appendix F) and continuing management efforts pursuant to the INRMP (Fort Benning 2001, 2003c).

Red-cockaded Woodpecker (RCW) (Federal Endangered)

The Biological Assessment contained in Appendix F provides a detailed analysis of the proposed Transformation's effects on the RCW, appendices of the BA are voluminous and while not appended to this EIS can be viewed and/or downloaded from this website: http://www.hqda.army.mil/acsim/brac/nepa_EIS_docs.htm. To summarize the results of that analysis, RCW cavity trees and foraging habitat would be removed or ultimately die as a result of project, road, and range construction, including staging areas and/or timber operations. The use of heavy equipment, increased traffic on infrequently used roads, and increased human activity would increase the potential disturbance and "harassment" (as defined by USFWS) of RCWs, particularly where the activity occurs within 200 ft of RCW cavity trees during the nesting season. Construction would result in the fragmentation of forested habitats, which may limit foraging and dispersal across unsuitable habitats. Newly cleared or disturbed areas would be susceptible to weed invasion, degrading the quality of foraging and nesting habitat. The removal of pine and hardwood habitat that is not currently RCW habitat, but could be managed and restored or converted to RCW habitat, would impede the further recovery of RCW on the Installation. The loss of pine forest and areas that could be restored as such is of particular concern because of continuing regional die-offs of loblolly pine (Biological Assessment, Appendix F).

Operations and maintenance activities associated with Transformation Alternative A also would be likely to have adverse impacts on the RCW, through additional disturbance in SDZs associated with the new training activities, live-firing exercises that overlap foraging habitat, reduced access for RCW and other natural resource management, the encroachment of disturbance into RCW habitat, and impacts of ground disturbance on tree health (see Appendix F for more detail). Finally, the loss or "take" (as defined under the ESA) of RCW clusters would have a detrimental effect on the long-term recovery of the RCW population on Fort Benning.

A total of 108 RCW clusters on Fort Benning would be directly impacted by Alternative A. Of these, there would be 102 active RCW clusters impacted that contain primary breeding groups, 4 have solitary males, 1 is captured (occupied by RCW from an adjacent cluster), and 4 are inactive. Pre-project, 23 of the 99 analyzed active RCW clusters did not meet the Standard for Managed Stability (SMS) (according to the 2003 USFWS RCW Recovery Plan) and 97 did not meet the Recovery Standard (RS) (according to the 2003 USFWS RCW Recovery Plan). The Biological Assessment (Appendix F) provides a detailed analysis for each affected cluster.

Post-Transformation, 54 out of the 99 analyzed active RCW clusters would be directly taken as a result of Transformation Alternative A. The U.S. Army is currently undertaking Section 7 consultation with the USFWS regarding these likely adverse effects (Biological Assessment, Appendix F). Through the consultation, necessary and sufficient measures to ensure that the Transformation action does not jeopardize the continued existence of the RCW will be determined. With the implementation of these measures, residual impacts would still likely be adverse because of the magnitude of the impact and its interference with long-term recovery goals for the RCW. Proposed avoidance, minimization, and

compensation measures that would lessen adverse effects on the RCW are detailed in the Biological Assessment (Appendix F) and summarized in Section 4.12.3 and Appendix G.

State-Listed Animal Species

State-listed animal species not known to occur in any of the areas affected by Alternative A include Barbour's map turtle, alligator snapping turtle, and bluestripe shiner (Table 4.12-4). Given the relatively limited acreage of aquatic habitats affected (about 3 percent) relative to their extent on the Installation as a whole, adverse impacts on populations of these species would not occur. The possibility exists that previously unknown locations of these species may be affected, but continuing adherence to INRMP policies and practices (Fort Benning 2001, 2003c) and general mitigation measures for special status species identified in Section 4.12.3 would minimize adverse impacts.

Two state-listed species reside in areas of impact and would be adversely affected by Alternative A: gopher tortoise (State Threatened) and Bachman's sparrow (State Rare). Table 4.12-11 describes the overlap of known occurrences of these species by Alternative A activities. The percentage of locations impacted indicates the relative magnitude of the impact on populations of both species.

The gopher tortoise and its habitat on Fort Benning are monitored and protected because it is a keystone species (i.e., a species that plays an important role in its ecosystem and if it were removed or greatly decrease would cause a disproportionate impact to that ecosystem) with numerous vertebrate and invertebrate species utilizing the burrow (Fort Benning 2001, 2003c). There are 2,661 known active burrows on the Installation. An estimated 12.3 percent of active post-wide burrows (328 of 2,661 active burrows) would potentially be impacted by Alternative A (Fort Benning 2006k). The potential impacts would be spread out over 7 years. Because of the magnitude of the impact and the potential for future listing action by USFWS, it is considered adverse if unmitigated. However, continuing adherence to INRMP policies and practices (Fort Benning 2001, 2003c) and mitigation measures for gopher tortoise and other special status species identified in Section 4.12.3 would reduce the adverse impact on this species.

Table 4.12-10: State-Listed Species Impacted by Transformation Alternative A

Species	Ecological Group	Percent of Area Impacted	Number of Occurrences Impacted by Range Projects	Number of Occurrences Impacted by Non-Range Projects	% Total Detections in Impacted Areas
Gopher tortoise *(Occurrence = active burrow)*	Mesic Hardwood Forest	2.4%	1		12.3% (328 of 2661)
	Dry-Mesic Hardwood and Dry-Mesic Mixed Hardwood/Pine Forest	4.3%	9		
	Longleaf Pine Loamhills	5.1%	15		
	Longleaf Pine Sandhills	7.0%	166	1	
	Plantations	4.9%	63		
	Other Altered Areas	11.1%	73		
Bachman's sparrow *(Occurrence = singing male)*	Longleaf Pine Loamhills	5.1%	1		13.2% (36 of 272)
	Longleaf Pine Sandhills	7.0%	24	1	
	Plantations	4.9%	9		
	Other Altered Areas	11.1%	1		

Impacts to Bachman's sparrow would occur predominately in the range project areas north of U.S. Highway 27/280. The majority of the detections occur in ongoing projects in the Heavy Maneuver Area – North and Heavy Maneuver Corridor – South. An estimated 13.2 percent (36 of 272) of post-wide detection records occur in areas that could be impacted by Alternative A (Figure 4.12-4) (Fort Benning 2006k). To some degree, Bachman's sparrow may be able to utilize open habitats that are created along the edges of forests and woodlands by Transformation activities. The species is widely distributed, and the impact would not be likely to jeopardize its existence on Fort Benning or trigger the need for protective listing. As a result, the impact is not considered adverse.

Other Animal Species of Conservation Concern

A small fraction of the known or potential habitat for these species would be affected by Alternative A (Tables 4.12-4, 4.12-6 and 4.12-8). Known affected locations include:

- Coachwhip snake (4 out of 92 known locations affected)
- Florida pine snake (1 out of 38 known locations affected)
- Migrant loggerhead shrike (1 out of 7 known locations affected)
- Southeast American kestrel (5 out of 25 known locations affected)

These species are not listed as threatened or endangered and their status is more secure than species discussed previously. Most of the known and potential habitat for these species would not be affected by

the Transformation action, and it is unlikely that impacts in any case would be of sufficient magnitude to jeopardize the species or trigger listing. Therefore, adverse impacts on these species would not occur. There is a small likelihood that these and other species of concern could be present in previously unsurveyed or undiscovered locations affected by Alternative A. Continuing adherence to INRMP policies and practices (Fort Benning 2001, 2003c) and general mitigation measures for special status species identified in Section 4.12.3 would minimize potential impacts.

There is suitable habitat for the Brazilian free-tailed bat and it could occur within the project area. The nature of impacts would primarily involve loss of roosting canopy, range impacts, vehicle traffic, and blockage or disturbance of subterranean roosting locations. The eastern woodrat and southern Appalachian woodrat may occur in the project area. Habitat preferences include many vegetation types, and could therefore be found in several of the project areas. These species may be affected by loss of suitable vegetation for nesting and fire suppression. Impacts would be minor and the disturbance to stream floodplains, hollow snags/trees, and caves would not substantially degrade mammal species at a population level across the Installation.

Dusky gopher frog habitat in the Hastings Relict Sandhills Community UEA would be impacted by range road crossings. The Southern Maneuver Corridor would also overlap potential habitat for this species. The nature of the impacts would primarily involve vehicle traffic and range impacts. Small areas of construction would require ground disturbance, soil excavation, and clearing of vegetation. Because of the isolation, small size, and limited distribution of the Fort Benning dusky gopher frog population, the species is sensitive to local disturbances and fragmentation.

Individual frogs may be killed by construction vehicles, excavation, and incidental range activities. Small patches of habitat within the range areas and heavy maneuver areas would be permanently disturbed. Tracked vehicles can crush burrows used by dusky gopher frogs and gopher tortoises. The impacts would be dispersed throughout the training areas, while the larger regional habitat would remain intact. The population of dusky gopher frogs appears to be tolerant of ongoing range training at K15 and Hastings Range (Fort Benning 2001, 2003c) and the impacts of the proposed Transformation actions would be similar, although the operational tempo would increase. The impact would not be likely to jeopardize the future existence of this species on Fort Benning or lead to the federal listing of the species; however, the impacts could substantially degrade the only available habitat for the dusky gopher frog population on the Installation.

Transformation activities would impact longleaf pine sandhills, streams, floodplains and wetland areas that may be inhabited by other amphibian species of special concern, including the Apalachicola dusky salamander and three-lined salamander. Individuals may be killed directly by construction and range activities, or breeding areas may be disturbed. The species are widespread and the impact would not be likely to jeopardize the future existence of these species on Fort Benning or lead to the federal listing of these species.

Stream crossings that would be affected by the Transformation action were surveyed in 2006 (Abbott 2006). No special-status mussel species were detected. The overall impacts to freshwater mussels would not be adverse. The ESPCP, NPDES permit, and Section 404 Permits will include measures to minimize impacts to aquatic habitats and wetlands. No federally-protected species or state-protected species are known in the affected area.

Overall, impacts on species of conservation concern are unlikely to be adverse in the long term because substantial areas of habitat subject to a limited level of disturbance would remain. Species populations likely would be reduced, but not to levels that would cause the extirpation of the species or trigger the need for federal protection.

Unique Ecological Areas (UEAs)

Implementation of Alternative A would involve some construction, development, operational, and maintenance projects in and adjacent to UEAs. Table 4.12-11 provides the area of direct impact in each UEA. The impact areas used in these calculations represent a disturbance envelope, including the development footprint, as well as areas used for construction staging, foot traffic, vehicle storage, and incidental ground disturbance. The boundaries and acreages of UEAs are approximate and are refined as the areas are further studied. The majority of the area within the disturbance envelope would be used for range projects, heavy maneuver areas, and the drivers training area. Range projects would involve large areas for ordnance impact and small construction sites for firing lines and associated facilities. Some site clearing and soil excavation would be conducted. Overstory trees would be cleared for line-of-sight requirements. Maneuver areas and the driver training area would be disturbed due to tracked vehicle traffic.

Approximately 417 acres of UEAs would be impacted under Alternative A. Resident species may be inadvertently killed due to logging activities and mechanized and repair/maintenance vehicle traffic through the UEAs via low water crossings. Erosion occurring from traffic in the streams within the UEA and in adjacent upland areas may increase sedimentation in the UEA, lower water quality, and adversely effect habitat quality. Trees that are felled and left in place to establish line-of-sight may become an obstruction and impede water flow in certain areas of the UEA. Due to the loss of the canopy, water temperature and evaporation rates will increase in creeks and streams within the UEAs. Construction impacts would involve site clearing, soil excavation, and development of urban facilities. Both of these effects would have an impact on the hydrologic cycle and degrade and reduce populations of some species, resulting overall in potential moderate adverse effects to UEAs.

Ranges and construction projects would affect varying percentages of the existing acreage of different UEAs. The Piedmont Interface UEA would be impacted by several construction projects as well as ranges and would have the largest total area affected, but 94 percent of the UEA would be outside areas of direct impact and would not represent adverse impact. Relatively small portions of most of the other UEAs would be impacted. The proposed Heavy Maneuver Corridor – South would overlap 26 percent of the Prosperity Church Oak-Hickory Forest UEA, with disturbance consisting of road upgrades and off-

road vehicle impacts. UEAs adjacent to range projects or within SDZ arcs may be affected by changes in the fire regime, vehicle access, and/or sedimentation and erosion that would occur due to the Transformation actions.

With the exception of the Prosperity Church Oak-Hickory Forest UEA, Alternative A would not substantially diminish or degrade UEAs. A relatively large portion of the Prosperity Church Oak-Hickory Forest UEA would be adversely impacted and indirectly through erosion, the spread of weeds, and increased fire frequency. This indirect effect could substantially degrade the oak-hickory forest in adjoining areas. Mitigation measures in Section 4.12.3 would reduce the impact, but it would remain adverse.

Table 4.12-11: UEAs Impacted by Transformation Alternative A

Name (Existing Acreage)	Impacted Acres	% Impacted	Management Issues	Transformation Actions Occurring in Each UEA
Longleaf Pine Loamhills (1,169)	65	5.6%	Forest Management Operational Plans, RCW	Qualification training range
Ochillee Creek Wetlands (836)	46	5.5%	Wetlands	Rail Car Storage/Tracks, cantonment area construction
Piedmont Interface (3,364)	213	6.3%	Relict trillium populations	Oscar Range complex development
Hastings Relict Sandhills Community (2,648)	8	0.3%	Gopher tortoise, RCW, Bachman's sparrow; off-road vehicles	Road upgrade/reinforcement
Prosperity Church Oak-Hickory Forest (272)	70	25.9%	Siting of roadways	Southern Maneuver Corridor
Pine Knot Creek Blackwaters (1,629)	10	0.6%	Wetlands and stream crossings, Bachman's sparrow, gopher tortoise	Road upgrade/reinforcement
Arkansas Oak Rock Hills (3,823)	5	0.1%	None.	Adjacent to road upgrade/reinforcement
Upatoi Bluffs (2,043)	0; Adjacent only	0%	None.	Adjacent to Drivers Training Area and several construction projects
Chattahoochee Backwaters (3,409)	0	0%	Bald eagle nest.	None
Hite Bowl Swamp (276)	0	0%	Not applicable.	None
Lakeland Sandhills (128)	0	0%	Not applicable.	None
Longleaf Pine Sandhills (169)	0	0%	Not applicable.	None
Malone Cane Brakes (2,132)	0	0%	Not applicable.	None
Slopes of Northern Affinities (655)	0	0%	Not applicable.	None
Upatoi Creek Flatwoods (533)	0	0%	Not applicable.	None

4.12.2.3 Transformation Alternative B (Preferred Alternative)

This section describes the impacts of Alternative B on biological resources. Since impacts are similar in most respects to those described in Section 4.12.2.2 for Alternative A, the impact descriptions reference that section for more details. For each resource a determination is made of the impacts' significance and whether mitigation measures have been identified to reduce the impact. Mitigation measures are described in Section 4.12.3.

Upland Vegetation

Implementation of Alternative B would involve the clearing or other disturbance of up to 15,708 acres of upland vegetation (Table 4.12-12). Table 4.12-13 shows the impact through time. Impacts would be generally similar to those described for Alternative A, but of greater magnitude. This is due to the larger area of impact for the Good Hope Maneuver Area beginning in 2009. The affected areas comprise mostly dry-mesic hardwoods and mixed hardwood/pine forests, altered areas, plantations, and successional forests. As with Alternative A, the impacts are adverse, and would remain so after mitigation.

Aquatic and Wetland Habitats

Impacts of Alternative B on aquatic habitats are summarized in Tables 4.12-14 and 4.12-15. The acreage of wetland impacts is shown in Table 4.12-16. Impacts would be generally similar to those of Alternative A, but of slightly greater magnitude, again being due to the development of the Good Hope Maneuver Area in 2009. The acreage for Alternative B is slightly smaller, however. As with Alternative A, mitigation measures listed in Section 4.12.3 would reduce the extent and severity of the impacts, but the residual impact to freshwater aquatic habitats and wetlands would be adverse because of the magnitude of the impact.

Fish and Wildlife

Impacts on fish and wildlife, apart from special status species, would be adverse and similar to those described for Alternative A, due to the magnitude of direct and indirect impacts on habitats that support fish and wildlife populations. The habitats of most native species would be diminished or degraded, resulting in reduced population sizes.

Table 4.12-12: Upland Vegetation Impacted by Transformation Alternative B

Vegetation Type (Existing acreage)	*Range Impacts (Acres)*	*Range Impacts (%)*	*Non-Range Impact (Acres)*	*Non-Range Impact (%)*	*Total Impacts (Acres)*	*Total Impact (%)*
Mesic Hardwood Forest (1,145)	83	7.3%	4	0.4%	87	7.6%
Dry-Mesic Hardwood and Dry-Mesic Mixed Hardwood/Pine Forest (15,420)	3,511	22.8%	137	0.9%	3,649	23.7%
Longleaf Pine Loamhills (17,597)	1,481	8.4%	262	1.5%	1,743	9.9%
Longleaf Pine Sandhills (69,095)	3,859	5.6%	873	1.3%	4,732	6.8%
Plantations (20,172)	1,269	6.3%	844	4.2%	2,113	10.5%
Other Altered Areas (17,643)	3,565	20.2%	151	0.9%	3,716	21.1%
Successional Uplands (10,516)	2,022	19.2%	52	0.5%	2,074	19.7%
Total (151,588)	**15,708**	**10.4%**	**2,319**	**1.5%**	**18,026**	**11.9%**

Table 4.12-13: Yearly Acres of Upland Vegetation Affected by Transformation Alternative B

Project Year	**Vegetation Affected (Acres)**
2007	2,097
2008	1,253
2009	13,458
2010	161
2011-2013	1,143

Table 4.12-14: Aquatic Habitats Potentially Impacted by Transformation Alternative B

Habitat Type	Range Impacts (Acres)	Range Impacts (%)	Non-Range Impacts (Acres)	Non-Range Impacts (%)	Total Impacts (Acres)	Total Impact (%)
Herbaceous and Shrub Seepage Bogs (440)	74	16.8%	8	1.8%	82	18.6%
Gum / Oak Ponds (217)	0	0.0%	0	0.0%	0	0.0%
Impounded/Flowing Water (2504)	92	3.7%	0	0.0%	92	3.7%
River Floodplains and Cypress-Tupelo Swamps (3825)	10	0.3%	13	0.3%	23	0.6%
Small Stream Swamps and Wooded Seepage Bogs (10,022)	414	4.1%	28	0.3%	441	4.4%
Seasonal Depression Ponds (163)	0	0.0%	0	0.0%	0	0.0%
Stream Floodplains (13,666)	638	4.7%	7	0.1%	646	4.7%
Total (30,837)	**1,228**	**4.0%**	**57**	**0.2%**	**1,285**	**4.2%**

Table 4.12-15: Wetlands Potentially Affected by Transformation Alternative B

Project Type	Wetland Area Impacted (Acres)	Percent Impacted of 16,926 existing acres
Range Projects	311	1.9%
Non-range Projects	18	0.1%
Total	**329**	**2.0%**

Special Status Species

Plant Species

Relict Trillium (Federal Endangered)

Potential impacts to relict trillium would be the same as for Alternative A, and would not be adverse in the long-term. While habitat in the Good Hope Maneuver Area does not support relict trillium growth and is not anticipated to be found; surveys would be conducted if these plants are identified during Transformation development and appropriate consultation would be reinitiated.

State-Listed Plant Species

Impacts on state-listed plant species under Transformation Alternative B would be the same as for Alternative A. No listed species are known to occur in areas affected by this alternative. The possibility exists that habitats supporting previously unknown populations may be affected, but continuing adherence

to INRMP policies and practices (Fort Benning 2001, 2003c) and general mitigation measures for special status species identified in Section 4.12.3 would minimize adverse impacts. The greater area of impact for this alternative does not include habitats or UEAs with a high potential to support listed plant species; the areas are mostly mixed forest, plantations, altered areas, and successional forest. No long-term adverse impacts are anticipated.

Other Plant Species of Conservation Concern

A small fraction of the known or potential habitat for these species would be affected by proposed Alternative B (Tables 4.12-3, 4.12-13 and 4.12-15). Known affected locations include:

- Canadian frostweed (1 out of 3 known locations affected)
- Needle palm (1 out of 66 known locations affected)
- Sandhills bean (3 out of 55 known locations affected)
- Smith's sunflower (1 out of 3 known locations affected)
- White four-o'clock (3 out of 11 known locations affected)

These species are not listed as threatened or endangered and their status is more secure than species listed above. Most of the known and potential habitat for these species would not be affected by the Alternative B (Tables 4.12-13 and 4.12-15), and it is unlikely that impacts in any case would be of sufficient magnitude to jeopardize the species or trigger listing. Therefore, adverse impacts on these species would not occur. There is a small likelihood that these and other species of concern could be present in previously unsurveyed or undiscovered locations affected by Alternative B. Continuing adherence to INRMP policies and practices (Fort Benning 2001, 2003c) and general mitigation measures for special status species identified in Section 4.12.3 would minimize potential impacts.

Animal Species

Federally Listed Animal Species that Would Not Be Affected

Alternative B would have no effect on federally-listed species that include the listed mussel species (purple bankclimber, shiny-rayed pocketbook, Gulf moccasinshell, and oval pigtoe), American alligator, wood stork, and the bald eagle due to the absence of these species from areas of potential impact (Biological Assessment, Appendix F) and continuing management efforts pursuant to the INRMP and ESMPs (Fort Benning 2001, 2003c). Continuing management protection under the ESMP for the bald eagle nest site in compartment A14, which is within one mile of the proposed Good Hope Maneuver Area, would ensure no effect on this species.

Red-cockaded Woodpecker (RCW) (Federal Endangered)

A detailed analysis of the effects of Alternative B on RCW, has been prepared in the Biological Assessment. Alternative B would impact far fewer RCW clusters when compared to Alternative A (refer to Figures 4.12-5 with Figure 4.12-6). Since Alternative B is the preferred alternative, the USFWS will render a BO on this alternative, the Army will then implement mitigation measures based on the outcome of formal Section 7 consultation between the U.S. Army and USFWS.

A total of 88 RCW active clusters on Fort Benning would be directly impacted by Alternative B. Of these, there would be 82 active RCW clusters impacted that contain primary breeding groups, 4 have solitary males, 1 is captured (occupied by RCW from an adjacent cluster), and 4 are inactive. Pre-project, 14 of the 80 analyzed active RCW clusters did not meet SMS and 78 did not meet RS (8 active clusters were in non-contiguous habitat and thus not analyzed). The Biological Assessment (Appendix F) provides a detailed analysis for each affected cluster.

Post- Transformation, 32 active RCW clusters (of the 80 analyzed) would be directly "taken" by Transformation Alternative B as a result of forage loss, cavity tree removal, harassment, group-level impacts and/ or neighborhood level impacts. Impacts of Alternative B would likely be adverse because of the magnitude of the impact and its interference with long-term goals to recover the species on Fort Benning, but the impacts would substantially less than for Alternative A.

Proposed avoidance, minimization, and compensation measures that would lessen adverse effects on the RCW are detailed in the Biological Assessment (Appendix F) and summarized in Section 4.12.3 and Appendix G.

State-Listed Animal Species

As for Alternative A, state-listed animal species not known to occur in any of the areas affected by Alternative B, include Barbour's map turtle, alligator snapping turtle, and bluestripe shiner (Table 4.12-4). Given the relatively limited acreage of impacts on aquatic habitats relative to their extent on the Installation as a whole, adverse impacts on populations of these species would not occur. The possibility exists that previously unknown locations of these species may be affected, but continuing adherence to INRMP policies and practices (Fort Benning 2001, 2003c) and general mitigation measures for special status species identified in Section 4.12.3 would minimize potential impacts.

Two state-listed species reside in areas of impact and would be adversely affected by Alternative B: gopher tortoise (State Threatened) and Bachman's sparrow (State Rare). Table 4.12-16 describes the overlap of known occurrences of these species by Alternative B activities. The percentage of locations impacted indicates the relative magnitude of the impact on populations of both species. The impact on the gopher tortoise species would amount to roughly 10.4 percent of known locations, which is less than for Alternative A. The impact would be adverse because of its magnitude and because it increases the potential for future listing action by USFWS. However, continuing adherence to INRMP policies and practices (Fort Benning 2001, 2003c) and mitigation measures for gopher tortoise and other special status species identified in Section 4.12.3 would reduce the impact on this species to a level that is not adverse.

Impacts to Bachman's sparrow would occur predominately in the range project areas north of U.S. Highway 27/280 and would amount to 7.0 percent of known locations, which is substantially less than for Alternative A. To some degree, Bachman's sparrow may be able to utilize open habitats that are created along the edges of forests and woodlands by Transformation activities. The species is widely distributed, and the impact would not be likely to jeopardize its existence on Fort Benning or trigger the need for protective listing. As a result, the impact is not considered adverse.

Table 4.12-16: State-Listed Species Impacted by Transformation Alternative B

Species	Ecological Group	Percent of Area Impacted	Number of Occurrences Impacted by Range Projects	Number of Occurrences Impacted by Non-Range Projects	% Total Detections in Impacted Areas
Gopher tortoise *(Occurrence = active burrow)*	Mesic Hardwood Forest	7.3%	1	0	10.4% (278 of 2661)
	Dry-Mesic Hardwood and Dry-Mesic Mixed Hardwood/Pine Forest	22.8%	12	0	
	Longleaf Pine Loamhills	8.4%	15	0	
	Longleaf Pine Sandhills	5.6%	119	2	
	Plantations	6.3%	57	0	
	Other Altered Areas	20.2%	72	0	
Bachman's sparrow *(Occurrence = singing male)*	Longleaf Pine Loamhills	8.4%	1		7.0% (19 of 272)
	Longleaf Pine Sandhills	5.6%	24	1	
	Plantations	6.3%	9		
	Other Altered Areas	20.2%	1		

Other Animal Species of Conservation Concern

A small fraction of the known or potential habitat for these species would be affected by Alternative B (Tables 4.12-4, 4.12-12 and 4.12-14). Known affected locations include:

- Coachwhip snake (2 out of 92 known locations affected)
- Florida pine snake (1 out of 38 known locations affected)
- Migrant loggerhead shrike (1 out of 7 known locations affected)
- Southeast American kestrel (4 out of 25 known locations affected)

These species are not listed as threatened or endangered and their status is more secure than species discussed previously. Most of the known and potential habitat for these species would not be affected by the Alternative B, and it is unlikely that impacts in any case would be of sufficient magnitude to jeopardize the species or trigger listing. Therefore, adverse impacts on these species would not occur. As discussed for Alternative A, there is a small likelihood that these and other species of concern could be present in previously unsurveyed or undiscovered locations affected by Alternative B. Continuing

adherence to INRMP policies and practices (Fort Benning 2001, 2003c) and general mitigation measures for special status species identified in Section 4.12.3 would minimize potential impacts.

Unique Ecological Areas (UEAs)

Implementation of Alternative B would involve some construction, development, operational, and maintenance projects in and adjacent to UEAs. Table 4.12-17 provides the area of direct impact in each UEA. The areas used in these calculations represent a disturbance envelope, including the development footprint, as well as areas used for construction staging, foot traffic, vehicle storage, and incidental ground disturbance. The boundaries and acreages of UEAs are approximate and are refined as the areas are further studied. The majority of the area within the disturbance envelope would be used for range projects, heavy maneuver corridors, and the driver training area. Range projects would involve large areas for ordnance impact and small construction sites for firing lines and associated facilities. Some site clearing and soil excavation would be conducted. Overstory trees would be cleared for line-of-sight requirements. Maneuver areas and the driver training area would be disturbed due to tracked vehicle traffic.

Approximately 681 acres of UEAs would be affected by Alternative B (see Table 4.12-17). The difference between the two alternatives is entirely due to the Good Hope Maneuver Area and its overlap of the Chattahoochee Backwaters UEA (Section 4.12.1.5 describes the UEA and Figure 4.12-3 illustrates the location). This impact is considered adverse because of the large area directly impacted, and the likelihood of indirect impacts on river habitats due to erosion in the watershed. Mitigation measures in Section 4.12.3 would reduce the impact, but it would remain adverse. Otherwise, the acreages of affected UEAs are the same for both alternatives. Impacts described previously for Alternative A would apply to Alternative B as well. In particular, the impact on the Prosperity Church Oak-Hickory Forest UEA would be adverse because a relatively large portion of the UEA would be impacted directly, and indirect impacts of erosion, the spread of weeds, and increased fire frequency could substantially degrade the oak-hickory forest in adjoining areas. Mitigation measures in Section 4.12.3 would reduce the impact, but it would remain adverse.

Table 4.12-17: UEAs Impacted by Transformation Alternative B

Name (Existing Acreage)	Impacted Acres	% Impacted	Management Issues	Transformation Actions Occurring in Each UEA
Longleaf Pine Loamhills (1,169)	65	5.6%	Forest Management Operational Plans, RCW	Qualification training range
Ochillee Creek Wetlands (836)	46	5.5%	Wetlands	Basic and Advanced Drivers Training Course
Piedmont Interface (3,364)	213	6.3%	Relict trillium populations	Oscar Range complex development
Hastings Relict Sandhills Community (2,648)	8	0.3%	Gopher tortoise, RCW, Bachman's sparrow; off-road vehicles.	Road upgrade/reinforcement
Prosperity Church Oak-Hickory Forest (272)	70	25.9%	Siting of roadways	Southern Maneuver Corridor
Pine Knot Creek Blackwaters (1,629)	10	0.6%	Wetlands and stream crossings, Bachman's sparrow, gopher tortoise	Road upgrade/reinforcement
Arkansas Oak Rock Hills (3,823)	5	0.1%	None	Adjacent to road upgrade/reinforcement
Upatoi Bluffs (2,043)	0	0%	None	None
Chattahoochee Backwaters (3,409)	264	7.7%	Bald eagle nest, aquatic and wetland habitats	Good Hope Maneuver Area
Hite Bowl Swamp (276)	0	0%	Not applicable	None
Lakeland Sandhills (128)	0	0%	Not applicable	None
Longleaf Pine Sandhills (169)	0	0%	Not applicable	None
Malone Cane Brakes (2,132)	0	0%	Not applicable	None
Slopes of Northern Affinities (655)	0	0%	Not applicable	None
Upatoi Creek Flatwoods (533)	0	0%	Not applicable	None

4.12.3 MITIGATION MEASURES

4.12.3.1 Transformation Alternative A

Mitigation measures for Alternative A are identified for each major category of biological resources discussed in Section 4.12.2.

Vegetation

Implementation of this Transformation alternative would incorporate the following mitigation measures and management practices, thereby minimizing effects on vegetation. Mitigation measures, per Army NEPA regulations, may include avoidance of effect; minimization of effect; repair, rehabilitation, or restoration of effect; reduction of effect; and/or compensation for effect.

- Facilities and supporting infrastructure to be constructed will be sited on previously disturbed ground to the maximum extent possible. Removal of longleaf and loblolly pine will be minimized. New developments would be clustered, rather than dispersed, to the extent practicable and consistent with other land use constraints to lessen edge effects on adjacent natural areas. Temporarily disturbed sites will be revegetated with native species wherever practicable.
- Mitigation measures for water resources (Section 4.10.3) and soils (Section 4.11.3) are also identified to reduce erosion, sedimentation, and potential contaminant impacts on vegetation.

Existing plans, such as the INRMP, the use of Land Condition Trend Analysis (LCTA) in conjunction with the Integrated Training Area Management Program (ITAM) will be continued to measure the long term effects of expanded training and to identify and implement impact reduction strategies. Monitoring and control measures for invasive plant species will be funded as necessary to minimize the potential spread of these species into areas adjacent to newly disturbed and developed areas.

The above mitigation measures and existing management practices would help minimize the adverse effects of this alternative due to construction; however, the potential for adverse term effects to vegetation would still remain as a result of operations and maintenance. Permanent large-scale loss of vegetation and habitat fragmentation across the Installation, which cannot be mitigated, would represent a substantial loss or degradation of habitat.

Aquatic Habitats

Adherence to applicable federal, state, and local laws and regulations is required. This would include obtaining and following Section 404 permits due to potential disturbance to wetlands and obtaining stream buffer variances for tree removal and construction within the 25-ft buffer along streams (refer to Section 4.10.2 and 4.10.3, water resources for more detail). The Transformation actions under this alternative also would require applications for Section 401 certifications in conjunction with Section 404 permits because there is a potential for impacts to wetlands and the potential for discharge into navigable waters of the U.S. The following measures also are required:

- Mitigation measures for water resources (Section 4.10.3) and soils (Section 4.11.3) are also required to reduce erosion, sedimentation, and potential contaminant impacts on aquatic and wetland habitats.
- Mitigation for impacts to wetlands by avoidance would be incorporated into the design process by reducing stream crossings and placing trails, roads, and targets, where possible, out of wetland areas. The boundaries of wetland areas would be marked with flagging or painted trees to indicate the limits of construction.
- Unavoidable impacts to wetlands would be compensated by habitat restoration or by purchase of wetlands credits. Wetlands may be restored, enhanced, or created at locations to be determined through the Section 404 permitting process.
- Low impact methods of tree clearing would be utilized in streambank buffer zones and wetlands in accordance with the Georgia Forestry BMPs for Water Quality and Timber Harvesting. Streambank buffer zones and wetland areas would be re-marked with paint and/or flagging after timber operations which are likely to destroy, trample, or otherwise obscure the markings.
- All harvested trees should be felled so the stem is parallel with the run of the stream and therefore reducing the obstruction effect
- Logging decks and defined skid trails would be located outside streambank buffer zones.
- Consistent with the INRMP (e.g., Section 8.2.4), a program to monitor and sustain the integrity and health of aquatic and wetland ecosystems on Fort Benning as it undergoes the Transformation will be developed and integrated with the LCTA/ITAM.

Avoidance and mitigation measures would reduce the extent and severity of the adverse impacts, but the residual impact to freshwater aquatic habitats and wetlands would be adverse. Mitigation measures would not avoid or alleviate impacts to all aquatic habitats. Ordnance impact zones, stream crossings, sedimentation, and erosion would degrade natural features and processes of aquatic and wetland habitats.

Fish and Wildlife

Mitigation measures cited in the preceding sections would reduce adverse impacts on fish and wildlife populations. Fort Benning would continue its long-term, proactive management of fish and wildlife species and habitats through cooperative efforts with regional partners as described in the INRMP.

Mitigation measures would reduce adverse impacts, but the overall loss and fragmentation of habitat on Fort Benning would result in reduced populations of fish and wildlife species and would be adverse in terms of impaired ecosystem functions and the potential loss of local populations.

Special Status Species

All avoidance, compensation, and minimization measures identified in the BA and subsequent BO will be implemented to reduce adverse effects on federally listed species. Mitigation measures identified in the preceding sections will also be implemented to reduce adverse impacts on all special status species.

Management for relict trillium specified in the ESMP includes measures that would be implemented to avoid and minimize potential effects on the species:

- Prior to land disturbing activities, surveys would be conducted if they have not been within the last 3 years.
- Populations would be marked; and to the extent possible, digging and driving would be prohibited within these populations.
- Timber harvest would not occur within 200 ft of known populations of relict trillium.

Additional mitigation considerations for protected plant species in general would be used to reduce potential adverse impacts:

- Prior to land disturbance, vegetation surveys will be conducted for special status species in all areas not surveyed within the past 3 years, and in areas subject to clearing or construction.
- All known occurrences of Indian Olive on the Installation are flagged prior to any timber harvests. Flagged plants would be avoided during timber clearing wherever practicable.
- Project siting and design within UEAs would be configured to avoid sensitive habitat areas such as wetlands, riparian areas, hardwoods, and water tupelo.
- Ongoing monitoring and conservation programs on the Installation would be continued with special emphasis on the areas affected by Transformation.
- Mitigation measures identified in Section 4.10.3 (Water Resources) would be employed to reduce potential impacts to streambanks and wetlands, to minimize erosion, and to protect water quality, reducing the potential impacts to lax-water milfoil and Georgia rockcress.

Additional mitigation measures to avoid or reduce impacts on special status species include:

- Hollow snags and dead trees should be left where possible, to increase natural roosting places for bats.
- Avoid existing caves and subterranean locations by construction activities and human disturbance to minimize disturbance to bats.
- Construction will not occur within 1/8 mile (200 meters) – or other distance deemed necessary by the Installation RCW Specialist – of an active RCW cluster during the nesting season (April through July).
- Construction and use of the proposed facilities will not impede RCW management activities in surrounding areas.
- Prior to ground disturbance in areas where gopher tortoise may occur, a qualified biologist will search for occupied burrows in areas subject to construction and will relocate tortoises to a safe location. Where tortoises are known to occur in close proximity to construction areas, fencing or other barriers to keep the animals out of harm's way will be installed.
- Prior to vegetation clearing in support of Transformation, existing GIS data and site conditions will be reviewed by Fort Benning Natural Resource Management staff to determine the known or likely potential for special status species to occur. Areas that are potential habitat for special

status species but have not been surveyed within the preceding 3 years will be surveyed. Subsequent clearing and land development will: a) minimize the loss of habitat for special status species and b) incorporate measures to minimize future losses of habitat or individuals incidental to use of the site.

Unique Ecological Areas

All required measures identified in preceding sections would reduce impacts on UEAs. Additional mitigation measures to avoid and/or minimize adverse impacts include:

- The drivers training and heavy maneuver areas will require proper siting and design to avoid impacts to sensitive resources in UEAs. Stream crossings should be limited and soil stabilization BMPs should be implemented along roadsides. Range facilities, targets, and berms should be configured to avoid wetland areas and sensitive vegetation within the UEAs.
- Where possible, additional acreage that includes appropriate habitat features will be incorporated into existing UEAs to offset losses caused by the Transformation actions.

4.12.3.2 Transformation Alternative B (Preferred Alternative)

Mitigation measures for Alternative B are the same as for Alternative A, but would also include the Chattahoochee Backwaters UEA. Similar mitigation measures would be undertaken for vegetation, aquatic habitats, fish and wildlife, and special status species.

4.13 CULTURAL RESOURCES

Definition of Resource

Cultural resources consist of prehistoric and historic districts, sites, structures, artifacts, objects, or any other physical evidence of human activity considered important to a culture, subculture, or community for scientific, traditional, religious, or other reasons. Cultural resources can be divided into two major categories: Prehistoric and Historic resources and Native American resources. Prehistoric and Historic resources include archaeological resources (prehistoric and historic) and architectural resources. Native American resources are also known as traditional cultural properties.

Archaeological resources include any material remains of past human life or activities that are are 100 years old or more and capable of providing scientific or humanistic understandings of past human behavior and cultural adaptation through the application of scientific or scholarly techniques (Archaeological Resources Protection Act of 1979, Section 3(I) 16 U.S.C. 470bb). For example, archaeological resources consist of sites, arrowheads, stone flakes, or bottles. *Architectural resources* include standing buildings, dams, canals, bridges, and other structures of historic or aesthetic significance (NPS 2002). *Traditional cultural resources* can include archaeological resources, buildings, neighborhoods, prominent topographic features, habitats, plants, animals, or traditional hunting and gathering areas that American Indians or others consider essential for the continuance of traditional cultures (NPS 1998). No traditional cultural properties have been identified on Fort Benning; therefore, this category will not be discussed further in this EIS.

Under the NHPA as amended, only cultural resources eligible for the National Register of Historic Places (NRHP), defined as 'historic properties', warrant consideration with regard to adverse impacts from a proposed action. Historic properties generally must be more than 50 years old to be considered for protection under the NHPA. However, under the NHPA, more recent structures, such as Cold War era military buildings, may warrant protection if they are "exceptionally significant." To be considered eligible for the NRHP, cultural resources must meet one or more criteria as defined in 36 CFR 60.4 for inclusion on the NRHP. These criteria include association with an important event, association with a famous person, embodiment of the characteristics of an important period in history, or the ability to contribute to scientific research. Resources must also possess integrity (i.e., its important historic features must be present and recognizable). Historic properties may be buildings, structures, historic districts, or objects

Several other Federal laws and regulations have been established to manage cultural resources, including the Archaeological and Historic Resources Preservation Act of 1974, the ARPA of 1979, and the Native

American Graves Protection and Repatriation Act (NAGPRA) of 1990. In addition, coordination and consultation with Tribes must occur in accordance with the above laws and implementing regulations as well as the American Indian Religious Freedom Act (1978); EO 13007, *Sacred Sites*; EO 13175, *Consultation and Coordination with Indian Tribal Governments*; and the DoD requirements relating to the *Annotated American Indian and Alaska Native Policy* (1999), which emphasizes the importance of respecting and consulting with Tribal governments on a government-to-government basis. This policy requires an assessment through consultation of the effect of proposed DoD actions that could significantly affect Tribal resources, Tribal rights, and Indian lands before decisions are made by the respective services.

Related construction activities for actions identified in this section and the following subsections would be subject to the requirements of all applicable laws, regulations, and permits that may be required for construction. These may include, but not necessarily be limited to, NPDES and MS4 permits, which are described in more detail in Sections 1.6.2 and 4.10.1.1.

4.13.1 Affected Environment

The area of potential effect (APE), or ROI, for cultural resources includes areas throughout the Installation where the proposed Transformation projects would occur to support the mission changes and realignments, including construction, demolition, renovation, and improvement projects within the cantonment and training range areas (see Figures 3.2-2 through 3.2-7). It would include areas subject to direct effects from ground disturbance or building renovation as well as indirect effects to historic structures, historic districts, or archaeological sites from changes in visual setting.

4.13.1.1 Prehistoric and Historic Resources

In order to provide a regional context and to assess whether buried resources could be encountered during construction projects, the prehistory and history of the Fort Benning area along with cultural resources that are known to occur in the general area are discussed briefly in the following section.

Paleoindian Period (12,000 to 8,000 B.C.)

Humans have lived on what is now Fort Benning for thousands of years. The earliest settlers were Paleoindians who arrived between 14,000 and 11,500 years ago after the end of the last Ice Age. These earliest settlers are associated with a particular type of stone projectile point or knife manufactured into a weapon or tool, known as a Clovis point. These distinctive lanceolate-shaped, bifacially chipped tools had a unique fluted base and they have been recovered in contexts that firmly tie them to a particular lifestyle. Paleoindians lived in highly mobile, small, loose-knit bands and subsisted by gathering seasonally available foods and hunting large and small game as well as the occasional mastodon and other

types of megafauna common during the Late Pleistocene. Variants of the Clovis technology developed in response to adaptations to the warming climate and the extinction of the megafauna. These late points did not have fluting at the base and exhibited prepared side hafting surfaces instead. Regional variants occurring in the Southeast are referred to as Dalton, Quad, Tallahassee, and Hardaway (Kane and Keeton 1998).

Seven Paleoindian points have been recovered from Fort Benning to date. Although no subsurface cultural deposits have been documented in association with these surface artifacts, these types of artifacts are extremely rare and are important because they can yield information regarding land use and tool material sourcing preferences. Paleoindians had a preference for sites along the Chattahoochee and its major tributaries, the Upatoi and Ochillee, within Fort Benning (Elliott *et al*. 1995).

Archaic Period (8000 to 1000 B.C.)

Gradually, the climate became warmer, evolving into the modern Holocene environment of today. The coastal plain became dominated by the oak-pine forest with later encroachment and domination of pine species (Watts 1971). In response, subsistence strategies shifted and the Archaic culture emerged. Archaic people's tool kits began to diversify to complement their way of life and emphasized a reliance on modern game species. Diagnostic stone artifacts from this period include large stemmed points (Bolen, Kirk, Big Sandy, Morrow Mountain, Guilford) as well as specialized unifacial scrapers, and knives for processing animal hides. The stone tool kit also included gravers and ground stone adzes and axes for working wood. Soapstone cooking vessels were used and traded over vast distances. Fiber-tempered pottery was developed and disseminated on a small scale (Sassaman 1983). West of the Mississippi River, earthen mounds were constructed (Saunders *et al*. 1994).

Numerous Archaic sites have been documented on Fort Benning. Archaeologists hypothesized that Archaic peoples lived in bands composed of one or more extended families and moved seasonally, exploiting a variety of terrestrial and riverine resources within a major river basin (Anderson and Hanson 1988). Within Fort Benning there is an Archaic preference for settlement along the Chattahoochee as well as within the interior along the major tributaries (Elliott *et al.* 1995).

Woodland Period (1000 B.C. to A.D. 1000)

During this time, there were changes that led to the establishment of ritual centers with increasing displays of public architecture and social stratification. Permanent villages were generally built in the floodplains of large to medium-sized rivers. Major innovations during this period include the practice of horticulture, the widespread adoption of pottery, and use of the bow and arrow. Other diagnostic features of this period are the use of subterranean storage pits, an indicator of sedentism and increased reliance on

the storage of food surpluses. Diagnostic artifacts from the Woodland Period, include Yadkin projectile point and a transition from stemmed to smaller, triangular shaped projectile points, which are better adapted for use with arrows. Changes in pottery technology included the incorporation of sand or grit as a tempering agent and the use of more elaborate decorative techniques.

Mississippian Period (A.D. 1000 to 1550)

Around A.D. 1200, a large chiefdom with populous villages and vast agricultural fields stretched along the Chattahoochee River Valley and for three centuries controlled the region. Called the Mississippian Culture, this era of settlement and agricultural development lasted through the mid-1550s and resulted in several large sites along the Chattahoochee River and its associated streams. A later culture, called "Creeks" by the subsequent European settlers, was responsible for building Kasita Town, one of the largest and most prominent of these sites, located on a gentle curving bluff above the Chattahoochee River and on the land occupied by present-day Lawson AAF on Fort Benning. In 1775, noted naturalist and explorer William Bartram visited Kasita Town and made a record of its high level of sophistication and the cultural achievements of its inhabitants, who called themselves the Muskogee.

Euro-American/African Settlement Period

Settlement by individuals of European and African descent began in the later 1790s and resulted in a substantial loss of land and life to the indigenous population of American Indian inhabitants. By 1840, the majority of the American Indian inhabitants had been forcibly removed to Oklahoma via the 1836 "Creek Trail of Tears." During this time, large plantations were established south of Columbus, GA, inside the large meanders of the Chattahoochee River. African-American settlement of the Fort Benning area primarily consisted of slaves associated with plantations in the late half of the eighteenth through the mid-nineteenth century. Large plantations, such as the Woolfork Plantation along the Chattahoochee River at Fort Benning, would have included a community of several hundred slaves. After the Civil War, several African-Americans were able to purchase land in the Fort Benning area following Reconstruction and establish farmsteads. For about 80 years, this land was intensively farmed. In 1918, the land was purchased for the establishment of a temporary 50-acre tent encampment, named Camp Benning in honor of General Benning, a Confederate Army hero from the area. The U.S. War Department selected Camp Benning to serve as the new home for the U.S. Army Infantry School of Arms (later to become the U.S. Airborne Infantry School [USAIS]) upon the closing of that facility at Fort Sill, Oklahoma. In the fall of 1918, the School's commandant, Colonel Henry Eames, selected a new site 9 miles south of Columbus, on a plateau above the Chattahoochee River, for the establishment of Camp Benning.

Military History

In June of 1919, the Army purchased a nearby plantation from its owner, Arthur Bussey, and established headquarters in the family residence, which was known as Riverside. Today, the house is the Commanding general's residence (Quarters 1). On January 9, 1922, Congress issued War Department General Order Number 1, authorizing the retention of Camp Benning as a permanent military post, and re-designating it as Fort Benning. Construction of family housing, Soldiers' quarters, a hospital, athletic fields, and mess facilities occurred during the 1920s. The former hospital (now the National Infantry Museum) and family quarters on Wold, Sigerfoos, and Austin Loop date from this era, as do the eastern-most Cuartel and Doughboy Stadium. By 1930, aviation activities had begun at Fort Benning and the Works Project Administration programs, spawned during the Great Depression, provided the impetus for construction of the first runways and hangars at Lawson AAF, the first airstrip at Fort Benning. Construction during this period was not restricted to aviation facilities, however, and included the Officer's Club in 1934, a new building for the USAIS in 1935, and the Post Chapel in 1935.

The Cuartels under construction (circa 1925)

Tank training at Fort Benning circa 1942

The birth of the airborne infantry concept resulted in the performance of infantry parachute test jumps over Lawson AAF, leading to the establishment of the Parachute School in 1942. With increased demand by the war effort for combat officers, Fort Benning met the challenge with the organization and establishment of the Officer Candidate School (OCS), which operated from 1941 to 1946. When the Korean Conflict escalated, the OCS was re-opened to train junior officers. In 1967, under demands of the Vietnam Conflict, the non-commissioned OCS was established to provide squad and fire team leaders.

Also during the 1940s, wooden mobilization facilities were constructed at two new areas known as Sand Hill and Harmony Church. In 1949, a major reorganization occurred when all of the units and activities of Fort Benning were consolidated under one command, forming the U.S. Airborne Infantry Command.

The 1950s at Fort Benning were characterized by activities reaffirming its permanent status. Several new units were established, including the Ranger Training Command and the U.S. Army Infantry Human Research Unit, designed to study human response to training procedures and techniques. Another new area, Kelley Hill, was added to the Installation and served as a self-sustaining entity, housing an entire infantry brigade. Housing facilities, a school, bachelor officer quarters, and Martin Army Hospital were built during this decade to improve the quality of life at Fort Benning.

1945 training under realistic conditions with live grenades

The escalation of the Vietnam Conflict during the 1960s shifted the emphasis of instruction at the USAIS toward combined-arms training. With the cessation of U.S. military involvement in Vietnam, the U.S. military re-directed its organization toward an all volunteer army. At Fort Benning, the Modern Volunteer Army Program was initiated and in 1973, the 197th Infantry Brigade at Kelley Hill became the Army's first all-volunteer unit and the first combined-arms team under the Strategic Army Forces concept. Since that time, development of the Fort Benning area and the construction of new facilities to accommodate training and housing have continued. Today, Fort Benning continues to serve as the USAIS and trains many Soldiers for the needs of today's Army.

4.13.1.2 Management

Management of cultural resources on Fort Benning is an ongoing effort and will be accomplished via compliance with applicable cultural resource laws and regulations, and the Installation's ICRMP. AR 200-4 and DoD Instruction 4715.3 require ICRMPs for all Army Installations. The ICRMP provides guidance for implementation of the Army's cultural resources management policy, as prescribed in AR 200-4, *Cultural Resources Management*, and is in the format of both an internal Army management plan (integrating the entirety of the cultural resources program with ongoing mission activities over a 5-year planning period) and a historic property component (an extractable portion of the plan that provides for the management and treatment of cultural resources sites and requires external review and approval). The ICRMP allows for ready identification of potential conflicts between the Installation's mission and the cultural resources management (CRM) program, in addition to identifying the legal compliance actions necessary to maintain the availability of properties and acreage required for combat readiness. The ICRMP should provide Fort Benning with a guide to assess what the Installation should be doing to ensure compliance with historic preservation laws and regulations and with the tools to measure progress

towards achieving the objectives outlined in the management section of the ICRMP. Fort Benning's ICRMP is in draft form, but should be completed in early 2007.

To further improve efficiency in the Installation's CRM program, Fort Benning has adopted the Army Alternative Procedures (AAP) for implementing the NHPA. Replacing NHPA Section 106 procedures (36 CFR 800), the Historic Properties Component (HPC) of the ICRMP provides the Standard Operating Procedures (SOPs) followed by Fort Benning when assessing proposed actions and their potential effects on Fort Benning's historic properties. Certification of the CRM program at Fort Benning by the ACHP was received in April 2006 (personal communication, Hamilton 2006).

The purpose of the AAP is to expedite the review of actions that might affect historic properties and leverage the NEPA process for coordination and consultation. At Fort Benning, the NEPA process of project review begins with the proponent submitting a Fort Benning Form 144R, (see discussion in Section 2.6). All projects are reviewed by the various Program Managers, including the Cultural Resources Manager. For those projects finding no effect to historic properties, a simple "concur" is noted, and the CRM review ends. Using Section 106 procedures, a finding of no adverse effect would still require review by the SHPOs and Tribes, as necessary. Under the HPC, however, a finding of no adverse effect will require no further review prior to the project notice to proceed, although record of the project is kept for a yearly review by the relevant state SHPO and Tribes in consultation with Fort Benning. An initial finding of an adverse effect for a project can be changed to no effect or no adverse effect if redesign or other avoidance measures are taken. Should mitigation be required, consultation with the appropriate SHPO and Tribes, as needed, will be conducted through the process required by NEPA. At this stage, comment may be made formally by all stakeholders, and Fort Benning must take into account such comments prior to deciding how to proceed. It should be noted that no Memoranda of Agreement between Fort Benning and other stakeholders generally are no longer used to document consultation and mitigation; instead the NEPA documents and the HPC steps are used. Thus, a time-consuming effort normally found under 36 CFR 800 has been streamlined, while appropriate coordination with stakeholders occurs.

Only NHPA Section 106 is covered by the AAP. Other legal requirements such as the NAGPRA, ARPA, NHPA Section 110, and other mandates are unaffected by the AAP. Fort Benning's ICRMP will address compliance with these requirements. Informal contacts between Installation Cultural Resource Managers, SHPO staff, and Tribal Representatives are maintained to assure appropriate alternatives are explored and considered early to achieve the highest level of historic preservation commensurate with mission requirements.

Status of Cultural Resource Inventories

Section 110 of the NHPA requires that all federal entities inventory their properties for cultural resources so that those resources can be effectively managed and protected. Fort Benning has completed its Section 110 requirement and the entire Installation (excluding those areas that pose a safety risk) has been surveyed as part of the cultural resource management program to identity, document, and evaluate all cultural resources on the Installation. Each survey produced recommendations as to whether the cultural resources discovered were eligible, potentially eligible, or not eligible for inclusion on the NRHP. The Georgia and Alabama SHPOs have concurred with a majority of these determinations of eligibility.

Archaeological Resources. Since 1987, over 120 archaeological surveys encompassing over 170,000 acres have been completed at Fort Benning, effectively completing the Installation's NHPA Section 110 requirements. As of 2003, all of the areas of Fort Benning, except those that pose threats to human health and safety (e.g. impact/dud areas), have been inventoried for archaeological resources. These surveys have ranged in size and scope from small-scale linear surveys to large-scale, multi-year inventories. As a result of these surveys, 3,982 archaeological sites have been recorded. A majority of those sites (n=2,831) have been determined ineligible for inclusion in the NRHP. The Georgia and Alabama SHPOs have concurred with these determinations and these determinations have been included in consultation with federally recognized Tribes. The remaining 1,151 cultural and/or archaeological sites consist of 79 sites determined eligible for the NRHP, including Yuchi Town (1RU63) which is listed on the NRHP and is also designated as a National Historic Landmark. The remaining 1,072 sites have not yet been evaluated for NRHP eligibility (Fort Benning 2006l). Brockington and Associates, Inc. and Goodwin and Associates are currently in the process of evaluating 179 sites for eligibility to the NRHP (personal communication, Hamilton 2006). Preliminary results of these evaluations determined that 27 of the 179 sites are considered eligible to the NRHP and 152 were ineligible to the NRHP. However, the reports have not yet been completed for these evaluations and therefore, SHPO concurrence has not been received to date and Tribal consultation is still in process. Another Phase II survey began in winter 2006 to determine the eligibility of 30 additional sites. Unevaluated sites require the same protection as eligible sites until their eligibility can be formally determined (personal communication, Hamilton 2006). Therefore, Fort Benning is responsible for managing 893 archaeological sites which have not yet been fully evaluated for NRHP eligibility and 106 sites eligible to the NRHP.

Architectural Resources/Historic Districts. Fort Benning is rich in buildings, structures, and objects, and has dedicated considerable effort toward the identification, preservation, and management of these historic properties. Since 1987, four architectural surveys have been conducted of Fort Benning's cantonment and other developed areas (Main Post, Lawson AAF, Custer Road, Sand Hill, Kelley Hill,

Harmony Church, and the Ammunition Storage Point). The surveys identified and evaluated four distinctive districts, combining several hundred buildings. These potential historic districts are as follows: 1) the Main Post Historic District, 2) the Lawson AAF Historic District, 3) the Parachute Jump Tower Historic District, and 4) the Ammunition Storage Area Historic District. NRHP nominations are in process. Three of the districts are considered to be eligible to the NRHP, and are treated as though they are listed. Therefore, no changes would occur to management of these resources if they were formally nominated or listed. The exception is the Ammunition Storage Area. This resource falls under a program comment and would no longer be managed as a historic district.

Fort Benning has also completed a Historic District Tree Management Plan in 1995 (updated in 2003) to aid management of the landscape associated with the numerous historic structures within historic districts on the Installation. Without a carefully managed landscaping plan, the various historic districts located within the Installation would lose a major part of their defining characteristics - the landscape.

In addition to identifying and documenting historic districts, the cantonment/developed area surveys resulted in the identification of 1,782 buildings, structures, and objects. Many of the buildings, structures, and objects (n=638) are contributing resources to the three NRHP-eligible Historic Districts. An additional 21 buildings, structures, and objects are individually eligible to the NRHP, and one of those 21 buildings (Riverside or Quarters 1) is individually listed on the NRHP. A total of 28 of the 1,782 buildings, structures, and objects surveyed have been demolished in accordance with either a nationwide Programmatic Agreement or in consultation with the Georgia SHPO. The remaining 1,095 buildings, structures, and objects are ineligible to the NRHP; the Georgia SHPO concurred with these recommendations (Fort Benning 2005e). Two of the cantonment areas inventoried (Kelley Hill and Harmony Church) yielded no historic buildings, structures, or objects and Sand Hill contains only a single eligible building (Fort Benning 2006l).

Cemeteries. All known historic cemeteries on Fort Benning property have been inventoried and delineated and are currently maintained by the Installation. Previously unknown historic cemeteries have recently been discovered on Fort Benning for a total of over 80 Installation-managed historic cemeteries. Cemeteries and graves are among those properties that ordinarily are not considered eligible for inclusion in the National Register unless they meet special requirements. The National Register Criteria for Evaluation include considerations by which burial places may be eligible for inclusion in the National Register. To qualify for listing under Criteria A (association with events), B (association with people), or C (design), a cemetery or grave must meet not only the basic criteria, but also the special requirements of Criteria Considerations C or D, relating to graves and cemeteries. For instance, it must have *outstanding* importance to the community, State, or nation; or the events or trends with which the burial place is

associated must be *clearly* important, and the connection between the burial place and its associated context must be unmistakable (NPS 1992).

Burial places evaluated under Criterion D for the importance of the information they may impart do not have to meet the requirements for the Criteria Considerations. These sites generally have been considered as archeological sites. Under Criterion D, the common requirements are that the property has information to contribute and the information is considered important. The importance of the information to be yielded usually is determined by considering a research design or a set of questions that could be resolved by controlled investigation of the site. However, although cemeteries and other burial places may be evaluated for their potential to yield information, they also may possess great value to those who are related culturally to the people buried there. In accordance with Georgia State law, prior to any disturbance, archival and genealogical research would be conducted to establish previous ownership and history of the properties, identify occupants of the cemetery, and identify descendants who may have an interest in the project.

If a historic cemetery cannot be avoided, then it will be examined for historic significance and integrity prior to removal. For historic Euroamerican cemeteries, final removal of remains and reburial locations, if necessary, are a real property issue. The general process that the Real Estate Division (both the Installation and USACE) follows is to determine if there is justifiable cause to move the cemetery, notify all family members through letters if they can be found or by public announcements if family members are unknown, obtain the applicable permits from the state for removal, determine how family members would like to handle the reinterment, and then assist in the reinterment. If no family members are identified or come forward then the Army will determine where the cemetery and/or remains would be relocated (43 CFR 10, AR 200_4, and personal communication, DeCarlo 2007).

Native American Resources. **A**n ethnographic overview study identified federally-recognized Tribes that are potentially associated with Fort Benning lands (Deaver 2000). These American Indian Tribes include: the Alabama-Coushatta Tribe of Texas, the Alabama-Quassarte Tribal Town of the Creek Nation of Oklahoma, the Chickasaw Nation of Oklahoma, the Coushatta Tribe of Louisiana, the Kialegee Tribal Town of the Creek Nation of Oklahoma, the Muscogee (Creek) Nation of Oklahoma, the Poarch Band of Creek Indians, the Seminole Tribe of Florida, the Seminole Nation of Oklahoma, the Thlopthlocco Tribal Town, and the Keetoowah Band of Cherokee Indians of Oklahoma (Fort Benning 2006l). In addition to identifying the Tribes, the report described efforts to assess the interest of these Tribes in consulting with Fort Benning on the identification of properties of traditional religious and cultural importance; suggested types and resources sensitive to the Tribes; recommended procedures for site and resource protection; and strategies for handling inadvertent or unavoidable damage to sensitive resources. Currently, no Tribe has

identified a property of traditional religious or cultural importance on Fort Benning managed lands (Fort Benning 2005e). Fort Benning has a Reinterment Comprehensive Agreement with several Native American Tribes so that reinterment elsewhere on Post is an option for any displaced Native American burials or related cultural items located on Fort Benning as part of the NAGPRA process (Fort Benning 2003d).

As part of the consultation process associated with the proposed Transformation action, a consultation meeting was held at Fort Benning for identified Tribes on November 29 and 30, 2006.

4.13.2 Environmental Consequences

For cultural resources, the threshold for impacts includes any disturbance that cannot be mitigated and affects the integrity of a historic property (an eligible cultural resource). The threshold also applies to any cultural resource that has not yet been evaluated for its eligibility to the NRHP or disturbs a resource that has importance to a traditional group under American Indian Religious Freedom Act (AIRFA), EO 13007, and NAGPRA.

Analysis of potential impacts to cultural resources considers both direct and indirect impacts. Direct impacts may be the result of physically altering, damaging, or destroying all or part of a resource, altering characteristics of the surrounding environment by introducing visual or audible elements that are out of character for the period the resource represents, or neglecting the resource to the extent that it deteriorates or is destroyed. Indirect impacts are those that may occur as a result of the completed project, such as increased vehicular or pedestrian traffic in the vicinity of the resource.

The APE has been defined as the project footprints as presented in Figures 3.2-2 through 3.2-7. Projects include new construction of structures and renovation of existing structures in the cantonment area and construction of ranges, roads, and utilities and an increase in training in Ranges. Numerous cultural resources are located within the APE. These resources are displayed in Tables 4.13-1 and 4.13-2. Table 4.13-1 lists the archaeological sites and Table 4.13-2 lists the architectural sites within the APE. Only archaeological sites and architectural resources determined eligible or contribute to the NRHP or those that have not been evaluated are included in these tables. Fifteen historic cemeteries are also present within the APE for Transformation activities (Table 4.13-3). These tables also indicate the appropriate action alternative that could affect the resource, the potential impact from the action, and recommended mitigation measures. A more detailed document presenting the undertaking for each

Table 4.13-1: Eligible and Unevaluated Archaeological Resources within the APE

Site Number	Site Affiliation	Project Location	Project Name	NRHP Eligibility Status	Alternative	Potential Impact	Proposed Mitigation
9ME216	Historic	Custer Road	Museum Operations Support Buildings	Eligible	A,B	Construction, Visual	Data Recovery Excavation
9ME63	Historic	Custer Road	Museum Operations Support Buildings	Eligible	A,B	Construction, Visual	Data Recovery Excavation
9ME1025	Historic	Custer Road	Museum Operations Support Buildings	Recommended Eligible	A,B	Construction, Visual	Testing/Evaluation
9ME1026	Prehistoric	Custer Road	Museum Operations Support Buildings	Recommended Eligible	A,B	Construction, Visual	Not Affected
9CE2011	Prehistoric	Main Post	Hospital Replacement	Recommended Eligible	A,B	Construction	Currently being Evaluated, Avoidance
9CE1360	Historic	Harmony Church	Railyard	Recommended Eligible	A,B	Construction	If impacted consult with Tribes and GASHPO
9CE1361	Prehistoric	Harmony Church	Railyard	Recommended Eligible	A,B	Construction	If impacted consult with Tribes and GASHPO
9CE1362	Historic	Harmony Church	Railyard	Recommended Eligible	A,B	Construction	If impacted consult with Tribes and GASHPO
9CE1363	Historic	Harmony Church	Railyard	Recommended Eligible	A,B	Construction	If impacted consult with Tribes and GASHPO
9CE1364	Historic	Harmony Church	Railyard	Recommended Eligible	A,B	Construction	If impacted consult with Tribes and GASHPO
9CE1365	Historic	Harmony Church	Railyard	Recommended Eligible	A,B	Construction	If impacted consult with Tribes and GASHPO
9ME94	Prehistoric	Northern Range	Stationary Tank Range 1	Eligible	A,B	No Visual/SDZ Area	None

Table 4.13-1: Eligible and Unevaluated Archaeological Resources within the APE

Site Number	Site Affiliation	Project Location	Project Name	NRHP Eligibility Status	Alternative	Potential Impact	Proposed Mitigation
9ME742	Historic	Northern Range	Range Heavy Use Area	Eligible	A,B	SDZ/Ordnance Cleanup	If impacted consult with Tribes and GASHPO
9ME54	Prehistoric	Northern Range	Range Heavy Use Area	Eligible	A,B	Clearing, Construction	Data Recovery
9ME81	Historic	Northern Range	Stationary Tank Range 1	Eligible	A,B	Visual/SDZ	Protection
9ME1040	Historic	Northern Range	Drivers Training Area	Eligible	A,B	Light Vehicle Use	Avoidance,
9CE1370	Prehistoric	Northern Range	Drivers Training Area	Recommended Eligible	B	Light Vehicle Use	Avoidance
9CE1367	Historic	Northern Range	Drivers Training Area	Recommended Eligible	B	Light Vehicle Use	Avoidance
9CE1879	Historic	Northern Range	Vehicle Recovery Area	Recommended Eligible	B	Heavy/light Vehicle Use	Avoidance
9CE1878	Prehistoric	Northern Range	Vehicle Recovery Area	Recommended Eligible	B	Heavy/light Vehicle Use	Avoidance
9CE1886	Prehistoric	Northern Range	Vehicle Recovery Area	Recommended Eligible	B	Heavy/light Vehicle Use	Avoidance
9CE1883	Prehistoric	Northern Range	Vehicle Recovery Area	Recommended Eligible	B	Heavy/light Vehicle Use	Avoidance
9ME1294	Prehistoric	Northern Range	Stationary Tank Range 2	Recommended Eligible	A,B	SDZ	, None
9ME1289	Prehistoric	Northern Range	Stationary Tank Range 2	Recommended Eligible	A,B	SDZ	None
9ME1290	Prehistoric	Northern Range	Stationary Tank Range 2	Recommended Eligible	A,B	SDZ	None
9ME1291	Prehistoric	Northern Range	Stationary Tank Range 2	Recommended Eligible	A,B	SDZ	None
9ME158	Historic	Northern Range	Heavy Maneuver Area North	Eligible	A	Tank Maneuvers, Road Improvement	Avoidance Using Proper Signage or Barriers
9ME102	Historic	Northern Range	Heavy Maneuver Area North	Eligible	A,B	Light Vehicle Use	Avoidance

Table 4.13-1: Eligible and Unevaluated Archaeological Resources within the APE

Site Number	Site Affiliation	Project Location	Project Name	NRHP Eligibility Status	Alternative	Potential Impact	Proposed Mitigation
9ME1319	Prehistoric	Northern Range	Heavy Maneuver Area North	Eligible	A,B	Light Vehicle Use	Avoidance
9ME1324	Historic	Northern Range	Heavy Maneuver Area North	Recommended Eligible	A,B	Light Vehicle Use	Avoidance
9ME691	Historic	Northern Range	Heavy Maneuver Area North	Eligible	A	Tank Maneuvers, Road Improvement	Avoidance Using Proper Signage or Barriers
9CE100/114	Prehistoric	Northern Range	Heavy Maneuver Area South	Eligible	A,B	Tank Maneuvers, Road Improvement	Avoidance Using Proper Signage or Barriers
9CE1161	Prehistoric	Northern Range	Heavy Maneuver Area South	Eligible	A,B	Tank Maneuvers, Road Improvement	Avoidance Using Proper Signage or Barriers
9CE50	Prehistoric	Northern Range	Heavy Maneuver Area South	Eligible	A,B	Tank Maneuvers, Road Improvement	Avoidance Using Proper Signage or Barriers
9CE101	Historic	Northern Range	Heavy Maneuver Area South	Eligible	A,B	Tank Maneuvers, Road Improvement	Avoidance Using Proper Signage or Barriers
9CE51	Prehistoric	Northern Range	Heavy Maneuver Area South	Eligible	A,B	Tank Maneuvers, Road Improvement	Avoidance Using Proper Signage or Barriers
9CE1733	Historic	Northern Range	Heavy Maneuver Area South	Eligible	A,B	Tank Maneuvers, Road Improvement	Avoidance, Excavation
9CE46	Prehistoric	Northern Range	Road Construction and Improvements	Eligible	A,B	Construction, Grading	Avoidance, Excavation
9ME434	Historic	Northern Range	Road Construction and Improvements	Eligible	A,B	Construction, Grading	If Affected Consult with Tribes and GASHPO
9ME472	Historic	Northern Range	Road Construction and Improvements	Eligible	A,B	Construction, Grading	If Affected Consult with Tribes and GASHPO
9ME1316	Prehistoric	Northern Range	Tracked Vehicle Training Course	Eligible	A,B	Light Vehicle Use	Avoidable

Table 4.13-1: Eligible and Unevaluated Archaeological Resources within the APE

Site Number	Site Affiliation	Project Location	Project Name	NRHP Eligibility Status	Alternative	Potential Impact	Proposed Mitigation
9ME57	Historic	Northern Range	Fire & Movement Range 2	Recommended Eligible	A,B	Light Vehicle Use	Testing/Evaluation
9CE1245	Prehistoric	Northern Range	Repair Training Area Roads	Eligible	A,B	Light Vehicle Use	If impacted, Consult with Tribes and GASHPO
9CE1813	Historic	Northern Range	Repair Training Area Roads	Recommended Eligible	A,B	Light Vehicle Use	Testing/Evaluation
9CE894	Prehistoric	Southern Range	Good Hope Maneuver Area	Eligible	B	Tank Maneuvers, Road Improvement	Avoidance Using Proper Signage or Barriers
9CE873	Prehistoric	Southern Range	Good Hope Maneuver Area	Eligible	B	Tank Maneuvers, Road Improvement	Avoidance Using Proper Signage or Barriers
9CE898	Historic	Southern Range	Good Hope Maneuver Area	Eligible	B	Tank Maneuvers, Road Improvement	Avoidance Using Proper Signage or Barriers
9CE910	Historic	Southern Range	Good Hope Maneuver Area	Eligible	B	Tank Maneuvers, Road Improvement	Avoidance Using Proper Signage or Barriers
9CE544	Prehistoric	Southern Range	Good Hope Maneuver Area	Recommended Eligible	B	Tank Maneuvers, Road Improvement	Testing/Evaluation, Avoidance Using Proper Signage or Barriers
9CE2506	Prehistoric	Southern Range	Good Hope Maneuver Area	Recommended Eligible	B	Tank Maneuvers, Road Improvement	Testing/Evaluation, Avoidance Using Proper Signage or Barriers
9CE2587	Prehistoric	Southern Range	Good Hope Maneuver Area	Recommended Eligible	B	Tank Maneuvers, Road Improvement	Testing/Evaluation, Avoidance Using Proper Signage or Barriers

Table 4.13-1: Eligible and Unevaluated Archaeological Resources within the APE

Site Number	Site Affiliation	Project Location	Project Name	NRHP Eligibility Status	Alternative	Potential Impact	Proposed Mitigation
9CE2592	Prehistoric	Southern Range	Good Hope Maneuver Area	Recommended Eligible	B	Tank Maneuvers, Road Improvement	Testing/Evaluation, Avoidance Using Proper Signage or Barriers
9CE2595	Historic	Southern Range	Good Hope Maneuver Area	Recommended Eligible	B	Tank Maneuvers, Road Improvement	Testing/Evaluation, Avoidance Using Proper Signage or Barriers
9CE2593	Prehistoric	Southern Range	Good Hope Maneuver Area	Recommended Eligible	B	Tank Maneuvers, Road Improvement	Testing/Evaluation, Avoidance Using Proper Signage or Barriers
9CE2600	Prehistoric	Southern Range	Good Hope Maneuver Area	Recommended Eligible	B	Tank Maneuvers, Road Improvement	Testing/Evaluation, Avoidance Using Proper Signage or Barriers
9CE2002	Prehistoric	Southern Range	Good Hope Maneuver Area	Recommended Eligible	B	Tank Maneuvers, Road Improvement	Testing/Evaluation Avoidance Using Proper Signage or Barriers
9CE1742	Historic	Southern Range	Good Hope Maneuver Area	Recommended Eligible	B	Tank Maneuvers, Road Improvement	Testing/Evaluation Avoidance Using Proper Signage or Barriers
9CE2006	Historic	Southern Range	Good Hope Maneuver Area	Recommended Eligible	B	Tank Maneuvers, Road Improvement Maneuvers	Testing/Evaluation Avoidance Using Proper Signage or Barriers
9CE1746	Historic	Southern Range	Good Hope Maneuver Area	Recommended Eligible	B	Tank Maneuvers, Road Improvement	Testing/Evaluation Avoidance Using Proper Signage or Barriers

Table 4.13-1: Eligible and Unevaluated Archaeological Resources within the APE

Site Number	Site Affiliation	Project Location	Project Name	NRHP Eligibility Status	Alternative	Potential Impact	Proposed Mitigation
9CE1748	Prehistoric	Southern Range	Good Hope Maneuver Area	Recommended Eligible	B	Tank Maneuvers, Road Improvement	Testing/Evaluation Avoidance Using Proper Signage or Barriers
9CE1749	Prehistoric	Southern Range	Good Hope Maneuver Area	Recommended Eligible	B	Tank Maneuvers, Road Improvement	Testing/Evaluation Avoidance Using Proper Signage or Barriers
9CE1066	Prehistoric	Southern Range	Good Hope Maneuver Area	Recommended Eligible	B	Tank Maneuvers, Road Improvement	Testing/Evaluation Avoidance Using Proper Signage or Barriers
9CE1932	Historic	Southern Range	Good Hope Maneuver Area	Recommended Eligible	B	Tank Maneuvers, Road Improvement	Testing/Evaluation Avoidance Using Proper Signage or Barriers
9CE1931	Historic	Southern Range	Good Hope Maneuver Area	Recommended Eligible	B	Tank Maneuvers, Road Improvement	Testing/Evaluation Avoidance Using Proper Signage or Barriers
9CE1934	Prehistoric	Southern Range	Good Hope Maneuver Area	Recommended Eligible	B	Tank Maneuvers, Road Improvement	Testing/Evaluation Avoidance Using Proper Signage or Barriers
9CE1938	Historic	Southern Range	Good Hope Maneuver Area	Recommended Eligible	B	Tank Maneuvers, Road Improvement	Testing/Evaluation Avoidance Using Proper Signage or Barriers
9CE1762	Prehistoric	Southern Range	Good Hope Maneuver Area	Recommended Eligible	B	Tank Maneuvers, Road Improvement	Testing/Evaluation Avoidance Using Proper Signage or Barriers
9CE899	Prehistoric	Southern Range	Good Hope Maneuver Area	Recommended Eligible	B	Tank Maneuvers, Road Improvement	Testing/Evaluation Avoidance Using Proper Signage or Barriers

Table 4.13-1: Eligible and Unevaluated Archaeological Resources within the APE

Site Number	Site Affiliation	Project Location	Project Name	NRHP Eligibility Status	Alternative	Potential Impact	Proposed Mitigation
9CE1943	Historic	Southern Range	Good Hope Maneuver Area	Recommended Eligible	B	Tank Maneuvers, Road Improvement	Testing/Evaluation Avoidance Using Proper Signage or Barriers
9CE1940	Prehistoric	Southern Range	Good Hope Maneuver Area	Recommended Eligible	B	Tank Maneuvers, Road Improvement	Testing/Evaluation Avoidance Using Proper Signage or Barriers
9CE908	Prehistoric	Southern Range	Good Hope Maneuver Area	Recommended Eligible	B	Tank Maneuvers, Road Improvement	Testing/Evaluation Avoidance Using Proper Signage or Barriers
9CE884	Prehistoric	Southern Range	Good Hope Maneuver Area	Recommended Eligible	B	Tank Maneuvers, Road Improvement	Testing/Evaluation Avoidance Using Proper Signage or Barriers
9CE897	Prehistoric	Southern Range	Good Hope Maneuver Area	Recommended Eligible	B	Tank Maneuvers, Road Improvement	Testing/Evaluation Avoidance Using Proper Signage or Barriers
9CE886	Prehistoric	Southern Range	Good Hope Maneuver Area	Recommended Eligible	B	Tank Maneuvers, Road Improvement	Testing/Evaluation Avoidance Using Proper Signage or Barriers
9CE904	Prehistoric	Southern Range	Good Hope Maneuver Area	Recommended Eligible	B	Tank Maneuvers, Road Improvement	Testing/Evaluation Avoidance Using Proper Signage or Barriers
9CE905	Prehistoric	Southern Range	Good Hope Maneuver Area	Recommended Eligible	B	Tank Maneuvers, Road Improvement	Testing/Evaluation Avoidance Using Proper Signage or Barriers
9CE1944	Historic	Southern Range	Good Hope Maneuver Area	Recommended Eligible	B	Tank Maneuvers, Road Improvement	Testing/Evaluation Avoidance Using Proper Signage or Barriers

Table 4.13-1: Eligible and Unevaluated Archaeological Resources within the APE

Site Number	Site Affiliation	Project Location	Project Name	NRHP Eligibility Status	Alternative	Potential Impact	Proposed Mitigation
9CE1942	Historic	Southern Range	Good Hope Maneuver Area	Recommended Eligible	B	Tank Maneuvers, Road Improvement	Testing/Evaluation Avoidance Using Proper Signage or Barriers
9CE1947	Historic	Southern Range	Good Hope Maneuver Area	Recommended Eligible	B	Tank Maneuvers, Road Improvement	Testing/Evaluation Avoidance Using Proper Signage or Barriers
9CE1946	Historic	Southern Range	Good Hope Maneuver Area	Recommended Eligible	B	Tank Maneuvers, Road Improvement	Testing/Evaluation Avoidance Using Proper Signage or Barriers
9CE2268	Historic	Southern Range	Good Hope Maneuver Area	Recommended Eligible	B	Tank Maneuvers, Road Improvement	Testing/Evaluation Avoidance Using Proper Signage or Barriers
9CE1771	Prehistoric	Southern Range	Good Hope Maneuver Area	Recommended Eligible	B	Tank Maneuvers, Road Improvement	Testing/Evaluation Avoidance Using Proper Signage or Barriers
9CE1051	Historic	Southern Range	Good Hope Maneuver Area	Recommended Eligible	B	Tank Maneuvers, Road Improvement	Testing/Evaluation Avoidance Using Proper Signage or Barriers
9CE1040	Historic	Southern Range	Good Hope Maneuver Area	Recommended Eligible	B	Tank Maneuvers, Road Improvement	Testing/Evaluation Avoidance Using Proper Signage or Barriers
9CE1562	Historic	Southern Range	Good Hope Maneuver Area	Recommended Eligible	B	Tank Maneuvers, Road Improvement	Testing/Evaluation Avoidance Using Proper Signage or Barriers
9CE1563	Historic	Southern Range	Good Hope Maneuver Area	Recommended Eligible	B	Tank Maneuvers, Road Improvement	Testing/Evaluation Avoidance Using Proper Signage or Barriers

Table 4.13-1: Eligible and Unevaluated Archaeological Resources within the APE

Site Number	Site Affiliation	Project Location	Project Name	NRHP Eligibility Status	Alternative	Potential Impact	Proposed Mitigation
9CE2262	Historic	Southern Range	Good Hope Maneuver Area	Recommended Eligible	B	Tank Maneuvers, Road Improvement	Testing/Evaluation Avoidance Using Proper Signage or Barriers
9CE2272	Historic	Southern Range	Good Hope Maneuver Area	Recommended Eligible	B	Tank Maneuvers, Road Improvement	Testing/Evaluation Avoidance Using Proper Signage or Barriers
9CE2279	Prehistoric	Southern Range	Good Hope Maneuver Area	Recommended Eligible	B	Tank Maneuvers, Road Improvement	Testing/Evaluation Avoidance Using Proper Signage or Barriers
9CE2281	Prehistoric	Southern Range	Good Hope Maneuver Area	Recommended Eligible	B	Tank Maneuvers, Road Improvement	Testing/Evaluation Avoidance Using Proper Signage or Barriers
9CE881	Prehistoric	Southern Range	Good Hope Maneuver Area	Recommended Eligible	B	Tank Maneuvers, Road Improvement	Testing/Evaluation Avoidance Using Proper Signage or Barriers
9CE882	Prehistoric	Southern Range	Good Hope Maneuver Area	Recommended Eligible	B	Tank Maneuvers, Road Improvement	Testing/Evaluation Avoidance Using Proper Signage or Barriers
9CE52	Prehistoric	Southern Range	Good Hope Maneuver Area	Recommended Eligible	B	Tank Maneuvers, Road Improvement	Testing/Evaluation Avoidance Using Proper Signage or Barriers
9CE38	Prehistoric	Southern Range	Good Hope Maneuver Area	Recommended Eligible	B	Tank Maneuvers, Road Improvement	Testing/Evaluation Avoidance Using Proper Signage or Barriers
9CE879	Prehistoric	Southern Range	Good Hope Maneuver Area	Recommended Eligible	B	Tank Maneuvers, Road Improvement	Testing/Evaluation Avoidance Using Proper Signage or Barriers

Table 4.13-1: Eligible and Unevaluated Archaeological Resources within the APE

Site Number	Site Affiliation	Project Location	Project Name	NRHP Eligibility Status	Alternative	Potential Impact	Proposed Mitigation
9CE875	Prehistoric	Southern Range	Good Hope Maneuver Area	Recommended Eligible	B	Tank Maneuvers, Road Improvement	Testing/Evaluation Avoidance Using Proper Signage or Barriers
9CE876	Historic	Southern Range	Good Hope Maneuver Area	Recommended Eligible	B	Tank Maneuvers, Road Improvement	Testing/Evaluation Avoidance Using Proper Signage or Barriers
9CE880	Prehistoric	Southern Range	Good Hope Maneuver Area	Recommended Eligible	B	Tank Maneuvers, Road Improvement	Testing/Evaluation Avoidance Using Proper Signage or Barriers
9CE903	Prehistoric	Southern Range	Good Hope Maneuver Area	Recommended Eligible	B	Tank Maneuvers, Road Improvement	Testing/Evaluation Avoidance Using Proper Signage or Barriers
9CE2285	Historic	Southern Range	Good Hope Maneuver Area	Recommended Eligible	B	Tank Maneuvers, Road Improvement	Testing/Evaluation Avoidance Using Proper Signage or Barriers
9CE2292	Prehistoric	Southern Range	Good Hope Maneuver Area	Recommended Eligible	B	Tank Maneuvers, Road Improvement	Testing/Evaluation Avoidance Using Proper Signage or Barriers
9CE1566	Historic	Southern Range	Good Hope Maneuver Area	Recommended Eligible	B	Tank Maneuvers, Road Improvement	Testing/Evaluation Avoidance Using Proper Signage or Barriers
9CE1036	Prehistoric	Southern Range	Good Hope Maneuver Area	Recommended Eligible	B	Tank Maneuvers, Road Improvement	Testing/Evaluation Avoidance Using Proper Signage or Barriers
9CE1044	Historic	Southern Range	Good Hope Maneuver Area	Recommended Eligible	B	Tank Maneuvers, Road Improvement	Testing/Evaluation Avoidance Using Proper Signage or Barriers

Table 4.13-1: Eligible and Unevaluated Archaeological Resources within the APE

Site Number	Site Affiliation	Project Location	Project Name	NRHP Eligibility Status	Alternative	Potential Impact	Proposed Mitigation
9CE1046	Prehistoric	Southern Range	Good Hope Maneuver Area	Recommended Eligible	B	Tank Maneuvers, Road Improvement	Testing/Evaluation Avoidance Using Proper Signage or Barriers
9CE565	Historic	Southern Range	Good Hope Maneuver Area	Recommended Eligible	B	Tank Maneuvers, Road Improvement	Testing/Evaluation Avoidance Using Proper Signage or Barriers
9CE1321	Historic	Southern Range	Good Hope Maneuver Area	Recommended Eligible	B	Tank Maneuvers, Road Improvement	Testing/Evaluation Avoidance Using Proper Signage or Barriers
9CE1322	Historic	Southern Range	Good Hope Maneuver Area	Eligible	B	Tank Maneuvers, Road Improvement	Avoidance, Protection, Excavation
9CE573	Historic	Southern Range	Good Hope Maneuver Area	Recommended Eligible	B	Tank Maneuvers, Road Improvement	Testing/Evaluation Avoidance Using Proper Signage or Barriers
9CE564	Historic	Southern Range	Good Hope Maneuver Area	Recommended Eligible	B	Tank Maneuvers, Road Improvement	Testing/Evaluation Avoidance Using Proper Signage or Barriers
9CE562	Historic	Southern Range	Good Hope Maneuver Area	Recommended Eligible	B	Tank Maneuvers, Road Improvement	Testing/Evaluation Avoidance Using Proper Signage or Barriers
9CE561	Historic	Southern Range	Good Hope Maneuver Area	Recommended Eligible	B	Tank Maneuvers, Road Improvement	Testing/Evaluation Avoidance Using Proper Signage or Barriers
9CE578	Historic	Southern Range	Good Hope Maneuver Area	Recommended Eligible	B	Tank Maneuvers, Road Improvement	Testing/Evaluation Avoidance Using Proper Signage or Barriers

Table 4.13-1: Eligible and Unevaluated Archaeological Resources within the APE

Site Number	Site Affiliation	Project Location	Project Name	NRHP Eligibility Status	Alternative	Potential Impact	Proposed Mitigation
9CE587	Historic	Southern Range	Good Hope Maneuver Area	Recommended Eligible	B	Tank Maneuvers, Road Improvement	Testing/Evaluation Avoidance Using Proper Signage or Barriers
9CE594	Historic	Southern Range	Good Hope Maneuver Area	Recommended Eligible	B	Tank Maneuvers, Road Improvement	Testing/Evaluation Avoidance Using Proper Signage or Barriers
9CE600	Prehistoric	Southern Range	Good Hope Maneuver Area	Recommended Eligible	B	Tank Maneuvers, Road Improvement	Testing/Evaluation Avoidance Using Proper Signage or Barriers
9CE601	Prehistoric	Southern Range	Good Hope Maneuver Area	Recommended Eligible	B	Tank Maneuvers, Road Improvement	Testing/Evaluation Avoidance Using Proper Signage or Barriers
9CE602	Prehistoric	Southern Range	Good Hope Maneuver Area	Recommended Eligible	B	Tank Maneuvers, Road Improvement	Testing/Evaluation Avoidance Using Proper Signage or Barriers
9CE608	Prehistoric	Southern Range	Good Hope Maneuver Area	Recommended Eligible	B	Tank Maneuvers, Road Improvement	Testing/Evaluation Avoidance Using Proper Signage or Barriers
9CE2004	Historic	Southern Range	Good Hope Maneuver Area	Recommended Eligible	B	Tank Maneuvers, Road Improvement	Testing/Evaluation Avoidance Using Proper Signage or Barriers

Table 4.13-2: Eligible and Unevaluated Architectural Resources within the APE

Building Number	Building Location	Historic District	NRHP Eligibility Status	Alternative	Potential Impact	Proposed Mitigation
NA	Benning Blvd. Pkwy.	NA	Eligible	B	Construction Access	Follow Treatment Plan
M9389	Main Post/Bridge	NA	Eligible	A,B	Road Construction	HAER
9	Main Post	Main Post	Contributing	A,B	Renovation	Follow Treatment Plan
73	Main Post	Main Post	Contributing	A,B	Renovation	Follow Treatment Plan
74	Main Post	Main Post	Contributing	A,B	Renovation	Follow Treatment Plan
75	Main Post	Main Post	Contributing	A,B	Renovation	Follow Treatment Plan
76	Main Post	Main Post	Contributing	A,B	Renovation	Follow Treatment Plan
83	Main Post	Main Post	Contributing	A,B	Renovation	Follow Treatment Plan
130	Main Post	Main Post	Contributing	A,B	Renovation	Follow Treatment Plan
224	Main Post	Main Post	Contributing	A,B	Renovation	Follow Treatment Plan
234	Main Post	Main Post	Contributing	A,B	Renovation	Follow Treatment Plan
259	Main Post	Main Post	Contributing	A,B	Renovation	Follow Treatment Plan
260	Main Post	Main Post	Contributing	A,B	Renovation	Follow Treatment Plan
285	Main Post	Main Post	Contributing	A,B	Renovation	Follow Treatment Plan
328	Main Post	NA	Eligible	A,B	Renovation	Follow Treatment Plan
336	Main Post	Main Post	Contributing	A,B	Renovation	Follow Treatment Plan
337	Main Post	Main Post	Contributing	A,B	Renovation	Follow Treatment Plan
490	Main Post	Main Post	Contributing	A,B	Renovation	Follow Treatment Plan
496	Main Post	Main Post	Contributing	A,B	Renovation	Follow Treatment Plan
497	Main Post	Main Post	Contributing	A,B	Renovation	Follow Treatment Plan
2962	Main Post	Main Post	Contributing	A,B	Demolition	HABS
9200	Kelley Hill	NA	Eligible	A,B	Reassign	Follow Treatment Plan
9201	Kelley Hill	NA	Eligible	A,B	Reassign	Follow Treatment Plan
9202	Kelley Hill	NA	Eligible	A,B	Reassign	Follow Treatment Plan
9203	Kelley Hill	NA	Eligible	A,B	Reassign	Follow Treatment Plan
9204	Kelley Hill	NA	Eligible	A,B	Reassign	Follow Treatment Plan
9205	Kelley Hill	NA	Eligible	A,B	Reassign	Follow Treatment Plan
9207	Kelley Hill	NA	Eligible	A,B	Reassign	Follow Treatment Plan

Table 4.13-3: Cemeteries within the APE

Cemetery Name	Location	Project Name	Alternative	Potential Impact	Proposed Mitigation
Unknown 5	Northern Range	Drivers Training Course	A,B	Light Vehicle Use	Avoidance
Anthony	Northern Range	Heavy Maneuver Area North	A	Tank Maneuvers, Road Improvements	Avoidance
McCook	Northern Range	Heavy Maneuver Area South	A,B	Tank Maneuvers, Road Improvements	Avoidance
Culpepper	Northern Range	Heavy Maneuver Area South	A,B	Tank Maneuvers, Road Improvements	Avoidance
Prosperity Church	Northern Range	Heavy Maneuver Area South	A,B	Tank Maneuvers, Road Improvements	Avoidance
Mount Paran 1	Northern Range	Heavy Maneuver Area South	A	Tank Maneuvers, Road Improvements	Avoidance
O'Quin	Northern Range	Heavy Maneuver Area South	A,B	Tank Maneuvers, Road Improvements	Avoidance
Sylvester	Northern Range	Heavy Maneuver Area South	A,B	Tank Maneuvers, Road Improvements	Avoidance
Cook	Northern Range	Heavy Maneuver Area South	A,B	Tank Maneuvers, Road Improvements	Avoidance
Walker	Northern Range	Heavy Maneuver Area South	A	Tank Maneuvers, Road Improvements	Avoidance
9CE272	Northern Range	Heavy Maneuver Area South	A,B	Tank Maneuvers, Road Improvements	Avoidance
Hickey	Northern Range	Heavy Maneuver Area South	A,B	Tank Maneuvers, Road Improvements	Avoidance
Orr-Osteen	Southern Range	Good Hope Maneuver Area	B	Tank Maneuvers, Road Improvements	Avoidance
Hewell	Southern Range	Good Hope Maneuver Area	B	Tank Maneuvers, Road Improvements	Avoidance
Jamestown	Southern Range	Good Hope Maneuver Area	B	Tank Maneuvers, Road Improvements	Avoidance

4.13.2.1 No Action Alternative

Under the No Action Alternative, no changes to NRHP-listed or eligible cultural resources or unevaluated properties would occur

4.13.2.2 Transformation Alternative A

Under Alternative A, 2,011 acres within the cantonment areas would be disturbed and 8,730 acres within the Ranges would be disturbed. This has the potential to adversely affect an estimated 65 cultural resources and 12 historic cemeteries (Table 4.13-4). Detailed descriptions of the projects under Alternative A are included in Section 3.0. Because the actions are so numerous, they are described generally here and in terms of overall acreage affected by ground disturbing actions. Visual impacts are discussed for historic properties in this section also. More detailed information in accordance with the HPC as part of SHPO and Tribal consultation process, is provided in a confidential appendix due to the sensitive nature of the information. An executive summary of the findings is provided in Appendix I. Mitigation measures to avoid, reduce, or minimize adverse impacts to cultural resources eligible to the NRHP are discussed in Table 4.13-1 and 4.13-2 and Section 4.13.3.

Cantonment Areas

Transformation activities proposed within the cantonment areas include construction of new barracks facilities for the projected increase in personnel, construction of new training facilities, and renovation and demolition of existing buildings. All of these activities will be coordinated through the CRM program at Fort Benning (applying the coordination and consultation requirements prescribed in the ICRMP) to mitigate any adverse impacts to historic properties.

Main Post/Custer Road. There are 15 proposed projects within the Main Post cantonment area. These range from clinic renovations to demolition and the construction of headquarters complexes. These actions will potentially affect 2 NRHP-eligible and 2 recommended eligible sites (1 prehistoric and 3 historic) in the Custer Road area, 1 recommended eligible site at the Main Post, and 19 buildings within the Main Post (see Tables 4.13-1 and 4.13-2). One bridge would also be adversely affected by road construction. Renovations to 18 buildings that are members of the Main Post NRHP-eligible District could have an adverse effect to the design and setting of the district and the individual contributing members. Construction and demolition activities could also have an adverse effect to the district, but could be mitigated by compatible design and landscaping (see Section 4.13.3).

Kelley Hill. Currently, two actions are planned within the Kelley Hill cantonment area. These actions include portions of the 3 ID BCT (Heavy) Complex and Marne Road and Lindsay Creek Parkway Intersection Improvements. Kelley Hill does not currently contain any eligible historic structures or

districts. Seven structures, however, will be eligible at the time of demolition and would be adversely affected.

Table 4.13-4: Cultural Resources Affected Under the Action Alternatives

Resource	Alternative A	Alternative B
Sites, Eligible	22	25
Sites, Recommended Eligible	16	93
Total Sites	38	118
Architectural Resources	27	28
Cemeteries	12	12
Total Resources	**77**	**158**

Sand Hill. Six actions are planned within the Sand Hill cantonment area. These include a Trainee Barracks Complex; Health Clinic Expansion (Winder); Soloman Dental Clinic Expansion; Training Aids Center Building Conversions; Reception Station Barracks and Processing Center; and Sand Hill Chapel. There are no eligible archaeological sites or architectural resources within the areas of these actions.

Harmony Church. Twenty-four actions are planned within the Harmony Church cantonment area. Of these actions the AT/FP Access Control Point and the Railyard have the potential to adversely affect six NRHP recommended eligible sites (see Table 4.13-1). These resources include six sites that are recommended eligible (see Table 4.13-1). If the sites cannot be avoided, mitigation measures as discussed in Section 4.13.3 would be implemented.

Ranges and Training Areas

Thirteen actions are proposed within the area north of U.S. Highway 27/280, including the Heavy Maneuver Area North, Heavy Maneuver Area South, the Stationary Tank Ranges, the range heavy use areas, road improvements, construction of ammunition storage igloos, and the Drivers Training Course. These actions primarily consist of expanding the size and amount of usage for existing ranges, providing transportation corridors, and constructing entirely new ranges for expanded training capabilities in tanks, light vehicles, and small arms. Within these project areas, there are 27 eligible and recommended eligible archaeological sites (see Table 4.13-1).

The increased use at the Heavy Maneuver Areas would have an adverse effect on eight eligible sites. Based on the expected heavier training load brought with the introduction of the Armor School, there would be an increase in routine operations and maintenance including road grading and hardening of some stream crossings. It is anticipated that under this alternative larger numbers of tracked vehicles would depart from already established roads or training locations, potentially leading to disturbance to archaeological sites. The Stationary Tank Ranges established in the north could adversely affect two eligible sites and four recommended eligible sites. However, most areas of potential disturbance are with

SDZs and the likelihood of disturbance is very low. One eligible site would be adversely affected by visual intrusions and possible ordnance use. Clearing of the ranges in the north (the range heavy use areas), road improvement and construction, and Drivers Training Areas would potentially adversely affect 10 eligible and 3 recommended eligible sites.

Construction of ammunition storage igloos in the Ammunition Storage Area would not adversely affect these resources since they are no longer considered to be eligible to the National Register. Twelve historic cemeteries are present within the areas of the Northern Range subject to the projects under Alternative A (see Table 4.13-3). These cemeteries would be avoided, if possible. If avoidance is not possible, these resources would be examined for historic significance and then removed in accordance with federal and state laws and regulations. The addition of a new range south of U.S. Highway 27/280 would not adversely affect any eligible or recommended eligible archaeological sites under Alternative A.

4.13.2.3 Transformation Alternative B (Preferred Alternative)

Under Alternative B, 2,011 acres within the cantonment areas would be disturbed and 18,020 acres within the Ranges would be disturbed. This has the potential to affect an estimated 146 eligible or recommended eligible cultural resources and 12 historic cemeteries.

Cantonment Areas

Transformation activities proposed within the cantonment areas under Alternative B are the same as for Alternative A, including construction of new housing and associated facilities for the projected increase in personnel, construction of new training facilities, and renovation and demolition of existing buildings. A total of 11 eligible and recommended eligible archaeological sites and 28 eligible structures (including an eligible historic district) could be adversely affected by this alternative.

Ranges and Heavy Maneuver Training Areas

Projects under Alternative B north of U.S. Highway 27/280, including the Stationary Tank Ranges, the range heavy use areas, construction of ammunition storage igloos, and Road Improvements are the same as for Alternative A. A total of 27 recommended eligible and 11 eligible sites would be adversely affected by the projects. In addition, a new Drivers Training Area and a Heavy Maneuver Area South with reduced acreage would adversely affect six recommended eligible and seven eligible sites. A total of 31 recommended eligible and eligible sites would be adversely affected in the ranges north of U.S. Highway 27/280. Like Alternative A, construction of ammunition storage igloos in the Ammunition Storage Area would not adversely affect resources. Twelve historic cemeteries are also present within the area subject to the projects under Alternative B (see Table 4.13-3). These cemeteries would be avoided if possible. If avoidance is not possible, then these resources would be examined for historic significance

and then removed in accordance with federal and state laws and regulations. A 9,500-acre area would be exposed to tank maneuvers, ground disturbance, and additional disturbance. Much of the proposed Good Hope Maneuver Area has been dedicated to light (infantry) training at least since World War II. Tracked vehicle traffic is expected to occur not only on existing trails and roads but will extend off the existing trails and roads. It is anticipated that the existing trails and roads are likely to require some upgrading. Although the proposed area contains 5 eligible archaeological sites and 71 recommended eligible sites, sites most likely to be affected would be located near existing trails. A total of 51 recommended eligible sites and 4 eligible sites are located with 100 meters of the trails and could be adversely affected by the range activities. Three historic cemeteries are also present within the area subject to the heavy maneuver disturbance associated with the Armor School under Alternative B (see Table 4.13-3). These cemeteries would be avoided if possible. If avoidance is not possible, they would be examined for historic significance and then removed in accordance with Real Property established procedures.

4.13.3 MITIGATION MEASURES

4.13.3.1 Transformation Alternative A

The proposed avoidance and mitigation measures will minimize or eliminate adverse effects to the historic properties. Refer to Tables 4.13-1 and 4.13-2 for specific mitigation recommendations for each resource. The required mitigation measures for historically eligible or potentially eligible archaeological resources consist of:

- avoiding direct effects to the resources through design
- protecting resources from potential contamination during construction and operations through the SPCC and NPDES requirements
- protecting resources through the use of signs and education of Soldiers,
- excavation/data recovery of historic properties in accordance with Fort Benning's HPC in the event that disturbance cannot be avoided
- other mitigation measures as may be developed in consultation with the SHPO and federally recognized American Indian Tribes.

Data recovery plans would be prepared and implemented for each site undergoing extensive excavation as mitigation for disturbance. The field work portion of all data recovery operations and investigations should be completed prior to groundbreaking operations on the site. If previously unidentified cultural resources sites are discovered during construction or during the course of operations, the Cultural Resource Manager will be notified. Fort Benning will make an eligibility determination using HPC procedures, Eligible sites will require either (1) avoidance of impacts to the site's integrity through the

use of additional protective measures (i.e. berms, redirecting routes); (2) excavation to acquire the scientific and historic information inherent within its archeological and historical context; or (3) other mitigation as determined through consultation. Fort Benning would comply with NAGPRA in implementing regulations if deemed appropriate.

The mitigation measures for the historically eligible or potentially eligible architectural sites and historic districts consist of:

- minimizing adverse effects to the structures through the design process
- conducting HABS/HAER documentation prior to renovation or demolition.
- using compatible styles and maintaining appropriate landscaping in accordance with Fort Benning's Historic District Tree Management Plan.

Consultation with the SHPO, Federally recognized American Indian Tribes, and interested parties to develop measures and implementation of mitigation would be conducted in accordance with SOP's of Fort Benning's HPC.

4.13.3.2 Transformation Alternative B (Preferred Alternative)

The mitigation measures for Alternative B for cultural resources would be the same as those identified for Alternative A.

4.14 SAFETY

This section addresses safety aspects associated with training and operational activities conducted by units stationed at or operating from Fort Benning. Additionally, this section describes the safety aspects required for demolition and construction and also on- and off-duty transportation safety. These operations include activities within the cantonment areas as well as training conducted within the training ranges.

The Army Safety Manual, Army Regulation 385-10 (U.S. Army 2000a), governs Army policies, responsibilities, and procedures to protect and preserve Army personnel and property against accidental loss. The regulation provides for operational safety, safe and healthy work places, and assures compliance with applicable safety laws and regulations. Army policy dictates that all Army plans, programs, decision processes, operations, and activities effectively integrate the following principles.

- Accidents are an unacceptable impediment to Army missions, readiness, morale, and resources requiring accident risk management to be employed by decision makers.
- Every level of decision maker will utilize the risk management process to avoid unnecessary risk to missions, personnel, equipment, and the environment.
- The acquisition process will maximize the use of engineering design to control unnecessary risks.
- Life cycle safety considerations will be considered in the acquisition, use, and disposal of chemicals and hazardous materials such that public health and safety is not endangered or compromised.
- Appropriate action is taken to quickly correct nonconformities with standards, hazards, and accident causes.
- Work performance standards for military and civilian managers and supervisors include accident prevention and occupational health and are rated on these aspects.

A key principal of the safety program is risk management. It is not possible to eliminate all safety risks associated with an activity but it is possible to minimize the risk through a risk management program. This program allows decision makers to assess the risk involved for each safety hazard, determine impacts to the mission or personnel should the event occur, and estimate the probability of it occurring. An extreme example of this would be an operation needed to transit a field littered with UXO. The safety hazard would be inadvertent detonation of the bomb; the impact could be loss of life, serious injury, and/or equipment destroyed; and the likelihood of this occurrence could be high; therefore, the risk would be considered catastrophic. The decision maker can minimize this risk by sending in an ordnance disposal team prior to crossing or find another way around the field and still meet mission objectives.

Using risk management as a tool allows decision makers to prioritize the risks involved so the operation can be implemented in a safer manner.

Safety programs are required to include accident reporting, workplace safety, transportation safety, as well as family and off-the-job safety for all Installations and (where applicable) range safety, explosive safety, aviation safety, tactical safety, radiation safety, and system safety.

Accident Reporting and Records, Army Regulation 385-40 (U.S. Army 1994), details the classes of accidents and the reporting requirements for each class. The classes are designated A through F and range from loss of life to loss or damage of equipment by dollar value and the corresponding reporting requirement for each class of accident.

Workplace Safety applies to on-the-job safety and implements the requirements of 29 CFR 1910 *et seq*. These requirements include protective clothing and equipment, hazard materials communication, health and safety standards for the workplace, on-the-job reporting requirements, and myriad other requirements designed to protect the health and safety of workers.

Transportation Safety entails a large part of Army functions because most troop movements are done by ground-based vehicles. Army Regulation 385-55, *Prevention of Motor Vehicle Accidents* (U.S. Army 1987), provides the policies and procedures to install a transportation safety program at Army installations. This regulation includes both on-the-job and off-the-job safety requirements. On-the-job requirements describe safe handling, loading, and operation of government-owned vehicles ranging from automobiles to trucks to troop carriers to tanks. Vehicular accidents of Soldiers while ff-duty are also a prime concern for the Army. Off-the-job topics stress training for vehicle operation for four-wheeled vehicles and motorcycles, seatbelt use, counseling, enforcement, and other prevention programs.

In addition to transportation, family and off-the-job safety is a critical part of safety and training programs for the Army. The Army provides training for off-duty activities such as recreation, in-home hazards, travel, and other topics.

Range Safety covers prevention of accidents on Army ranges. AR 385-63, *Range Safety*, (U.S. Army 2003) prescribes policies and responsibilities for ranges on the use of live firing of small arms, rockets, guided missiles, and lasers, and provides guidance for using risk management. SDZs are a key aspect of providing safe range operations. An SDZ is an area downrange from a firing line which is an exclusion area for other activities and personnel such that bullets, fragments, and debris from the use of the range will stay contained within the SDZ. Figure 4.14-1 shows a typical layout of an SDZ.

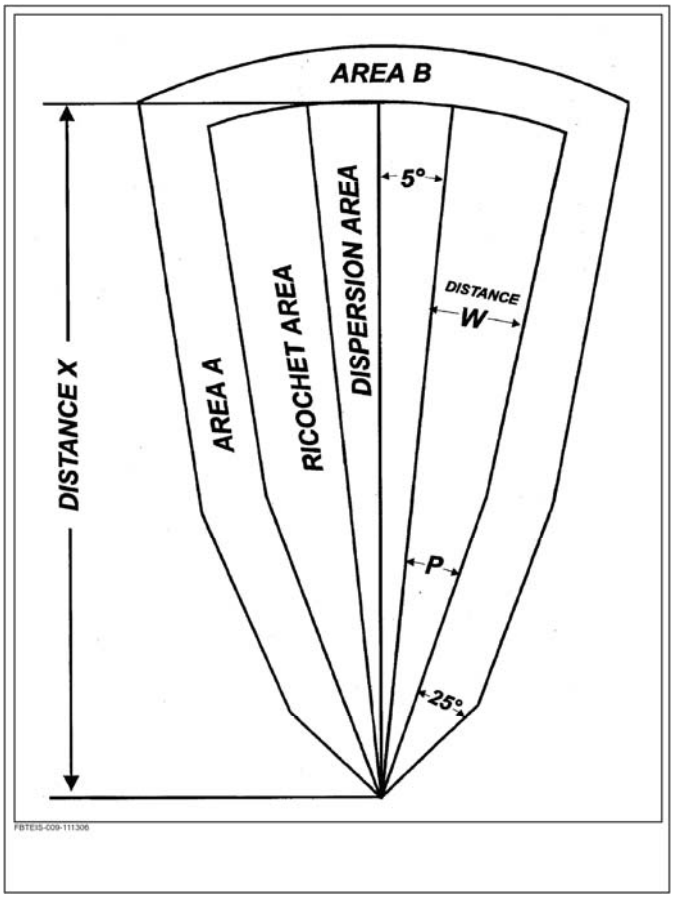


Figure 4.14-1: Typical SDZ

Explosive safety entails the use, storage, and disposition of ordnance on Army facilities. The *U.S. Army Explosive Safety Program, AR 385-64* (U.S. Army 2000a), provides the guidance for implementing explosive safety programs that comply with DoD Standard 6055.9. This includes explosive safety arcs around storage facilities, prescribes the coordination process between the Army and the Department of Defense Explosive Safety Board (DDESB), site survey requirements, and transportation of explosives.

Aviation Safety involves all safety aspects of aircraft operations and responsibilities for personnel working in or around aircraft such as pilots and crew or maintenance personnel as well as individuals flying aboard aircraft. *Army Aviation Accident Prevention*, AR 385-95 (U.S. Army 1999), details the responsibilities and policies regarding aviation safety. Clear Zones and Accident Potential Zones are established near military airfields based on the analysis of military aircraft accident history and a determination of where, within the airfield environs, an accident is likely to take place and how large an impact area is likely to result from any single accident. Land use controls are implemented in these areas to reduce the level of risk associated with these zones.

4.14.1 Affected Environment

The ROI for safety encompasses the Installation and ranges associated with Fort Benning. . On-and Off-Duty, family and public safety encompasses the cantonment areas and includes operations and maintenance activities, transportation and construction safety, as well as provides the general safety background for the Post's personnel. The ROI for explosive safety include igloos, ranges, as well as UXO associated with ordnance use and storage.

At Fort Benning, the Directorate of Public Safety commands the Military Police Units, the Fort Benning Fire Prevention and Protection Division, and the Post Safety Office. This Directorate ensures unity of effort among Fort Benning emergency services to ensure a safe and secure environment to work, train, live, and play.

Public Safety

Scoping concerns identified areas along the Fort Benning border that are not fenced, with particular concern expressed about Chatsworth Road, located at the northern boundary of the Post. Existing Fort Benning security procedures increased access controls points and barriers ensure public safety and limit unauthorized access to the Installation.

Transportation Safety

Fort Benning provides transportation safety briefings for on- and off-duty personnel and families. On-the-job requirements describe safe handling, loading, and operation of government-owned vehicles ranging from automobiles to trucks to troop carriers to tanks. Off-the-job topics stress training for vehicle operation for four-wheeled vehicles and motorcycles, seatbelt use, counseling, enforcement, and other prevention programs.

Construction Safety

Construction and demolition activities performed or contracted by the USACE must follow the *USACE Safety and Health Manual* 386-1-1 (USACE 2003b). This manual outlines all of the requirements to comply with OSHA standards during the construction and demolition process, non usage contracts would not necessarily be required to follow the USACE manual, but would be required to comply with all applicable OSHA standards and regulations.

Explosive Safety

Infantry training at Fort Benning has been conducted since the establishment of the Installation in 1918. Infantry training has required, and continues to require, the use of "blank" as well as "live" ammunition. The type of ammunition used for training purposes is very diverse. It encompasses virtually every

weapon system from small caliber individual weapons to air-delivered 500-pound bombs, with the exception perhaps of some long-range artillery guns or missiles and air defense systems. Blank ammunition and various pyrotechnic simulators are used throughout the entire training area. Live-fire training is conducted in designated ranges and training areas, with projectiles directed towards designated ordnance impact areas. Current annual weapons use at Fort Benning is presented in Table 4.14-1.

Table 14.14-1: Baseline Annual Weapons Use Fort Benning

	Day	Night	Total
Small Caliber	30,120,421	2,978,943	**33,099,363**
Percent Day/Night	91%	9%	
Large Caliber	246,046	40,054	**286,100**
Percent Day/Night	86%	14%	

Source: USACHPPM 2006a and Fort Benning 2004b, includes DMPRC operational data

Explosive safety quantity distance arcs are imaginary arcs surrounding ammunition storage igloos to provide a safety buffer in case of a detonation inside the bunker. Certain activities and personnel density limits are instituted within these arcs to protect people and facilities from explosion and fragmentation.

The main "dudded" ordnance impact areas on Post are compartments A20 and K15 with 9,300 and 5,500 acres, respectively. Smaller isolated "dudded" ordnance impact areas are found in the periphery of the main ordnance impact areas and within the Malone Range Complex (USACE 2006ab). The Fort Benning military and civilian personnel and the community are routinely advised and reminded not to handle any suspected UXO, and to report suspicious ordnance to the Explosive Ordnance Detachment and to the Director of Public Safety through calling 911. UXO warning articles are periodically published in the Fort Benning Bulletin, as well as in the Post newspaper, *The Bayonet*.

Range Safety - Surface Danger Zones

Fort Benning currently offers 119 ranges; 34 basic marksmanship ranges, 11 direct fire gunnery ranges, 16 collective live fire ranges, 32 indirect firing facilities, 7 special live fire ranges, and19 non-live fire facilities covering a total of 3,173 acres (U.S. Army 2006). An additional 3,612 acres are currently under construction and predominately associated with the approved DMPRC, IPBC, and ISBC.

The SDZ is an "invisible" line that surrounds the firing range and ordnance impact area portions of a range and provides a buffer area to protect personnel from the non-dud producing rounds that may be ricocheted during operation of the range. For each training scenario on a range, the SDZ is computed to take into account the firing positions and ordnance used, so the SDZ exclusion zone will vary. For this document, for the purposes of analysis, the cumulative/maximum SDZ possible for the action alternatives will be utilized. The SDZ is an "exclusion" or safety zone for personnel on or in the vicinity of the range. Its function is to provide a buffer zone that contains projectiles, fragments, debris, and components

resulting from the firing of weapon systems; these items have an approximately one in a million chance of landing outside of the SDZ (personal communication, Weekley 2006). SDZs are updated on the basis of data derived from research and development, testing, and/or actual firing experience and differ depending on the type of activity occurring on the range (small arms training versus tank gunnery) and the type of ammunition being fired on the range (AR 385-63). The area comprising the SDZ is closed to all personnel not directly using the range complex during currently ongoing exercises. The acreage associated with the SDZ for the current ranges equals 52,396 acres for the maximum extent of SDZ. Figure 4.14-2 shows the current ranges and SDZs.

4.14.2 Environmental Consequences

The threshold level of significance for safety is exceeded when construction would occur within an area with UXOs; the SDZ exclusion area overlaps with personnel support areas; the SDZ of a range extends off the Installation; or when a violation of OSHA standards occurs during construction. During construction, only authorized personnel would be allowed within the footprint for construction; in addition, all workers must adhere to safety standards established by the Installation November 2003 *U.S. Army Corps of Engineers Safety and Health Requirements Manual* EM 385-1-1, and OSHA.

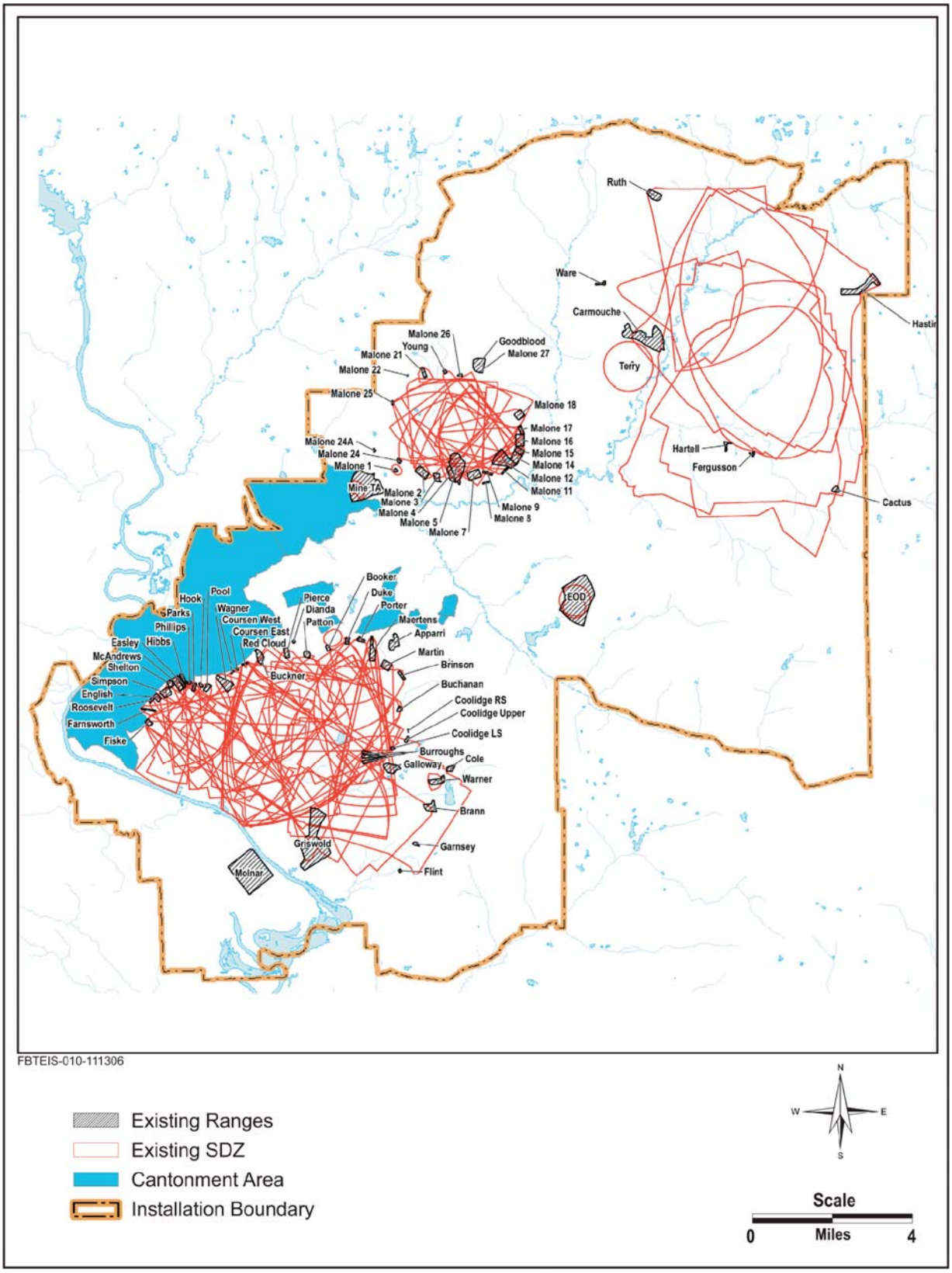
4.14.2.1 No Action Alternative

There would be no change under the No Action Alternative from current conditions as described under the affected environment sections. Therefore, there would be no impacts to safety.

4.14.2.2 Transformation Alternative A

Public Safety

General safety briefings and safety orientation for new personnel would continue and be provided to the Soldiers gained by Fort Benning under Alternative A. While there would be a substantial increase in personnel, the number of accidents per capita should remain approximately the same. Because there currently is no fencing along the Chatsworth Road, unauthorized residents could continue to trespass onto Fort Benning. This could pose a safety risk to citizens who inadvertently wander onto the ranges because part of Alternative A includes a tank road and firing ranges adjacent to this northern boundary. The safety risks could include accidentally getting in the path of an oncoming tank and being downrange of a firing line. These risks are discussed further in the following transportation and range safety sections.



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Existing Ranges
Existing SDZ
Cantonment Area
Installation Boundary

4.14-2: Existing SDZs

Transportation Safety

The Fort Benning Safety office provides in-depth transportation training for on- and off-duty personnel. These training activities would be provided and the requirement would apply to all of the activities proposed under Alternative A. Despite efforts to train personnel, accidents still occur and would likely increase proportionally with the number of people and vehicles associated with the Transformation. Tank and heavy vehicle drivers also receive intense accident avoidance training and should minimize accidents if encounters with citizens trespassing onto Installation lands occur on tank trails. A long-term solution would be to fence the Installation boundary where residential areas abut active arms and training ranges. This is addressed as a recommended mitigation in Section 4.13.3.

Construction Safety

Most of the proposed construction and demolition activities for Alternative A would be performed or contracted by the USACE and would follow the *USACE Safety and Health Manual* 386-1-1. These requirements would also be imposed on non-USACE contracted activities, through in-house or acquired by other contracting means, if non-USACE contracts are used. This manual outlines all of the requirements to comply with OSHA standards during the construction and/or demolition process. The timber harvest/slash removal and range construction, as well as range maintenance, may involve heavy machinery and some safety risks to personnel working and/or monitoring these activities. As with all work on Fort Benning, OSHA requirements and other applicable worker safety regulations must be followed. Appropriate measures to limit unauthorized persons from accessing the range area during construction, timber harvest/slash removal, and maintenance are required.

Explosive Safety

The proposed addition of the Armor School with this action alternative would require additional ordnance use and storage. Ammunition storage igloos construction is proposed in association with Alternative A. The siting of these igloos is north of the Harmony Church area, as an expansion to the existing ammunition storage area. Ordnance would be used in strict compliance with Army and DoD regulations to assure the safe use of these items. Additional storage space would be required and new igloos would be sited in accordance with DoD Standard 6055.9 (DoD 2004) with the required explosive safety quantity distance arcs for the amount and type of ordnance planned in the storage bunker.

The total amount of ammunition fired at Fort Benning would increase substantially (about 27 percent) as a result of the Alternative A (see Table 2.3-4 in Section 2.3.3), but there would not be a change in the footprint of the dudded impact areas, as Alternative A would utilize existing “dudded” areas. The increase of artillery operations shooting into the dudded area would increase, but the size of the area

would remain the same. Additional use would lead to additional UXOs in the area, but this area already has sufficient safety requirements to protect against inadvertent UXO detonations (personal communication, Weekley 2006).

Range Safety - Surface Danger Zones

Under Alternative A, there would be 23 new ranges covering 4,529 acres constructed by 2011. The SDZs associated with the proposed ranges would encompass 56,925 acres if all of the ranges were active at the same time. Of these 56,925 acres, only a small piece of an SDZ falls outside the Installation boundary near the Hastings Range. AR 385-63 allows for SDZs to extend past the Installation boundary only if the area meets the requirements of AR 385-63, and if an agreement is made with the landowner; applicable environmental and local regulations are met; and controls are in place to prohibit entry by unauthorized personnel and to provide decontamination after use. Figure 4-14-3 shows the ranges and SDZs associated with Alternative A. Among the duties of a Range Safety Officer (RSO), present at each active firing range, is to ensure there are no unauthorized personnel or equipment located downrange while the range is being used. The new small arms ranges, in the northern area of the Installation (near Chatsworth Road), would be controlled by an RSO so the chances of an unauthorized citizen being on range and in danger is minimal. A long-term solution would be fencing to prevent unauthorized entry onto the Installation.

In summary, there would be increased safety risks introduced within the training areas due to the increased tank and heavy vehicles traffic and ordnance use, but implementation of all existing safety programs should minimize any adverse safety hazards. Unauthorized entry onto Installation lands could be minimized by erecting fences and ensuring that RSOs undertake thorough review of downrange activities prior to range use. Under these circumstances, safety would be protected and not be adversely impacted.

4.14.2.3 Transformation Alternative B

Public Safety

General safety briefings and safety orientation for new personnel would continue and be same as described for Alternative A.

Transportation Safety

The transportation safety briefings would continue and be the same as discussed under Alternative A. In addition, there would be increased use of existing roads in the Good Hope Maneuver Area for heavy maneuvering. Tracked and wheeled vehicles would be traveling on roads along the eastern boundary of

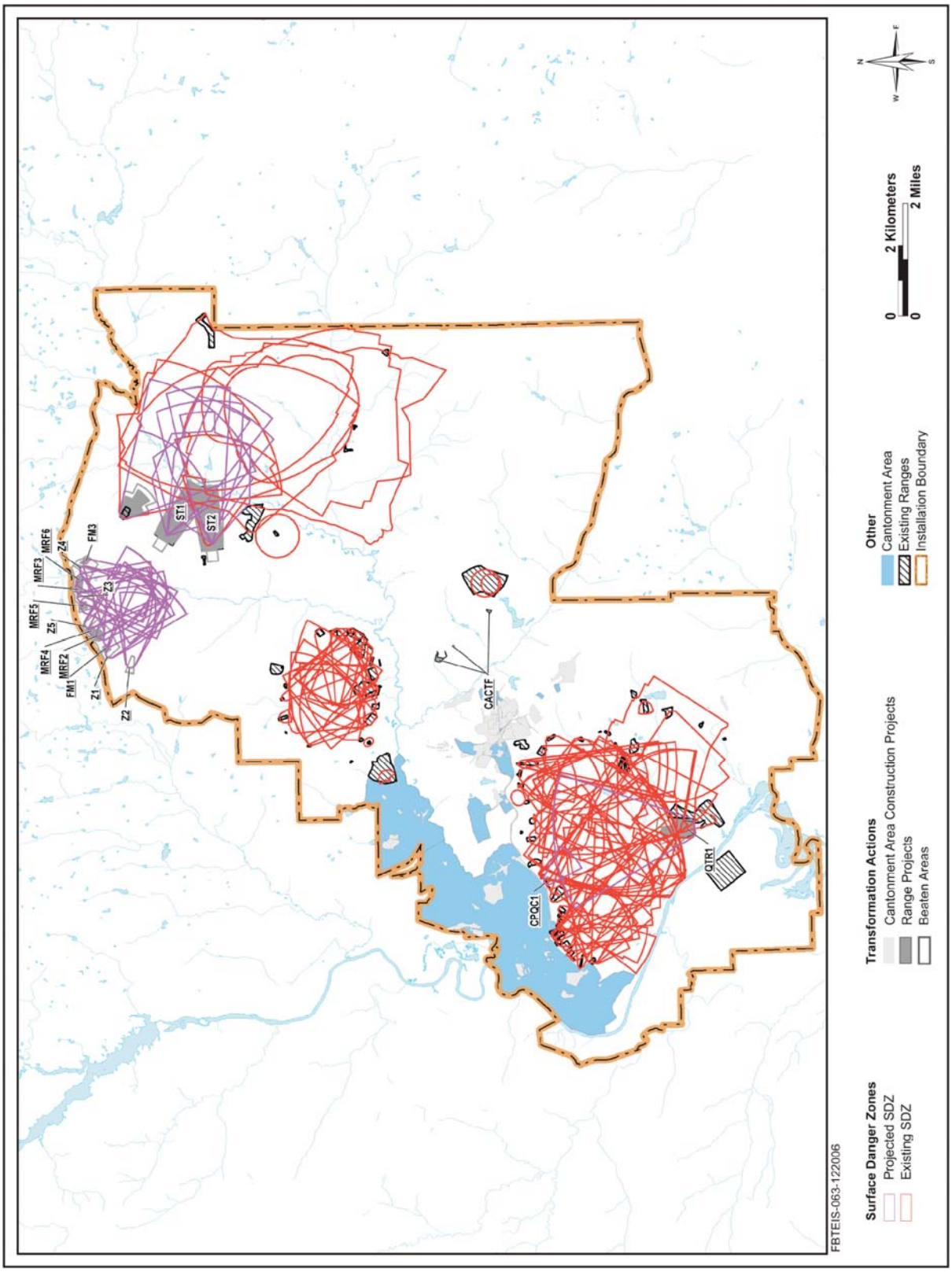


Figure 4.14-3: Proposed SDZs under Transformation Alternatives A and B

the Good Hope Maneuver Area that are in close proximity to existing residential areas. No fencing is present to discourage entry (advertent or inadvertent) to Fort Benning. As with Alternative A, the long-term solution would be to fence the Installation boundary. This is addressed as recommended mitigation in Section 4.13.3.

Construction Safety

Most of the proposed construction activities for Alternative B are the same as those for Alternative A and, therefore, the impacts to construction safety are the same as under Alternative A.

Explosive Safety

Explosive safety impacts would be the same for both alternatives since there are no differences between the alternatives relating to explosive safety.

Range Safety - Surface Danger Zones

Range safety and surface danger zones would be the same as presented for Alternative A.

As with Alternative A, there would be increased safety risks introduced within the training areas due to the increased tank and heavy vehicles traffic and ordnance use but implementation of all existing safety programs should minimize any adverse safety hazards. Unauthorized entry onto Installation lands could be minimized by erecting fences and ensuring that RSOs undertake thorough review of downrange activities prior to range use. Under these circumstances, safety would be protected and not be adversely impacted under either Alternative A or B.

4.14.3 MITIGATION MEASURES

4.14.3.1 Transformation Alternative A

A recommended minimization measure for safety is to fence the Installation boundary where residential areas abut active arms and training ranges. However, fencing may not deter trespassers. As mitigation for Alternative A, fencing along the northern boundary of the proposed small arms ranges in the Oscar Complex is recommended. This fencing would be erected in accordance with guidance for protective barriers provided in U.S. Army Field Manual 3-19.30, Physical Security (U.S. Army 2001b).

4.14.3.2 Transformation Alternative B

Under Alternative B, safety fencing is recommended along the Fort Benning boundary at locations where the proposed Good Hope Maneuver Area abuts adjacent residential areas or areas that could be accessed from adjacent areas. However, fencing may not deter trespassers. This fencing would be in addition to the recommended mitigation of safety fencing along the northern boundary of the Installation in the vicinity of the proposed Oscar Complex small arms ranges for Alternative A. As noted for Alternative A, security fencing should be erected in accordance with the guidance for physical barriers provided in U.S. Army Field Manual 3-19.30, Physical Security (U.S. Army 2001b).

4.15 CUMULATIVE IMPACTS

The CEQ defines cumulative impacts as the "impact on the environment which results from the incremental impact of the action(s) when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions" (CEQ 1508.7). These other projects all occur within a geographical (spatial) defined ROI or affected environment, which is defined in the following subsection. Projects presented may occur within the next 7 years, since they have the potential of occurring within the same time period as, or shortly after, the Transformation activities. Information for these projects has been obtained from the Final EIS for the DMPRC (Fort Benning 2004b), planning documents of surrounding communities, and Fort Benning personnel. In addition, the DMPRC EIS considered the cumulative effects analysis and provided many of the thresholds.

4.15.1 Region of Influence

The overall ROI for the purposes of this EIS is shown in Figure 4.15-1 and consists of Chattahoochee, Muscogee, Marion, and Talbot counties, Georgia and Russell County, Alabama; this ROI includes the cities of Columbus, Buena Vista, and Cusseta, Georgia; Phenix City, Alabama; and the Fort Benning Military Installation. Individual ROIs have also been established for some media (or resources); these ROIs may be larger or smaller in size than the overall ROI and are defined in subsequent sections. Please note that the numbers used in the figure are not sequential but represent a tracking system used by the Installation.

4.15.2 Past and Present Actions within the ROI

Numerous projects related to training improvements, cultural facilities, residential developments, and utility services are being undertaken at Fort Benning. Recently completed and ongoing projects with the potential to affect the ROIs are discussed below; each project is also identified on Figure 4.15-1 by its associated number in *parentheses*. In accordance with CEQ's guidance, actions identified herein are focused on those that are relevant and useful in analyzing whether or not the reasonably foreseeable effects of the Transformation alternatives may have a continuing, additive, and significant relationship to those effects in the ROI.

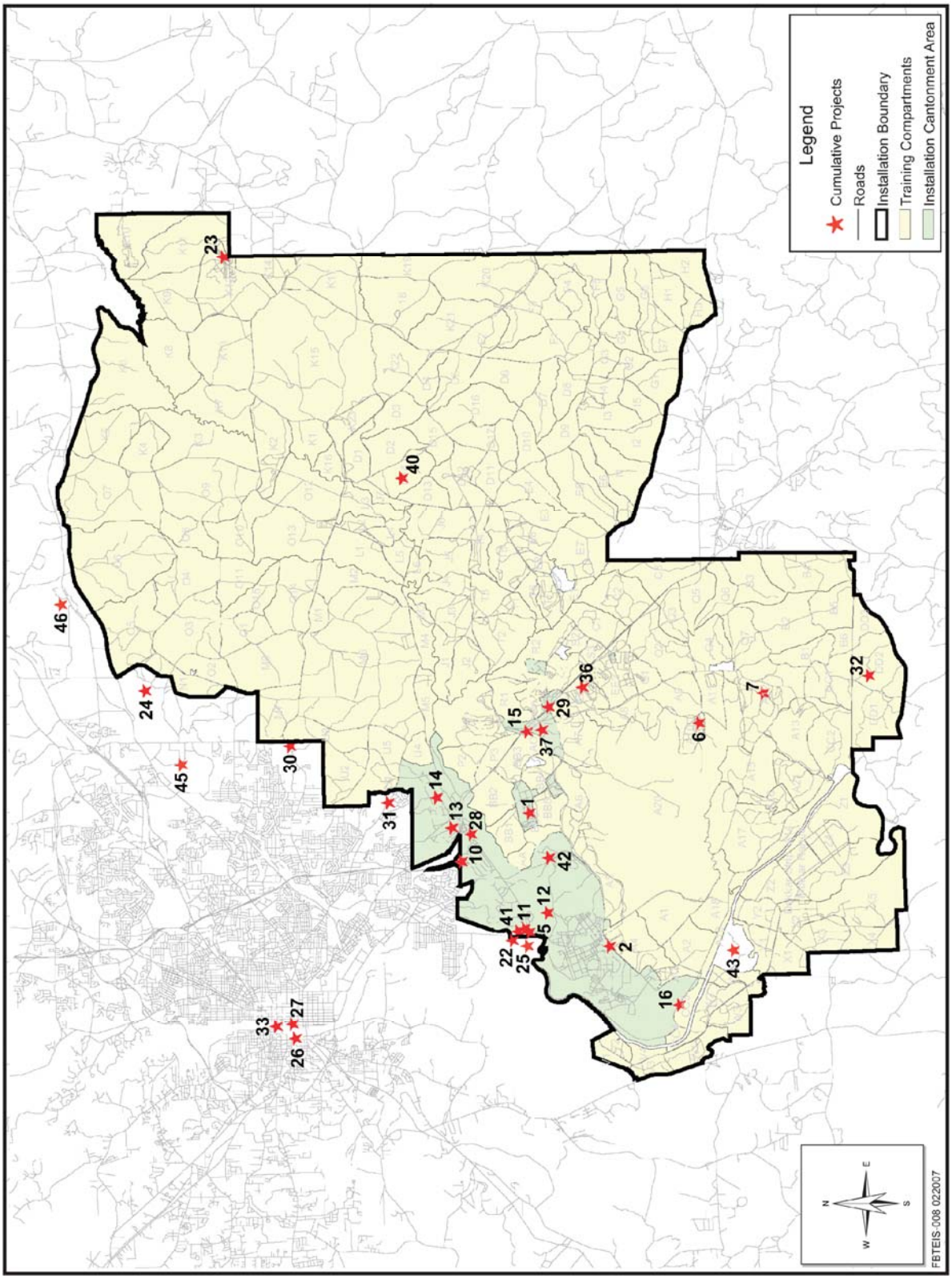


Figure 4.15-1: Projects Considered for Cumulative Effects

Recently Completed Actions at Fort Benning

- Privatization of the Water and Wastewater Treatment System (*5*) (FY04) – The wastewater treatment system at Fort Benning, which consists of three facilities and a network of underground piping, has been privatized. The contract for the system includes the day-to-day upkeep of the system and requires the contractor to abide by applicable federal, state, and Installation policies and guidelines. The process includes either the "mothballing" or demolition to slab of the existing water and wastewater treatment facilities and the construction of a series of new underground utility transport lines, for the purpose of connecting the existing on-Post facilities to the new owner's off-Post facilities. +During the construction of these connection lines (18 to 24 months), the new owner will utilize the on-Post facilities. Approximate size of the overall project area is 50 to 60 acres. An EA, FNSI, and Supplemental EA were prepared for this action.
- Communications Tower (*36*) (FY04) – A communication tower was constructed in the South Harmony Church area, west of Cusseta Road and south of El Caney Road.
- Installation of Anti-Terrorist/Force Protection Measures (*10 through 16*) (FY03) – This consisted of the construction of an enhanced physical security perimeter barrier around the Installation's four cantonment areas that included either fence, guard rail, or use of existing natural barriers (e.g., streams and steep ridges) and establishment of permanent access control points at the Installation's seven entry points. Drainage for perimeter roads and erosion control measures were required, in addition to protective lighting at the seven access control points. An EA and FNSI were prepared for this project (Fort Benning 2003f). Approximate size of the overall project area is 20 to 25 acres.
- Barracks Project (*2*) (FY03) – Work consisted of the construction of a new barracks complex along Dixie Road, Main Post, Fort Benning, GA. The new barracks are located across from the existing Easley and McAndrews ranges. The project also included the demolition of six existing buildings. Approximate size of the overall project area is 30 to 35 acres.

Columbus and Fort Benning completed a "Land Exchange," (*24, 32*) (FY99) swapping two parcels of land, known as the North Tract and the South Tract, for which an EIS and ROD were prepared (Fort Benning 1999), as well as a BA and BO. Columbus is currently developing the 2,470-acre North Tract (*24*) located adjacent to the Fort Benning northwestern boundary line. This development will be primarily industrial, mixed with recreational land use. In exchange, Fort Benning received the South Tract land (*32*), a 2,536-acre parcel located at the southernmost end of the Installation, which is currently used by the Installation for training and land management (reforestation and habitat restoration) purposes.

Ongoing Actions at Fort Benning

- Residential Communities Initiative (RCI) (*42*) (FY05-15) – Consistent with authorities contained in the 1996 Military Housing Privatization Initiative, Fort Benning has transferred responsibility for providing housing and ancillary supporting facilities to Fort Benning Family Communities LLC. Fort Benning conveyed 3,945 existing family housing units of which 754 will be renovated (482 non-historic and 272 historic) and 2,930 will be demolished; 3,185 new units will be constructed for an end state inventory of 4,200 housing units (which includes 261 "no-work" units, 221 historic and 40 non-historic). In addition, the Fort Benning Family Communities LLC has been provided with a 50-year lease of the underlying land, as well as an additional 536 acres for lease to site new housing. An EA, FNSI, and errata sheet have been prepared for this action (Fort Benning 2005f).
- New Post Exchange Army and Air Force Exchange Service (AAFES) (*21*) (FY06) – Work consists of constructing a new AAFES on the land across the street from the existing AAFES on Custer Road, Main Post, Fort Benning. The old AAFES will be abandoned and reutilized in another format; it is not scheduled for demolition at this time. Work will additionally consist of landscaping and parking lot construction. Approximate size of the overall project area is 10-15 acres. An EA and FNSI have been prepared for this action (AAFES 2005).
- Ongoing Improvements and Training at Ranges and other Training Areas (*No map location shown, but predominantly along Dixie Road*) (FY06) – Minor range construction and target maintenance projects are ongoing activities at Fort Benning. These types of improvements have been assessed for environmental effects and NEPA documentation has been prepared for these ongoing activities. Additionally, training activities are ongoing at ranges and other training areas; there have been some recent increases in training operations of the same type and nature as historical training activities.
- Infantry Platoon Battle Course (IPBC) (*7*) (FY06) – Work consists of the construction of a new IPBC in the A12 portion of Fort Benning and would include tree clearing, grading, cut-and-fill, construction of the range and target firing area, and placement of targetry, in addition to the construction/emplacement of support facilities, access roads and trails, and associated utilities. Approximate size of the overall project area is 1,000 acres. An EA was prepared for this action (Fort Benning 2005g).
- The Digital Multi-Purpose Range Complex (DMPRC) (*40*) (FY05) is being constructed near the D13 area on Fort Benning. The DMPRC will provide a state-of-the-art range facility for conducting advanced gunnery exercises in a realistic training environment. Support facilities associated with the DMPRC will be located adjacent to the range. The DMPRC design includes

as many as 22 water crossings (average dimensions: 350 feet long by 29 feet wide each), and up to 1,500 acres of vegetation removal on the construction site is required. The DMPRC is being constructed on approximately 1,800 acres and an EIS was prepared (Fort Benning 2004b).

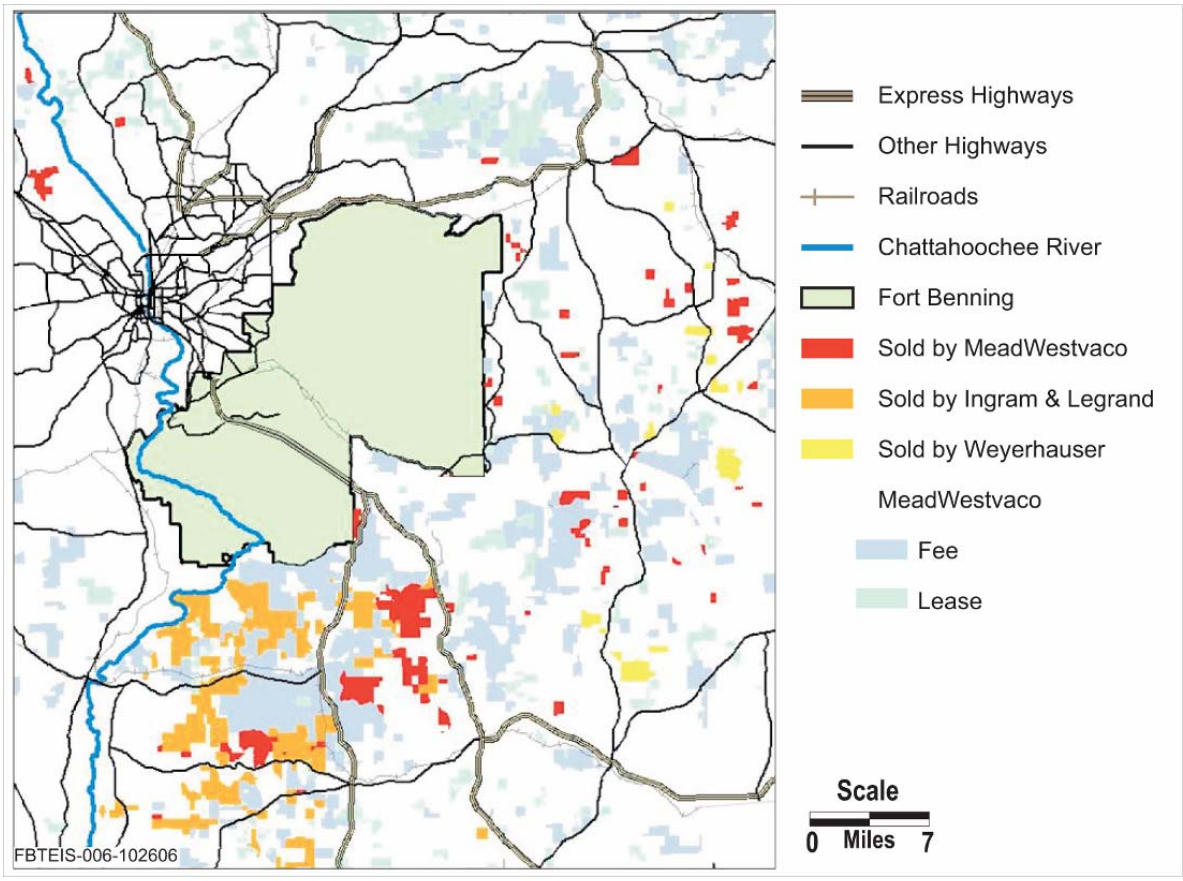
- Barracks Replacement, Kelley Hill, Phase III (*1*) (FY05) – Work consists of the demolition of existing buildings (9043, 9046, 9047, 9053, 9054, 9055, 9057, 9058, and 9074), the construction of new facilities, and landscaping around the new facilities in the Kelley Hill area of Fort Benning. Approximate size of the overall project area is 10 to 15 acres.
- Infantry Squad Battle Course (ISBC) (*6*) (FY04) – Work consists of the conversion of an existing Fort Benning range, Galloway Range, into an Infantry Squad Battle Course and includes the removal/replacement and upgrading of existing targetry, the construction of associated support facilities, the demolition of currently existing temporary buildings on site, and associated utility placement. Approximate size of the overall project area is 180 to 190 acres.
- National Infantry Museum (*22*) (FY04) – A new infantry museum is being constructed on the land between South Lumpkin and Fort Benning Roads on the Installation's border with the City of Columbus. Work will also consist of establishing a World War II Company Street. The existing museum building, located on Baltzell Avenue, Main Post, Fort Benning, would be reutilized in another manner, but would not be demolished. Approximate size of the overall project area is 20 to 30 acres. An EA, FNSI, and errata sheet were prepared for this action by the Army (Fort Benning 2004d).
- Uchee Creek Campground Expansion (*43*) (FY07) – Approximately 19 acres will be improved at the existing Fort Benning Uchee Creek Campground. The campground is found in Russell County, AL, adjacent to the Chattahoochee River. Improvements include construction of up to 29 additional pull-through recreational vehicle sites, ten chalets, a new playground, as well as upgrades to existing playgrounds and common areas. An EA and FNSI were prepared for this action by Fort Benning in February 2007 (Fort Benning 2007.
- Stationing Actions (*no map locations*) (FY06 and FY07) – Some stationing actions (both activations and deactivations) that involved moving Soldiers, staff, and equipment have been evaluated by Fort Benning as to the level of impacts they would introduce to the human and natural environment and have been categorically excluded (i.e., the actions do not require an environmental assessment or EIS). The activations include the: 362nd Multi-Role Bridge Company, 92nd Military Police Battalion, 2nd Battalion, 1st Cavalry, 24th Ammunition Heavy Lift Platoons; deactivations include the 756th Medical Detachment, 1/30 Infantry Battalion 3ID (Unit of Action), 36th Engineer Company, and other activations that would not introduce impacts at the Installation.

Recently Completed and Ongoing Actions Outside of Fort Benning

The proposed Transformation activities have the potential for cumulative effects on the following actions outside of Fort Benning:

- Forest industry divestment of timberlands (*see graphic below*) (ongoing) – Much of the land surrounding the northeastern, eastern, and southern boundaries of Fort Benning formerly held by timber companies including MeadWestvaco, Ingram and Legrand, and Weyerhaeuser has been sold in recent years as these timber companies are divesting of their forestland holdings. MeadWestvaco continues to own large, contiguous tracts of land south of and adjacent to and northeast of Fort Benning. Some of these lands are currently owned in fee and some are leased. The graphic below (adapted from TNC 2006b) depicts the lands in the vicinity of Fort Benning that have been sold by these timber companies and those that are currently held in fee or leased by MeadWestvaco.

Divestment of Timberlands in the vicinity of Fort Benning



- Safety improvements to the Highway Interchange at I-185/U.S. Highway 27/280 in Columbus (to the north of Fort Benning) (*28 and 29*) (FY06/07) – Highway improvements are currently

underway and consist of reconstructing the interchange 105 at I-185 and U.S. Highway 27/280. Safety improvements also include removing and replacing guardrails and possibly installing medians along 10.5 miles of U.S. Highway 27/280. Approximate size of the overall project area is 5 to 10 acres.

4.15.3 Reasonably Foreseeable Future Actions within the ROI

There are several construction projects planned for implementation on Fort Benning proper during the same time frame as the projects analyzed in the alternatives in this EIS, FY 2007-2013, as well as soon thereafter. Some of the projects have been previously identified as part of the Installation's master planning process and have been preliminarily assessed for environmental impacts via the NEPA process; however, each project is still pending compliance with NEPA and final approval, except as indicated below. Other reasonably foreseeable actions on Fort Benning, such as routine road and tank trail maintenance, range and building maintenance, building renovations, unit motor pool maintenance, troop training, and routine airfield activities, would continue in the current manner on an annual basis.

The projects relevant to cumulative analysis in the ROI are listed below. In addition, each project is identified on Figure 4.15-1 by its associated number. FY refers to the period between 1 October and 30 September of each year and is the period the Army uses for budget phases.

Within Fort Benning

- National Guard Pre-Ranger Complex Expansion (*37*) (FY06/07) – The National Guard Pre-Ranger Complex is located within the South Harmony Church area. The National Guard proposes to establish an area south of First Division Road that would be used for field training exercises.
- DMPTR (*23*) (FY15) – Work would consist of upgrading the existing Hastings Range to a DMPTR and would include removal/replacement and upgrading of existing targetry, expansion of the existing tank trails, construction of associated support facilities, demolition of currently existing temporary buildings on site, and associated utility placement. Approximate size of the overall project area is 1,000 acres (Fort Benning 2004b)
- Central Issue Facility (*41*) (FYTBD) – Expansion of the existing Central Issue Facility on Main Post. The existing Central Issue Facility (Building 2386) has exceeded its maximum storage capability due to the Global War on Terrorism requirements.

As mentioned in Section 2, the Transformation activities that have been scheduled for construction in FY 2014 have not been approved or funded and are not required for BRAC implementation or for the relocation of the Armor School, ; however these projects were initially identified to support Transformation or ongoing missions at Fort Benning to support the increase in operations and Installation

population. These reasonably foreseeable actions are addressed as potential future projects and their potential impacts considered herein. The Transformation projects are shown in Figure 4.15-2 and listed in Table 4.15-1. The list of proposed projects described in the table is intended to be comprehensive, but during the course of implementing the Transformation action, unidentified projects may arise. The listed projects may be modified or locations moved, or new projects added. The future projects will be evaluated and the appropriate NEPA evaluation undertaken. This evaluation could result in projects that are categorically excluded (i.e., would not require either an environmental assessment or EIS), require an assessment, or would be of such an extent that an EIS may be called for. Ongoing Installation categorically excluded projects (for past and present actions) have already received environmental impact scrutiny from EMD and do not present cumulative impacts.

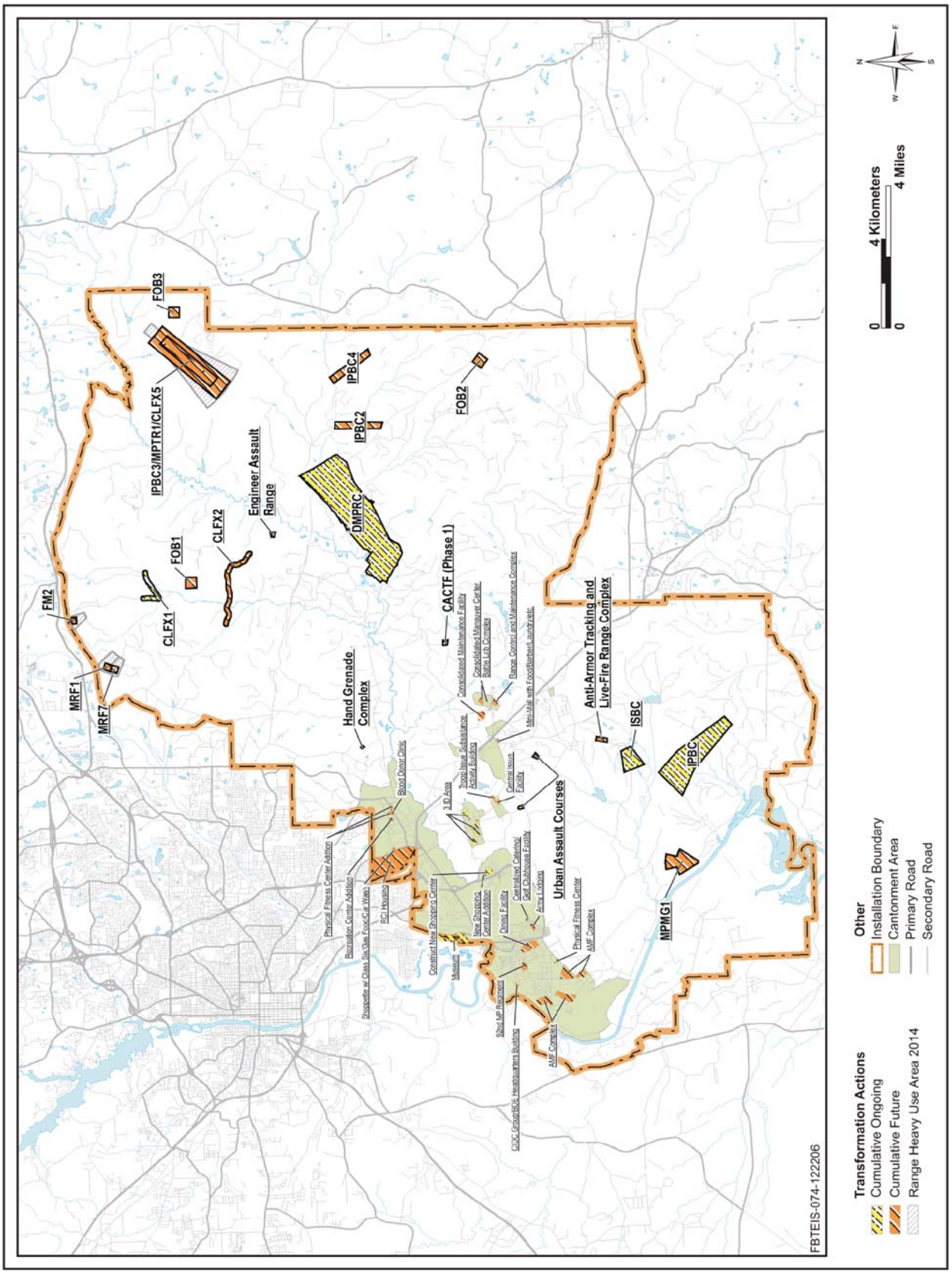


Figure 4.15-2: Actions for Cumulative Analysis at Fort Benning

Table 4.15-1: Transformation-Related Future Project List

Geographic Area	Project Title	Total Potential Area of Disturbance (in acres)
Sand Hill	Blood Donor Center	32
	Shopette with Class Six/Gas/Food/Car Wash	
	Recreation Center Addition	
	Physical Fitness Center Addition	
Harmony Church	Consolidated Maintenance Facility	70
	Mini-Mall with Food/Barber/Laundry/etc.	
	Range Control and Maintenance Complex	
	Consolidated Maneuver Center Battle Lab Complex	
	Garrison Support Facilities	
Kelley Hill	Expand Shopping Center	18
	Central Issue Facility	
	Troop Issue Subsistence Activity Building	
	598th DS Maintenance Facility (36th ENG Group)	
Main Post	Organizational Storage Building (36th ENG Group)	296
	Tactical Equipment Shop (36th ENG Group)	
	Vehicle Maintenance Facility and Shop (36th ENG Group)	
	Multi-Role Bridge Company Maintenance Complex	
	36th ENG Group Headquarters	
	Veterinary Facility	
	Army Lodging	
	Centralized Catering/Golf Clubhouse Facility	
	Lodging and Dining Facilities	
	CIDC Group/BDE Headquarters Bldg	
North of U.S. Highway 27/280 Ranges	3 Forward Operations Bases (FOBs)	1,413
	Engineer Assault Range	
	3 IPBCs	
	MPTR	
	Hand Grenade Complex	
	2 MRFs	
	2 CLFXs	
	1 Fire and Movement Range	
South of U.S. Highway 27/280 Ranges	Anti-Armor Tracking and Live Fire Range Complex	275
	Multi-Purpose Machine Gun Range	
	2 Urban Assault Courses	

Outside of Fort Benning

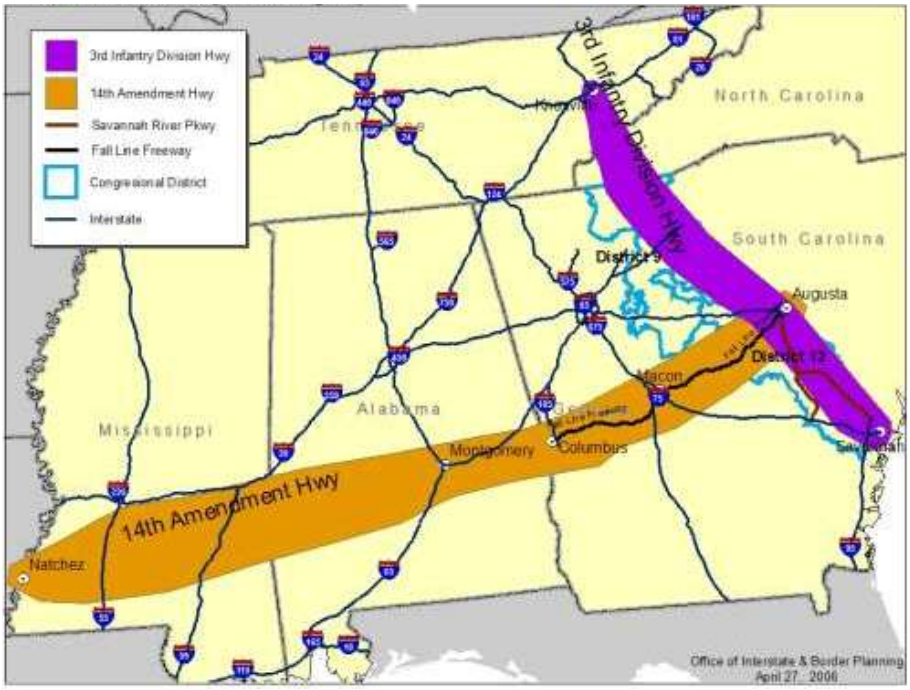
The projects listed below are those that occur beyond the Fort Benning boundary but within the ROI and were determined to be relevant for cumulative analysis.

- Oxbow Project, Lumpkin Road (*25*), Columbus, GA (date undetermined; tentatively scheduled to begin within the next 2 to 3 years) – Work would consist of the further development of the Oxbow Meadows Environmental Learning Center by creating additional outdoor classrooms, a series of walking trails, a series of hiking trails, pavilion, and construction (to include dredge and fill) of a 350-slip capacity marina on the Chattahoochee River. Approximate size of the overall project area is 10 to 15 acres (Fort Benning 2005h). The site is located off of South Lumpkin Road to the west of the new National Infantry Museum site. Development of a hotel and conference center has also been proposed in this area (Jones 2006).
- Phenix City Riverwalk Phase II, (*26*) Phenix City, AL (date undetermined) – Work would consist of the construction of a hiking/biking trail between the 13th and 14th Street bridges in Phenix City. Approximate size of the overall project area is 5 to 10 acres (Fort Benning 2005a).
- Alternative Transportation System, Phase II, (*27*) North Riverwalk, Columbus, GA (date undetermined; scope of work decision pending implementation of Chattahoochee River Restoration Project, below) – Work would consist of continuing to construct the hiking/biking trail (Riverwalk) northward along the Chattahoochee River from 12th Street to 14th Street. Approximate size of the overall project area is 5 to 10 acres (Fort Benning 2005h).
- Widening/Improvements to Buena Vista Road, (*30*) Columbus, GA (FY07) – Work would consist of widening and reconstructing 1.15 miles of an existing two (2) and four (4) lane road to a four (4) through-lane system with turn lanes and medians, as required. Approximate size of the overall project area is 5 to 10 acres (Fort Benning 2005h).
- Widening/Improvements to St. Mary's Road, (*31*) Columbus, GA (date undetermined) – Two projects are planned to provide for (1) the widening of an 1-mile stretch of St. Mary's Road from Buena Vista Road to Robin Road (to be completed by the end of calendar year 2007) and (2) widening and reconstruction of a 1.25-mile stretch of St. Mary's Road just west of Fort Benning from Robin Road to Northstar Drive. Intersections are being reworked and the existing bridge over I-185 is being widened as part of this project (Georgia Department of Transportation 2006). Approximate size of the overall project area is 10 to 20 acres.
- Chattahoochee River Restoration (*33*) (FY07) – Work would consist of breaching the Eagle-Phenix Dam and the City Mills Dam along the Chattahoochee River, in order to restore the historic and natural course of water along this portion of the river, which extends from just north

of the City of Columbus and down to its most southern edge. The desired outcome is to increase Fall Line shoal fish habitat and recreation (Eubanks and Buckalew 2005). Approximate size of the project area is 2.5 miles (approximately 35 acres).

- Tri-State Water Disputes (*throughout ROI*)– For more than a decade, the states of Georgia, Alabama, and Florida have been in dispute regarding the withdrawal and use of water from the Apalachicola-Chattahoochee- Flint and Alabama-Coosa-Tallapoosa River basins. The Apalachicola-Chattahoochee- Flint River basin is within the ROI. The Chattahoochee River originates in the Blue Ridge Mountains of the Appalachian Highlands of northeast Georgia, where it flows southwesterly for 120 miles before turning south and flowing approximately 200 miles along the Georgia and Alabama borders, and a small part of the Florida border. The Flint River includes Blackshear Dam and Lake, Flint River Dam, and Lake Worth. The river originates south of Atlanta, GA, in the Piedmont Province and flows southerly to the upper Coastal Plain, where it joins the Chattahoochee River in Lake Seminole to form the Apalachicola River. The Apalachicola River includes the Corps-operated Jim Woodruff Lock and Dam and Lake Seminole along its length. The river lies entirely within the Coastal Plain along the 180 miles of its length and flows south across northwest Florida from GA to Apalachicola Bay in Florida. In 1997, Congress ratified two interstate water compacts agreed to by the GA, AL, and Florida state legislatures concerning withdrawals of water and public usage from the two river basins. These compacts put litigation on hold and allowed the states to work together to manage the resources; however, the states could not reach an agreement during these compacts and they expired without resolution (in 2003 for the Apalachicola-Chattahoochee- Flint River basin). Active, on going discussions between the states address water supply and allocation at various scales and locations throughout the basin (Upper Chattahoochee Riverkeeper 2006).
- Kia Automotive Assembly and Manufacturing Plant (*to the north of the map window)* – Construction began on a new $1.2 billion automotive assembly and manufacturing plant in early 2007, located in West Point, GA (near LaGrange) about 30 miles north of the Columbus/Phenix City area. The 2.4 million square foot plant will be situated on a site covering nearly 28 million square feet and is scheduled to begin production in 2009 and is expected to produce 300,000 vehicles per year at full capacity. In addition to the expected employment of about 3,000 people, an additional 2,600 employees are expected to be hired at five supplier facilities in Georgia (Georgia Governor 2006). The supplier facilities are considering locating in the Columbus/Phenix City area. Secondary development is expected within the ROI in the form of retail, commercial, residential-type growth (Jones 2006).

- Aflac, Incorporated expansion (*45*) – Aflac, an international holding company based in Columbus, GA, is one of the area's largest employers and is expanding to accommodate 2,000 new administrative professional employees in the next 4 to 7 years. An additional 340,000 square feet of office space is being constructed at the company's Paul S. Amos Campus at Corporate Ridge in Columbus. The new construction is the company's third major expansion project within 7 years. In 1998, Aflac established its Computer Service Center, which employs 600, and, in 2001, the company opened the Corporate Ridge office, which handles claim processing and call center operations (Aflac 2005).
- 14th Amendment Highway Corridor (also known as Proposed Interstate 14) (*46)* – Section 1927 of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users, directed the U.S. Department of Transportation to study two new highway corridors. One links Augusta, GA, Macon, GA, Columbus, GA, Montgomery, AL and Natchez, MS. The other links Savannah, GA, Augusta GA and Knoxville, TN and is referred to in the statute as the 3rd Infantry Division Highway (also known as Interstate 3). FHWA has not formally designated highways, and uses the term corridors when referring to potential highways since no preferred alignment for these highways has been established. FHWA will study at minimum the cost of construction and



The eastern end of the 14th Amendment Highway Corridor alignment study area aligns with U.S. Highway 80 and includes the northern end of Fort Benning.

the steps needed to construct highways in both corridors. Determining a cost estimate will require some identification of such factors as alternative locations, the geographic and environmental impacts that will have to be addressed as well as, for example, land costs. The statute does not require the FHWA to make a recommendation on whether to build either corridor, and the FHWA does not intend to do so; rather, the studies will be sent to Congress and be available to State, regional, and local decision makers (FHWA 2006)

- ACUB Initiatives (*Fort Benning perimeter)* – In December 2002, Congress provided legislative authority to expand the Private Lands Initiative. Section 2684a of 10 U.S. Code allows military departments to partner with government or private organizations to establish buffer areas around active training and testing areas. The Army created the ACUB Program to implement these authorities. An ACUB allows an installation to work with partners to encumber land to protect habitat and training without acquiring any new land for Army ownership. Through ACUBs, the Army reaches out to partners to identify mutual objectives of land conservation and to prevent development of critical open areas. In turn, the military can conduct training and operations with little compromise while local communities' partnerships assume habitat, biodiversity, and wildlife management responsibilities (U.S. Army 2006d). The Nature Conservancy is Fort Benning's conservation partner charged with developing, planning, negotiating, and securing ACUB land interests. TNC has worked closely with Fort Benning, with staff on Post, since 1993. Key ACUB strategies are:
    - "no-development" lands in 1- to 3-mile zones around the northeastern and western sides of the installation, primarily for noise and smoke land use compatibility,
    - Fall Line habitat protection and restoration extending out along the northeast boundary as much as 10 miles, to secure viability of gopher tortoise and relict trillium off Post, as well as other associated rare species and wetlands, and provide future habitat for RCW, and
    - mature pine habitat protection and restoration, extending westward into Alabama providing similar Fall Line habitat, as well as the best opportunity for near-term RCW restoration and protection off Post by linking existing habitat.

  Possible future direction for the ACUB program is restoration and protection of pine uplands and riverine systems southward along the Chattahoochee River, offering similar potential for RCW restoration linked with existing habitat. Projects underway include two conservation easements under negotiation along the northeast boundary, with relict trillium, gopher tortoise, wetland, noise/smoke buffer, and future RCW relevance. The Fort Benning ACUB program requested $1 million in 2006, and received $800,000. It plans to request $3 million in 2007 and subsequent years (TNC 2006a and 2006b).

- Expansion of Hospitality Market (*throughout ROI*) – It is anticipated that Columbus will add nearly 350 hotel rooms or suites by the end of calendar year 2006 to meet the growing demand for conventions, business, military and leisure travelers. Plans are already in place to add an additional 200 rooms in 2007, a number that may continue to increase. The city's average hotel occupancy rate in 2003 was approximately 65 percent, as compared to the regional occupancy rate of 57 percent and the national occupancy rate of 59 percent. Many of the new and planned hotel developments are near Fort Benning, particularly on Victory Drive and near the new Infantry Museum site. The city also will continue to court conventions, meetings, corporate business, sports events, and leisure travelers. Columbus attracted nearly 965,472 visitors in FY 2005 and the city aims for more than 1 million annual visitors (Columbus Ledger-Enquirer 2006).
- Columbus Metropolitan Airport Growth (*northeast of downtown Columbus, not on map*) – According to the Master Plan Update (Columbus Airport Commission1994), the following have been recommended and are in varying levels of accomplishment: automotive parking lot expansion; relocating a taxiway, marketing to cargo and larger aircraft operators, and extending a runway.
- General urban growth (throughout ROI) – The urban growth associated with the Columbus Metropolitan Area has been robust over recent years and is expected to continue, particularly when considering the alternatives coupled with the aforementioned cumulative impact projects. A 2003 Government Accounting Office Testimony on the DoD's approach for managing encroachment used Columbus and Fort Benning as an example of rapid growth near a military installation; see figures in Section 4.2. The Army and Fort Benning have been working with the community to appropriately plan development near the Installation. The efforts have had some positive results, for example, the previously mentioned ACUB program. These types of projects are small housing and strip mall type developments, renovation, or rehabilitation of existing structures to allow for denser populations. Growth will still occur in the ROI, but under planning guidelines developed by the surrounding communities with input from Fort Benning, such as current zoning practices and the development of a JLUS.

4.15.4 Cumulative Effects under the No Action Alternative

Cumulative effects to all resources would remain similar to those impacts described under each of the No Action Alternative discussions for each resource. While this alternative is not viable for BRAC-directed actions, if the no action were to occur, no broad-scale construction would be undertaken and the approximate 14,400 people would not be relocated to the Installation. For each resource area, it was determined that there would be no adverse impacts associated with the No Action Alternative, therefore

no cumulative impacts are anticipated within the ROI (described for each resource category found in Sections 4.2 through 4.14).

4.15.5 Cumulative Effects under Alternatives A and B

Potential cumulative impacts within the ROI would be the same if Alternative A or B were implemented; therefore, the following discussion applies to both alternatives. This approach is justified because the amount of people that would move is the same under both alternatives, the number of facilities that would be constructed are the same, the type of operations would not differ between the two alternatives, and the overall area disturbed would be within Fort Benning and would not differ to such an extent to cumulatively change impacts. For cumulative analysis, the Transformation action, its impacts (direct and indirect), and projects constructed between 2007 through 2013 are considered in their totality—each year will not be analyzed separately.

The resource areas covered in this section reflect those considered in the impact analysis in Section 4.2 through 4.14. The threshold criteria for cumulative impacts are the same as those described in the corresponding impact section but reiterated here for ease of reading.

4.15.5.1 Land Use

Potential cumulative impacts on land use would be considered adverse for the Transformation alternatives if one or more of the following occurs:

- They are incompatible with surrounding land uses; or
- They change land uses in such a way that mission-essential training is degraded; or
- They are inconsistent or in conflict with the environmental goals, objectives, or guidelines of a community or county comprehensive plan for the affected area.

Past and present development has framed the modern land use pattern for the ROI. For Fort Benning, this includes the existing placement of facilities, training areas, infrastructure, and associated circulation patterns. For lands adjacent to Fort Benning, this includes the trend of increasing urbanization resulting in development pressures on the principally rural agricultural lands surrounding the Installation and comprehensive plans addressing the communities' goals and objectives directing growth. There have been long-standing interrelationships between the land use and development throughout the communities associated with Fort Benning and the operations and growth of the Installation. Many of those who are stationed at or work on Fort Benning, live outside the Installation. Regardless of where they live; however, most take part in activities in the surrounding communities. Development of schools, utilities infrastructure, neighborhoods, and services are all influenced by this interrelationship.

Within the cantonment areas, past, present, and future projects are occurring in Kelley Hill and Main Post. These include the development of approximately 70 acres in Kelley Hill of barracks for the 3 ID and 140 acres in the Main Post for construction of the new AAFES Shopping Center (approximately 22 acres), physical fitness center (approximately 6 acres), and the Infantry Museum (approximately 112 acres). These projects are being constructed in areas that have typically been disturbed, but do not displace other land uses. The projects have been appropriately sited compatible with existing land uses. Development proposed with the Transformation actions after 2013 considered compatibility with these past, present, and future projects and many (such as the museum support buildings) are interactive. These include the following.

- Harmony Church: Consolidated Maneuver Center Battle Lab Complex (approximately 15 acres), Range Control and Maintenance Complex (approximately 17 acres), Consolidated Maintenance Facility (approximately 31 acres), Consolidated Maneuver Center Battle Lab Complex (approximately 3 acres), and Mini-Mall with Food/Barber/Laundry/etc. (approximately 5 acres)
- Kelley Hill: Troop Issue Subsistence Activity Building (approximately 6 acres) and Central Issue Facility (approximately 10 acres)
- Main Post: CIDC Group/BDE Headquarters Building (approximately 4 acres), Centralized Catering/Golf Clubhouse Facility (approximately 8 acres), Army Lodging (approximately 15 acres), Dining Facility to Support Army Lodging (approximately 57 acres), New Shopping Center Addition (approximately 1 acre, and AMF Complex (36th Engineering Corps) (approximately 192 acres)
- Sand Hill: RCI Housing (approximately 356 acres), Physical Fitness Center Addition (approximately 10 acres), Recreation Center Addition (approximately 7 acres), Shoppette w/ Class Six/Gas Food/Car Wash (approximately 7 acres), and Blood Donor Clinic (approximately 2 acres)

The largest scale future development within the cantonment areas is the RCI housing project in the Sand Hill area; the remainder is redevelopment projects (primarily in the Main Post, much of which is associated with the 36th Engineering Corps complex). The land use associated with these projects is consistent with the land use configuration that would result from the combination of existing and proposed Transformation projects.

Outside of cantonment areas, the past, present, and future projects include the development of a CACTF (approximately 11 acres), DMPRC (approximately 2,340 acres), IPBC (approximately 962 acres), ISBC (approximately 186 acres), UACC (approximately 7 acres), and a Combat Live Fire Exercise Course (CLFE) (approximately 109 acres). Land use and range operations compatibility was taken into

consideration when siting these facilities. Potential future projects that could interact with the Transformation proposed action projects, within the ranges and training areas, include the following.

- Range Development North of U.S. Highway 27/280: two Modified Record Fire Ranges (approximately 24 acres each), Fire and Movement Range (approximately 20 acres), three Forward Operating Bases (approximately 60 acres each), one Hand Grenade Complex (approximately 2 acres), two stand alone IPBCs (approximately 164 acres each), one IPBC integrated with a Multi-Purpose Training Range (MPTR) and CLFX (approximately 370 acres total), one CLFX (approximately 200 acres), and one Squad Defense Range (approximately 10 acres)
- Range Development South of U.S. Highway 27/280: an Anti-Armor Tracking and Live Fire Range Complex (approximately 25 acres), a Multi-Purpose Machine Gun Range (approximately 238 acres), and an Urban Assault Course (approximately 12 acres).

The heavy ordnance use areas associated with the training ranges are estimated to encompass approximately 250 acres. These past, present, and future projects, in combination with the proposed Transformation action within the training areas and ranges, would further contribute to the complexity and density of land uses throughout the Installation. The majority of the larger-scale development would occur north of U.S. Highway 27/280 adjacent to similar existing training and range assests so there would be no incompatible land use to training and range areas within Fort Benning. Because these actions are occurring within the Installation boundaries, there would be no incompatibility anticipated with land uses outside Installation boundaries.

The impact of ongoing and future growth and urbanization and encroachment in the communities adjacent to and outside of Installation boundaries is a potentially adverse impact that could result in degradation of the mission essential training at Fort Benning if left unchecked. The communities surrounding Fort Benning are planning for the anticipated growth expected with the proposed Transformation action, including development of residential areas, schools, and services. The 3,000-ft planning zone is recognized in the comprehensive planning documents for Muscogee County/Columbus and Chattahoochee County/Cusseta, but additional land use controls are lacking. It remains to be seen how compatibility within this 3,000-ft planning zone will be addressed in the comprehensive plan updates for Harris, Talbot, and Marion Counties. Transformation action alternatives may have incremental adverse impacts to land use when considering past, present, and future actions in the ROI.

4.15.5.2 Aesthetics and Visual Resource

Impacts for aesthetics and visual assessments are considered to be adverse if one or more of the following criteria are found to be true.

- Changes to form, line, color, and/or texture substantially degrade an existing viewshed or alter the character of a viewshed by the introduction of anomalous structures or elements.
- Changes would result in viewers' expectations (measured against the relative importance of those views) changing to a negative impression of the viewshed. The emphasis of this criterion is on views from public view areas.

Past, and present construction and renovation actions have minor effect on the existing viewsheds and site character both within and outside of the Installation. While new construction would change some of the existing underdeveloped character of the Installation, new buildings would complement the existing surrounding land uses and architectural character. To the greatest extent possible, site planning would retain wildlife habitats, natural buffers, and thick forest cover to balance the developed and open areas.

Within Fort Benning, future projects are also expected to be consistent with the aesthetic quality of the surrounding buildings. New construction is expected to consolidate tenants from run-down WWII structures and off-Post leased facilities into efficient facilities that would be consistent with the theme of their respective planning zones and follow the Georgian Revival and Colonial architectural styles consistent with the rest of the Post. Consequently, these project impacts would not be adverse when considering the effects of Transformation actions within the Installation, as long as existing regulations and guidance provided in the Installation Design Guide (IDG) are followed for all new construction and renovation projects. Transformation actions, along with past, present, and future projects within Fort Benning boundaries have little incremental or interactive impacts with those found outside the boundaries; therefore, no adverse cumulative impacts are anticipated to aesthetics and visual resources. No viewsheds would be degraded, no negative impressions created in public view areas, and illumination would not cause disturbance to adjacent areas.

4.15.5.3 Socioeconomics

For purposes of this analysis, social and economic changes are considered adverse if they fall outside the historical range of economic variation within the ROI, refer to section 4.4.2 for further definition. As with the ROI under environmental consequences, the region of influence for cumulative impacts includes the counties where the Installation is located and those that could potentially be impacted, both directly and indirectly, by past, present, and future actions. This is justified because of the considerable increase

in population under the Transformation action and the potential to impact surrounding counties—areas that are considered in past, present, and reasonably foreseeable actions.

Rapid growth in the region is anticipated from the Transformation action and from the anticipated expansion of Aflac and the construction of the new Kia plant. These projects would add to the construction spending both at Fort Benning and in the region. Additional spending would have positive economic effects on employment generation, income, and sales volume. Although all economic impacts as measured by the EIFS model resulted in outputs that did not exceed historical RTV values, additional spending for all of these activities could potentially have moderate beneficial economic development impacts. Housing would need to expand in the overall region to support these activities and increased demands for public services such as schools, hospitals, and police/fire departments would need to be met. It is not anticipated there would be adverse cumulative impacts, because these communities are prepared to meet these demands.

4.15.5.4 Transportation

The following criteria have been developed to assess the transportation cumulative impacts, refer to Section 4.5.2 for more detailed threshold information. No adverse impact is anticipated if short- or long-term changes to the traffic patterns and level of service do not change existing conditions to cause an intersection to fail. An intersection is said to have failed when it reaches LOS E or worse. Moderate impacts would occur if short- or long-term changes to the traffic patterns and level of service that would cause an intersection to perform more poorly as a result of implementing that past, present, or future action in conjunction with what is anticipated under the Transformation action. A drop from LOS A to LOS C, or from LOS B to LOS D, would be considered moderate. Adverse impacts in the short or long-term would result if changes to the traffic patterns and level of service would cause an intersection to fail that was not failing under existing conditions. There are two types of cumulative impacts: on Post and at entry/exit gates and access points off Post.

On Post. Within the Post, the analysis of the Transformation action shows that traffic impacts are significant in only a few intersections. The incremental effect that the past, present, and future projects would have in addition to the Transformation action is not likely to change the level of impacts anticipated under the Transformation action, considering that the traffic increases represent less than 10 percent of the number of trips generated under the Transformation action (Alternative A or B) for three of the four cantonment areas (see Table 4.15-2).

Table 4.15-2: Trip Generation Comparison – Cumulative versus Transformation Actions

Location		AM Out	PM Out	AM In	PM In
Main Post	Additional Cumulative Trips	382	978	297	879
	Transformation Action	5,048	12,274	12,532	9,920
	Percent Increase	8%	8%	2%	9%
Kelley Hill	Additional Cumulative Trips	45	242	98	201
	Transformation Action	326	610	607	577
	Percent Increase	14%	40%	16%	35%
Harmony Church	Additional Cumulative Trips	81	234	142	227
	Transformation Action	5,441	11,039	10,667	5,955
	Percent Increase	1%	2%	1%	4%
Sand Hill	Additional Cumulative Trips	211	587	122	520
	Transformation Action	4,600	6,798	4,444	5,931
	Percent Increase	5%	9%	3%	9%

The projects to be implemented by Fort Benning recommended (described in Section 4.5.3) are expected to accommodate these increases in traffic. For example, Dixie Road is the most congested in the Main Post. The combination of the recommended projects from Fort Benning's Comprehensive Transportation Study (Fort Benning 2006g) would double the number of lanes for its entire length (from two to four lanes) and add an overpass. These projects also would add left turning lanes and coordinate existing and new traffic signals.

The Kelley Hill cantonment would experience the highest percentage increase in traffic from the projects. Again, the most congested intersections in this cantonment area are on Dixie Road/ First Division Road. The capacity of this road also would be expanded in this area and the intersections are expected to be able to handle the increase in traffic. This is especially true considering that this cantonment area has several possible access points: Marne Road (east to U.S. Highway 27/280 or west to Lindsay Creek) and Ivy Road (south).

Off Post: The growth identified in both action alternatives has the potential to affect the transportation network off Post. The best way to indicate where this may occur would be to examine increased traffic volumes at the various Fort Benning ACPs. If any of the ACPs experience a substantial increase in traffic volumes, it is reasonable to assume that the off-Post transportation network serving the affected ACP would also experience increased traffic volume. The critical time at the ACPs is the AM peak hour when traffic entering the Post is heaviest. This would be the primary indicator of potential impacts off Post. Considering that gate security needs to inspect the vehicles before entering, this would be the critical direction. The traffic forecasts prepared for the Transformation action show that the highest volume entering Fort Benning is at the 11th Airborne Division Road ACP in the Sand Hill cantonment area where traffic at the AM peak hour is 946 vehicles (see Table 4.15-3). To process these vehicles, up to two security personnel per lane and three lanes at the 11th Airborne Division Road ACP would be required. This requirement applies an

estimated processing rate of 1,170 vehicles per hour (390 vehicles/hr/lane) for a mix of 70 percent decaled and 30 percent non-decaled vehicles, and a medium processing rate[1]. Additionally the ACP design and its location would need to be such that there is enough room for vehicle storage in case some unexpected queuing occurs at the gate. This is particularly true in areas close to intersections or highway ramps.

Table 4.15-3: Traffic at Two ACPs under the No Action and Action Alternatives

	AM		PM	
Custer/Fort Benning Blvd	**Northbound**	**Southbound***	**Northbound**	**Southbound***
Existing	137	575	562	101
No-Action	145	634	597	107
Growth Rate vs. Existing	1.1%	2.0%	1.2%	1.2%
Action Alternative (A or B)	209	731	661	203
Growth Rate vs. Existing	8.8%	4.9%	3.3%	15.0%
	AM		**PM**	
11th/187th	**Eastbound***	**Westbound**	**Eastbound***	**Westbound**
Existing	495	198	124	324
No-Action	525	211	132	344
Growth Rate vs. Existing	1.2%	1.3%	1.3%	1.2%
Action Alternative (A or B)	**946**	503	553	637
Growth Rate vs. Existing	13.8%	20.5%	34.9%	14.5%

Note: *Indicates entering traffic to a cantonment area.

The access roads leading to the Sand Hill cantonment area, mainly U.S. Highway 27/280, are considered to have enough capacity, according to conversations with the consultants working on the Fort Benning Comprehensive Transportation Study and personnel at the Installation (personal communication, Shad 2006).

The Main Post has several access roads and the increased traffic would not be concentrated on a single place. At the ACP on Custer and Fort Benning Boulevard, the increase is moderate and the road would be able to handle it without major disruptions.

4.15.5.5 Utilities

The threshold level of significance for utilities is the potential for change in demand that would result in the inability of a utility provider to provide service to existing customers; in addition, significance is determined by the ability of facilities to effectively accommodate additional demands.

[1] Taking into consideration processing rates estimated by the Military Traffic Management Command (MTMC) for 100 percent DoD-decaled vehicles and an estimate made by STV Incorporated (STV 2003) for 100 percent non-decaled vehicles at Fort Benning, GA for a specific number of security personnel and three processing scenarios (i.e., low, medium, and high).

Within the Installation, The Transformation action alternatives would not have an adverse cumulative effect on utility services when considering the past, present, and future projects in the ROI. Outside the Installation, water supply, wastewater, energy, communications, and solid waste services would need to increase; however, when incrementally evaluated the past, present, and future projects would not present an adverse cumulative effect on the ability of utility services to provide for these increased needs.

4.15.5.6 Noise

The threshold level of significance for noise is the increase of any Zone III (incompatible) noise contours where there are sensitive noise receptors (residences, hospitals, libraries, and etc.)

The ROI for cumulative noise impacts would be the Installation and communities adjacent to the Installation boundaries. This ROI is chosen because significant noise generators are found on Post. Off-Post noise generators (e.g., cars, trucks, and airplanes from the city airport) would need to increase considerably to make a negligible change in the noise environment. When evaluating past, present, or foreseeable actions, past actions would not significantly change the noise contours when compared to those found under the Transformation action alternatives. As presented in the environmental consequences section, off-Post noise would not incrementally increase under future projects.. However, with the addition of future new ranges anticipated in 2014, contours would both increase in some locations and decrease in others from projected conditions but when compared to existing conditions would increase considerably (Figure 4.15-3).

When compared to Transformation projected conditions (Table 4.15-4), Zone III noise levels would increase on Post by about 6 percent and off Post by less than 1 percent. For Zone II, there would be a 9 percent increase in noise levels off Post and decrease about 2 percent on Post.

Table 4.15-4: Comparison of Existing, Projected, and Cumulative LUPZs

	Existing			Projected			Cumulative		
Zone	**Acres**	**On Post**	**Off Post**	**Acres**	**On Post**	**Off Post**	**Acres**	**On Post**	**Off Post**
LUPZ	76,478	56,498	19,980	111,780	58,403	53,377	113,189	57,262	55,927
Zone II	49,484	48,053	1,431	59,003	51,844	7,159	58,967	51,077	7,890
Zone III	32,578	32,288	290	43,260	42,959	301	46,159	45,855	303
	158,540	136,839	21,701	214,043	153,206	60,837	218,315	154,194	64,121

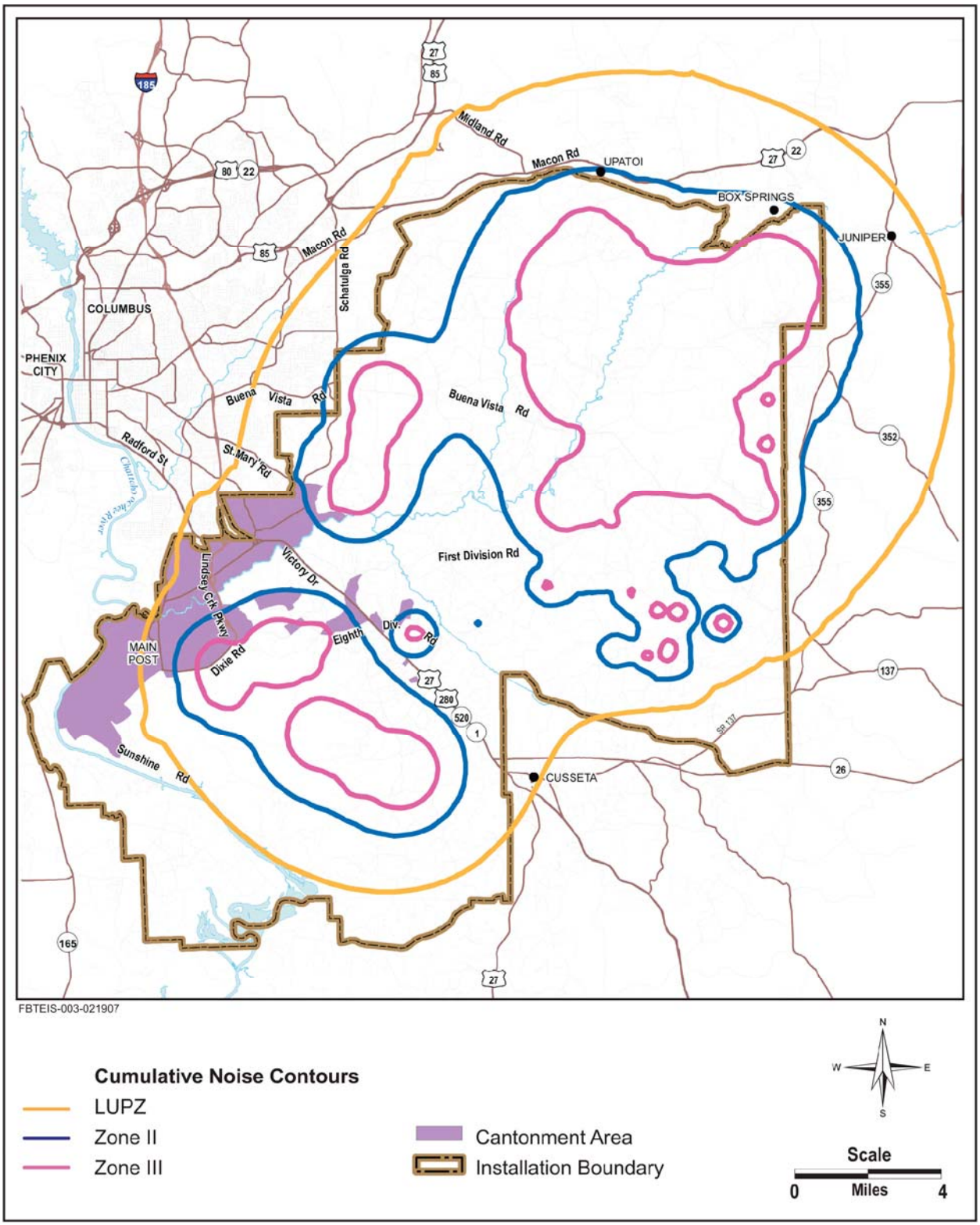


Figure 4.15-3: Cumulative Noise Contour Levels Generate by Large Caliber Arms/Weapons

On Post, there would be an increase of 2,896 acres within Noise Zone III as a result of implementation of these potential future range projects. There would actually be a decrease of 767 acres within Noise Zone II and LUPZ on Post, as noise contours would outwardly expand to encompass additional off-Post lands. Compatibility within the increased Noise Zone III area and the on Post cantonment areas would be similar to existing noise exposure in the Main Post, Sand Hill, Kelley Hill, and Harmony Church Areas (see Figure 4.7.1). Noise sensitive land uses are located in these areas, but similar to the discussion in Section 4.2.2.1, the noise impacts cumulatively would not be adverse on Post.

Off Post, there would be a minor cumulative impact for Noise Zone III (2 acres) when compared to the Transformation action alternatives. There would be 731 additional acres in Noise Zone II and 2,550 additional acres in the LUPZ. Additive and interactive impacts would result from additional incompatibilities within Noise Zone II, including residential land uses in eastern Muscogee, southwestern Talbot, western Marion, and northern Chattahoochee County. The 731 additional acres within Noise Zone II would primarily occur within the panhandle/Chattsworth Road area of Muscogee County/Columbus (approximately 550 acres), as well in western Marion County (approximately 145 acres), and southwestern Talbot County (33 acres). In terms of noise-sensitive noise receptors, there are none found in Zone III; within Zone II there would be additional residential areas exposed as well as two more churches cumulatively (Table 4.15-5). There would be one less school impacted by Noise Zone II under cumulative than found in existing conditions—there are no incremental changes when added to Transformation activities. The majority of the additive impact in the LUPZ would occur in areas currently experiencing these noise levels and those potentially exposed to such noise levels under the Transformation action alternatives but would expand outward into the northeast into southern and northeastern Muscogee County and southwestern Talbot County, to the north into southern Harris County, and to the east into western Marion County. In summary, the future projects would not cumulatively change the level of anticipated impacts (i.e., moderate but not adverse) as presented under the Transformation action alternatives for land uses and sensitive noise receptors. There are no increases in Zone III receptors.

Table 4.15-5: Comparison of Noise Sensitive Receptors Noise Contours

Noise Receptor	Zone II (65-75 dB for Airfield)			Zone III (>75 dB for Airfield)		
	Existing	Projected	Cumulative	Existing	Projected	Cumulative
Schools[a]	2	1	1	0	0	0
Churches[b]	0	3	5	0	0	0
Parks[c]	0	0	0	0	0	0
TOTAL	2	4	6	0	0	0

Sources: a) Georgia Tech 2005, b) ESRI 2004, c) Fort Benning 2006m.

4.15.5.7 Air Quality

The threshold level of significance for air quality is the violation of applicable federal or state laws and regulations, such as the CAA, and the potential for any *stationary* source (i.e., a specific facility) to be considered a major source of emissions as defined in 40 CFR 52.21, where total emissions of any pollutant subject to regulation under the CAA is greater than 250 tons per year for attainment areas.

The ROI would remain the same as that described in 4.8.1. Regional activities, including those within Fort Benning that will introduce air quality impacts include the construction and operation of a Kia manufacturing facility in West Point, GA and the expansion of the existing Aflac facility in Columbus, GA.

The Kia plant is proposed to be constructed near West Point, GA, approximately 40 miles northwest of Fort Benning. The 2,000,000-square-foot manufacturing facility is expected to begin production sometime in 2008 and employ nearly 3,000 workers. Manufacturing is expected to comprise two vehicle assembly lines and an engine facility. In addition to the Kia plant, smaller supply companies integral to the Kia production process will likely set up shop within proximity of the plant. Overall, air quality impacts will be concentrated in two areas, manufacturing production emissions from the plant itself and mobile source emissions as a significant population commutes to West Point to work at the plant (and possibly, other nearby supply facilities). Operational emissions at the Kia facility can be expected to be controlled by state-of-the-art technologies and permitted by the GDNR. The Kia facility has the potential to be categorized and regulated as a major source of air pollutants, primarily for VOCs, NOx, and HAPs.

The Aflac facility located in Columbus, GA is composed of office space. Upon completion of the expansion construction, which will occur in phases over the period 2007 to 2012, the primary air quality impact will be due to commuting workers, as the workforce increases by 2,000 employees, many of whom may be expected to commute from localities within the region to the Aflac facility in Columbus.

An indirect impact of these two commercial projects is the possible increase in construction to provide additional housing for workers who will relocate to the region. This is an almost inevitable occurrence as Kia and Aflac seek to fill a certain portion of the expanded work force requirements with individuals of particular educational or job experience assets. While it is expected that residential construction activities in the region will increase as a result of the regional workforce increases, the extent of this action is not known.

Future actions within the Fort Benning fence line that may add to air quality impacts primarily include the construction actions from 2014 to 2017, and will conclude the Transformation construction actions. Thereafter, operational emissions alone will continue to impact the local air quality.

Table 4.15-6 summarizes the estimated annual emissions from these construction activities for the period 2014 through 2017. Detailed information on the emission estimates can be found in Appendix E.

Table 4.15-6: Criteria Pollutant Construction Emissions Tons per Year

Year	VOC	CO	NO_x	SO_2	PM_{10}	$PM_{2.5}$
2014	36	124	183	20	339	44
2015	28	93	103	11	310	37
2016	2	9	18	2	10	2
2017	0.3	0.1	0.1	0.0	0.0	0.0

The years 2014 and 2015 are proposed to involve a significant percentage of the total number of construction projects under the Transformation Alternative. Thereafter, the pace of construction drops dramatically as most of the projects have a 1 year timeline, and none have timelines exceeding 2 years duration. Operational emissions associated with the Transformation, which will achieve 100 percent activity at the end of the construction period, have been previously discussed in Section 4.8.

The incremental impacts of known actions could result in a degradation of regional air quality. During the period 2014 to 2017, the additional Fort Benning construction activities have the capability to produce significant air emissions, particularly NO_x, PM_{10}, and to a lesser extent, $PM_{2.5}$. During this period, the impacts of $PM_{2.5}$ on ambient air quality will be extremely important.. Should Fort Benning be include in an area categorized as nonattainment, remaining Fort Benning Transformation projects may require a General Conformity Applicability Analysis prior to proceeding to determine if *de minimus* levels of $PM_{2.5}$ would be exceeded.

Ultimately, the construction impacts will cease as the Transformation action is fully implemented. Transformation operations will continue into the unforeseeable future and involve the operational parameters described in Section 4.8, with a modest increase in overall emissions associated with Fort Benning. The external regional impacts of the Kia manufacturing facility operations and increased

commuter traffic patterns associated with both the Kia plant and the Aflac office complex are expected to become permanent air quality degradation actions. The most significant degradation action is the operation of the Kia plant, which will potentially be regulated as a major source of emissions for VOCs, NO_x, and HAPs. The cumulative impacts of the Transformation action alternatives, given the past, present, and other future actions in the ROI, are expected to be long-term minor.

4.15.5.8 Hazardous Materials, Toxic Substances, and Hazardous Waste

The threshold level of significance for hazardous materials, toxic substances, and hazardous waste is surpassed if the storage, use, handling, or disposal of these substances substantially increases the risk to human health due to direct exposure, substantially increases the risk of environmental contamination, or violates applicable federal, state, DoD, and local regulations.

The ROI for this resource would be the Installation as well as the regional area and its ability to absorb the additional materials, substances, and waste that would be generated in combination with all the other present and future projects. Cumulatively, it is not anticipated that there would be an adverse impact to the region's ability to supply this increased use or absorb disposal of wastes. No new toxic substances are anticipated with the Transformation alternative so there would be no relative cumulative impacts.

4.15.5.9 Water Resources

The threshold level of significance for water resources is defined as any impacts (chemical, physical, or biological effects) that would be detectable and would be frequently altered from the historical baseline or desired water quality conditions; and/or chemical, physical, or biological water quality standards or criteria would be locally, slightly, and singularly, exceeded on either a short-term or prolonged basis. The actions would be adverse if they impact a water body currently considered impaired under CWA. The ROI for water resources is provided in Section 4.10.1.

Cumulatively, the Transformation action would not result in any incremental adverse effects on water quality. Minor incremental adverse effects to palustrine wetland areas and to waterways having the potential to be directly impacted by this action are possible. Those waterways include Randall Creek and unnamed tributaries Ochillee Creek, the Chattahoochee River, Upatoi Creek, Spring Creek, and Pine Knot Creek.

The minor adverse effects to wetland areas and waterways would be mitigated through the adherence to existing installation policies and recommendations by GDNR to reduce and/or maintain point and non-point sediment; comply with NPDES permit limits and requirements; adopt Natural Resources Conservation Service Conservation practices; follow guidance in the wetland permitting process;

implement Soil Erosion Control Plans; and apply BMPs. More detailed discussion of measures that would avoid adverse impacts is outlined in Sections 4.10.2 and 4.10.3.

4.15.5.10 Geology and Soils

Cumulative impacts would be considered adverse if ground disturbance or other activities would violate applicable federal or state laws and regulations, such as the Georgia erosion control and sedimentation acts, and the potential for NOVs for the failure to receive applicable state permits, such as a NPDES construction/operation permits when added. The ROI would remain similar to that provided in Section 4.11.1.

Cumulative impacts to geology, topography, and soils are site-specific and are not affected by development in the region. Cumulative impacts would only occur if past, present, or future actions, when added to the Transformation proposed activities would interact. No adverse cumulative impacts to the *geology* or *topography* within or immediately adjacent to the ROI are expected. In total, construction projects currently occurring or occurring within the reasonably foreseeable future that would be considered cumulative would impact approximately 1,820 acres within the Installation (Table 4.15-1). The cumulative impacts to soils; however, would be adverse because that would occur as a result of these present and future projects would include soil compaction, and disturbed and modified soil layers. Exposed soils would become more susceptible to erosion, and soil productivity, (i.e., the capacity of the soil to produce vegetative biomass), would also decline in disturbed areas and be completely eliminated for those areas within the footprint of paved or other hardened areas and new structures. Impacts to soils from construction and/or demolition activities occurring in areas that are currently or previously developed would be minimal, given the fact that these soils have been previously disturbed or modified and in some areas are already covered by structures, concrete, or other appropriate surfaces.

These impacts, when added to the soil disturbance anticipated with the Transformation action, would result in significant cumulative impacts to the soils of Fort Benning. However, because the Installation would be required to adhere to the same regulatory requirements for past, present, and future construction projects, the cumulative impacts would not be adverse when combined the Transformation action alternatives.

4.15.5.11 Biological Resources

Impacts on biological resources would be considered adverse if one of more of the following conditions would result:

- Substantial loss or degradation of habitat or ecosystem functions (natural features and processes) essential to the persistence of native plant and animal populations;
- Substantial loss or degradation of a sensitive habitat, including wetlands and UEAs that support high concentrations of special status species or migratory birds;
- Disruption of a federally listed species, its normal behavior patterns, or its habitat that substantially impedes the Installation's ability to either avoid jeopardy or conserve and recover the species (including violating section 9 of the ESA); or
- Substantial loss of population or habitat for a state-protected or non-listed but special status species, increasing the likelihood of Federal listing action to protect the species in the future.

The definition of "substantial" is dependent on the species and habitats in question and the regional context in which the impact would occur. Impacts may be considered adverse if the action affects previously undisturbed habitat or if the impact would occur over a large portion of available habitat in the region.

Cumulative impacts to vegetation, wetlands, wildlife, protected species, and UEAs may occur due to the additional habitat disturbance resulting from increased human population, supplemental training ranges, additional housing, commercial areas, roads, and recreational facilities in the region. The impacts would be dispersed in time and place, but would have a collective effect in changing the native landscape at Fort Benning and surrounding region. The Transformation action alternatives would increase the population of the region, leading to new facilities both on and off the Installation. Expansion of the Aflac facility and Kia manufacturing plant also brings new jobs to the area and increases the demand for housing and commercial services. The influx in population and development would disturb and fragment habitat surrounding Fort Benning. Disturbance and clearing of the longleaf pine ecosystem may impact sensitive plant species and reduce available habitat for sensitive wildlife such as RCW and gopher tortoise. Habitat fragmentation may affect reproduction, dispersal, and migration of these and other species.

The Chattahoochee River Restoration project is expected to have a beneficial effect on biological resources after an initial period of increased turbidity and sedimentation. Other construction projects and the overall increase in impervious surfaces are likely to increase the sediment load in Fall Line streams, which are sensitive to erosion from unstable soils. The individual effects of each project would be

controlled and permitted as required, but cumulative impacts to stream ecosystems may occur. Sedimentation and changes in flow rate could affect fish and other aquatic species.

Implementation of ACUB initiatives could potentially offset impacts for biological resources, including special status species. The protection of key habitat areas adjacent to Fort Benning would potentially result in contiguous corridors for special status species protection. Specifically, the Fall Line habitat protection and restoration areas may extend out along the northeastern boundary of the Installation as much as 10 miles. The ACUB program would manage these lands to secure viability of gopher tortoise and relict trillium populations off Post, as well as other associated rare species and wetlands; and to provide future habitat for RCW. Mature pine habitat protection and restoration, extending westward into Alabama providing similar Fall Line habitat, would provide the best chance at providing near-term RCW restoration and protection off post by linking existing habitat. The restoration and protection of pine uplands and riverine systems southward along the Chattahoochee River offer similar potential for RCW restoration linked with existing habitat (TNC 2006a). Fort Benning's participation in the RCW donor population program is evaluated in the BA (Appendix F).

Transformation actions would potentially have cumulative impacts to biological resources. The details of each project in the cumulative analysis remain to be determined, but several of the projects are expected to involve potentially adverse impacts to biological resources. The projects may occur in sensitive habitats, wetlands, UEAs, and may affect threatened and endangered species. The incremental impact would result in adverse cumulative effects. Each new project within the Installation would be subject to review under NEPA and the ESA. These review processes and consultation with the USFWS, when applicable, would potentially reduce the adverse impact of each individual project on biological resources.

4.15.5.12 Cultural Resources

The threshold for impacts includes any adverse disturbance that cannot be mitigated and affects the integrity of a historic property (an eligible cultural resource) or that may affect a cultural resource that has not yet been evaluated to determine its eligibility to the NRHP or one that has importance to a traditional group under American Indian Religious Freedom Act (AIRFA), EO 13007, and NAGPRA.

For cultural resources, cumulative effects under the Transformation alternatives are similar to other environmental consequences in that resources could potentially be affected where ground disturbance would occur to expose unknown cultural resources, where structures are renovated or demolished, or where visual elements may be introduced that are out of character with a historic property within the view shed. Cumulative impacts to cultural resources may occur due to the additional ground disturbance

resulting from increased population, supplemental training ranges, additional housing, commercial areas, roads, and recreational facilities in the region. The impacts would be avoided, minimized, or mitigated if possible, but would have a collective effect in reducing the overall number of historic properties on Fort Benning and in the surrounding region.

Under existing plans and designs, Transformation projects starting in 2014 could affect the historic Cottage Mill cemetery, nine eligible and potentially eligible sites, and the Phillips-Wragg historic cemetery. These proposed projects would also affect 34 eligible or potentially eligible sites, 2 unevaluated sites, 9 structures, and 3 cemeteries (Tables 4.15-7 through 9).

Table 4.15-7: Eligible and Unevaluated Archaeological Sites Affected, Cumulative

Site Number	Site Affiliation	Project Location	Project Name	NRHP Eligibility Status
Cumulative Ongoing				
9CE433	Prehistoric	Northern Range	DMPRC	Eligible
9CE1735	Historic	Northern Range	DMPRC	Eligible
9CE2028	Prehistoric	Northern Range	DMPRC	Eligible
9CE2030	Prehistoric	Northern Range	DMPRC	Eligible
9CE2032	Prehistoric	Northern Range	DMPRC	Eligible
9CE2033	Historic	Northern Range	DMPRC	Eligible
9CE2038	Historic	Northern Range	DMPRC	Eligible
9ME893	Prehistoric	Northern Range	CLFX1	Eligible
9CE2369	Prehistoric	Southern Range	IPBC	Eligible
Cumulative Future				
9CE18	Prehistoric	Northern Range	RCI	Eligible
9CE36	Prehistoric	Northern Range	RCI	Eligible
9CE374	Prehistoric	Northern Range	RCI	Eligible
9CE1000	Prehistoric	Northern Range	RCI	Eligible
1RU377	Historic	Northern Range	RCI	Eligible
1RU389	Historic	Northern Range	RCI	Eligible
9CE2068	Prehistoric	Northern Range	IPBC4	Eligible
9CE2113	Prehistoric	Northern Range	MPTR1	Eligible
9CE2470	Prehistoric	Northern Range	MPTR1	Eligible
9CE2479	Prehistoric	Northern Range	MPTR1	Eligible
9CE2486	Prehistoric	Northern Range	Range Heavy Use Area	Eligible
9CE2487	Prehistoric	Northern Range	MPTR1	Eligible
9ME51	Prehistoric	Northern Range	Range Heavy Use Area	Eligible
9ME54	Prehistoric	Northern Range	Range Heavy Use Area	Eligible
9ME55	Historic	Northern Range	Range Heavy Use Area	Not Evaluated
9ME608	Historic	Northern Range	Range Heavy Use Area	Eligible
9ME626	Prehistoric	Northern Range	CLFX2	Eligible
9ME742	Historic	Northern Range	Range Heavy Use Area	Eligible
9ME748	Historic	Northern Range	Range Heavy Use Area	Eligible
9ME757	Historic	Northern Range	FM2	Eligible
9ME992	Historic	Sand Hill	N.A.	Eligible
9ME752	Historic	Northern Range	FM2	Eligible
9ME757	Historic	Northern Range	FM2	Eligible
9ME893	Prehistoric	Northern Range	CLFX1	Eligible
9ME839	Prehistoric	Northern Range	CLFX1	Eligible
9ME1335	Prehistoric	Northern Range	CLFX2	TBD

Table 4.15-7: Eligible and Unevaluated Archaeological Sites Affected, Cumulative

Site Number	Site Affiliation	Project Location	Project Name	NRHP Eligibility Status
9ME626	Prehistoric	Northern Range	CLFX2	Eligible
9CE2411	Prehistoric	Southern Range	MPMG2	Eligible
9CE1623	Prehistoric	Northern Range	MPTR1/CLFX5/IPBC3	Eligible
9CE1622	Prehistoric	Northern Range	MPTR1/CLFX5/IPBC3	Eligible
9CE2481	Prehistoric	Northern Range	MPTR1/CLFX5/IPBC3	Eligible
9CE2470	Prehistoric	Northern Range	MPTR1/CLFX5/IPBC3	Eligible
9CE2478	Prehistoric	Northern Range	MPTR1/CLFX5/IPBC3	Eligible
9CE2479	Prehistoric	Northern Range	MPTR1/CLFX5/IPBC3	Eligible
9CE2471	Prehistoric	Northern Range	MPTR1/CLFX5/IPBC3	Eligible
9CE2092	Prehistoric	Northern Range	MPTR1/CLFX5/IPBC3	Eligible

Table 4.15-8: Eligible and Unevaluated Architectural Resources Affected, Cumulative

Building Number	Building Location	Project Name	Historic District?	NRHP Eligibility Status
Cumulative Future				
85	Main Post	Conversion	Main Post	Eligible
124	Main Post	Conversion	Main Post	Eligible
214	Main Post	Conversion	Main Post	Eligible
216	Main Post	Conversion	Main Post	Eligible
217	Main Post	Conversion	Main Post	Eligible
218	Main Post	Conversion	Main Post	Eligible
219	Main Post	Conversion	Main Post	Eligible
220	Main Post	Conversion	Main Post	Eligible
221	Main Post	Conversion	Main Post	Eligible

Table 4.15-9: Cemeteries Affected, Cumulative

Cemetery Name	Location	Project Name
Ongoing		
Phillips-Wragg	Northern Range	DMPRC
Cottage Mill	Southern Range	IPBC
Future		
Ginn-Pate	Northern Range	CLFX2
Possible	Northern Range	Range Heavy Use Area
Unknown 6	Sand Hill	Shoppette

These impacts, when added to the adverse impacts from the action alternatives of 58 sites, 45 structures, and 14 cemeteries, would result in adverse cumulative impacts to cultural resources. However, because all future construction projects would be under the same regulatory requirements to mitigate as the Transformation action alternatives, these cumulative impacts would not be considered adverse**.**

4.15.5.13 Safety

The threshold level of significance for safety is exceeded when actions would occur within an area with UXOs, the SDZ exclusion area overlaps with personnel support areas, the SDZ of a range extends off the Installation, or when a violation of OSHA standards occurs during construction.

The ROI for cumulative effects to safety encompasses the Installation and ranges associated with Fort Benning. Off duty and family safety pertain to the Installation and the surrounding communities where Fort Benning personnel and families live, shop, and recreate. On duty and construction safety encompasses main installation and includes operations and maintenance activities as well as the general safety background for the base's personnel.

When combined with regional past, present, and foreseeable future projects, there would be no adverse cumulative impacts under the proposed Transformation action alternatives.

4.16 IRREVERSIBLE OR IRRETRIEVABLE COMMITMENTS OF RESOURCES

4.16.1 Irreversible and Irretrievable Commitment of Resources

An irreversible/irretrievable commitment of resources results from a decision to use or modify resources when they are renewable only over a long period of time, such as soil productivity, or when they are nonrenewable resources, such as cultural resources. The single most irreversible and irretrievable commitment of resources associated with the proposed action is the loss of forested lands for the projects associated with the training range improvements and alterations, including its support facilities and access roads. It is considered an irreversible commitment because, for the foreseeable future, this area will be used for a range and re-establishing it as a forest is not reasonable for quite some time. Some wetland areas and vegetation will be permanently lost due to construction; in addition, there is a potential for the displacement of wildlife or the loss of protected species and their habitat. Although these actual resources will be lost, through the design and other mitigation, much of the impacts will be offset or minimized.

The materials and energy required for the construction, operation, and maintenance of the projects in the proposed action, particularly the range improvements and operations, also represent irretrievable commitments of resources. The total amount of construction materials required for this action is relatively insignificant when compared to the resources available in the region. The energy required for construction consists of the fuels necessary to operate heavy construction equipment and trucks. Although energy conservation is a vital and critical issue, the energy resource commitment to the proposed action is not anticipated to be excessive in terms of region-wide usage. Materials and energy are not in short supply and their use would not have an adverse effect upon continued availability of these resources. Construction, operation, and maintenance would also require a substantial expenditure of Federal funds that would not be directly retrievable.

4.16.2 Unavoidable Adverse Effects

The environmental analysis of the alternatives includes the avoidance, minimization, or other mitigation of potential adverse effects on natural, cultural, and environmental resources; however, all adverse impacts may not be completely avoided and/or mitigated. Some adverse effects would be temporary in nature; for example, there would be temporary minor adverse effects to air quality due to the presence of construction equipment and repeated occurrences of temporary effects due to subsequent training by mechanized vehicles, in addition to the ongoing use of prescribed fire for habitat management. Other adverse effects could be long-term in nature; for example, the removal of protected species habitat due to land-clearing activities for construction and subsequent training/use by mechanized vehicles.

Current noise impacts near the Installation boundary would continue and not be readily avoided or completely mitigated. Adverse impacts from Zone III noise in the action alternatives cannot be completely avoided or minimized, although sensitive receptors are currently present there. Operations within training areas and ranges would continue to result in noise generation. Limiting night firing on ranges is currently on a voluntary basis only and imposing rigid restrictions on night firing would decrease the realism of the training for Soldiers and, therefore, impede the training mission of Fort Benning. Continued communication with the public would help address noise concerns. Programs to discourage or avoid incompatible land uses (e.g., ACUB and the Joint Land Use Study programs) may minimize noise impacts to the community. Any mitigation measures identified in the future will be considered to mitigate the unavoidable adverse effects that have been identified in this EIS.

CHAPTER 5

LIST OF PREPARERS

5.0 LIST OF PREPARERS

U.S. Army Corps of Engineers, Mobile District

Name	Title	Education/Responsibility	Experience
Julie Morgan	BRAC NEPA Support Team – Project Manager	B.A., Anthropology, MA Historical Administration. Responsible for the overall management of the BRAC NEPA document preparation.	11.5

The Louis Berger Group, Inc.

Name	Title	Education/Responsibility	Experience
Erin Andersen	Production Specialist	B.A., Sociology	9 years
Najja Bracey	Economist	M.A., International Relations and Economics. Responsible for Socioeconomics.	4 years
Timothy Canan, AICP	Manager and Senior Planner	M.U.R.P., Urban and Regional Planning. Responsible for project management and all sections.	17 years
Jill Cavanaugh, AIA Associate	Architect/Planner	B.A., Architecture, M.S. Architecture and Urban Design. Responsible for Aesthetics and Visual Resources.	6 years
Jess Commerford, AICP	Senior Vice President	B.G.S., Political Science, M.S. Urban and Regional Planning. Responsible for all sections.	17 years
Carlos Espindola	Senior Transportation Engineer	M.S., Civil Engineering / Transportation. Responsible for Transportation.	10 years
Julie Flesch-Pate	Senior Environmental Planner	B.S., Biochemistry, Certified Public Manager. Responsible for Water Resources.	13 years
Joel Gorder	Planner/Environmental Scientist	M.U.R.P., Responsible for Geology and Soils.	11 years

TEC Inc.

Name	Title	Education/Responsibility	Experience
James Campe	Senior Environmental Analyst	B.S., Naval Architecture and Offshore Engineering,. Responsible for Safety.	18 years
Cathy Doan	Environmental Analyst	B.S., English, MA Human Resources Development. Responsible for Utilities	10 years
Mike Dungan	Senior Environmental Analyst	Ph.D., Ecology and Evolutionary Biology. Responsible for Biological Resources	26 years

Name	Title	Education/Responsibility	Experience
Elaine Emerson	Technical Editor	B.A., English Literature and American Studies. Responsible for QA/QC	16 years
Ellen Graap-Loth	Senior Environmental Analyst	B.S., Natural Resources. Responsible for Hazardous and Toxic Substances and Wastes	17 years
Lesley Hamilton	Senior Environmental Analyst	B.A., Chemistry. Responsible for Air Quality	17 years
Edie Mertz	Graphics Specialist	A.A., General Education. Responsible for Graphics	13 years
Kelly Mitchell	Cultural Resources Specialist	B.S., Anthropology, M.A. History. Responsible for Cultural Resources.	11 years
William C. Palmer	GIS Specialist and Planner	B.A. Economics, M.A. Urban and Environmental Planning. Responsible for GIS	5 years
Kathy L. Rose	Manager and Senior Environmental Analyst	B.A. Political Science/German, M.A. International Relations, M.S. Forest Resource Management. Responsible for all sections and QA/QC	12 years
Teresa Rudolph	Cultural Resource Senior Analyst	B.A./M.A., Anthropology. Responsible for Cultural Resources	27 years
Carol Wirth	Senior Planner	B.S. Ecology and Evolutionary Biology. Responsible for DOPAA, Land Use, QA/QC	12 years

CHAPTER 6

DISTRIBUTION LIST

6.0 Notification List

Federal-State Agencies

First	Last	Title	Organization	Address	City	State	Zip Code
			Columbus Consolidated Government Planning Division	100 10th St., 6th Floor, Government Center Tower	Columbus	GA	31902
			Columbus/Muscogee County Soil Conservation Service	100 10th St., 6th Floor, Government Center Tower	Columbus	GA	31993
Tom	Fisher	Albany Field District	USACE	1104 North Westover Rd.	Albany	GA	31707
Gregory	Hogue	Regional Environmental Officer	USDI, Office of Environmental Policy & Compliance	Russell Federal Building, Suite 1144, 75 Spring Street, S.W.	Atlanta	GA	30303
Willie R.	Taylor	Director	USDI, Office of Environmental Policy & Compliance	(MS:2342MIB), 1849 C Street, N.W.	Washington	DC	20240
J.I.	Palmer, Jr.	Administrator, Region IV	USEPA	61 Forsyth Street S.W.	Atlanta	GA	30303
Bob	Lord	Region IV, Wetland Section	USEPA	61 Forsyth Street S.W.	Atlanta	GA	30303
Gerald	Miller	Commander, Savannah District	USACE	Post Office Box 889	Savannah	GA	31402
James D.	Giattina	Director, Water Management Division	USEPA	61 Forsyth Street S.W.	Atlanta	GA	30303
		Soil Conservation Service	USDA	Post Office Box 18	Buena Vista	GA	31803
James R.	Crozier	Region 5 Representative	Georgia Soil and Water Conservation Commission	4344 Albany Highway	Dawson	GA	39842
Barbara	Jackson		Georgia State Clearinghouse	270 Washington Street, SW., 8th Floor	Atlanta	GA	30334
M. Barnett	Lawley	Commissioner of Conservation	AL Department of Conservation and Natural Resources	64 N. Union Street	Montgomery	AL	36130
		Alabama State Historic Preservation Officer	Alabama Historic Commission	468 South Perry Street	Montgomery	AL	36130
Ray	Luce	Director, Historic Preservation Division	GA DNR	34 Peachtree Street, N.W., Suite 1600	Atlanta	GA	30303
John	Doresky	Fort Benning Field Office	USFWS	P.O. Box 52560	Fort Benning	GA	31995
Ralph	Costa		USFWS	261 Lehotsky Hall	Clemson	SC	29634
Dr. Carol A.	Couch	Director	Georgia EPD	2 Martin Luther King Jr. Dr., SE, Suite 1152 East	Atlanta	GA	30334
Noel	Holcom	Commissioner	Georgia DNR	2 Martin Luther King Jr. Dr., SE, Suite 1252 East	Atlanta	GA	30334
Linda	MacGregor	Branch Chief	Watershed Protection Branch, GA EPD	4220 International Pkwy, Suite 101	Atlanta	GA	30354
Becky	Kelley	Director	Parks, Recreation and Historic Sites Division, GA DNR	2 Martin Luther King Jr. Dr., SE, Suite 1352	Atlanta	GA	30334

Elected Officials

Agency	First	Last	Address	City	State	Zip Code
Alabama Governor	Bob	Riley	600 Dexter Avenue	Montgomery	AL	36130
Alabama, 28th State Senate District	Myron C.	Penn	11 S. Union Street Room 731	Montgomery	AL	36130
Alabama, 79th House District	Mike	Hubbard	11 S. Union Street Room 536-A	Montgomery	AL	36130
Alabama, 80th State House District	Lesley	Vance	11 S. Union Street Room 630-E	Montgomery	AL	36130
Alabama, 81st State House District	Betty Carol	Graham	11 S. Union Street Room 531	Montgomery	AL	36130
Alabama, 82nd State House District	Pebblin W.	Warren	11 S. Union Street Room 532-C	Montgomery	AL	36130
Alabama, 83rd State House District	George	Bandy	11 S. Union Street Room 529	Montgomery	AL	36130
Alabama, 84th State House District	Billy	Beasley	11 S. Union Street Room 625-A	Montgomery	AL	36130
Alabama, U.S. House of Representatives, 3rd District	Mike	Rogers	324 Cannon HOB	Washington	DC	20515
Alabama, U.S. Senate	Jeff	Sessions	335 Russell Senate Office Building	Washington	DC	20510
Alabama, U.S. Senate	Richard	Shelby	110 Hart Senate Office Building	Washington	DC	20510
Board of Commissioners, Cusseta, GA	Larry	Dillard	P.O. Box 299	Cusseta	GA	31805
Board of Commissioners, Russell County, AL	Cattie	Epps	P.O. Box 969 County Courthouse	Phenix City	AL	36868
Chairman, Marion County	Myron	Well	240 Cool Springs Road	Buena Vista	GA	31803
Georgia Governor	Sonny	Perdue	Office of the Governor, Georgia State Capitol	Atlanta	GA	30334
Georgia State House District 129	Vance	Smith, Jr.	P.O. Box 171	Pine Mountain	GA	31822
Georgia State House District 130	Debbie	Buckner	780 Fielder's Mill Road	Junction City	GA	31812
Georgia State House District 131	Richard	Smith	P.O. Box 2122	Columbus	GA	31902
Georgia State House District 132	Calvin	Smyre	P.O. Box 181	Columbus	GA	31902
Georgia State House District 133	Carolyn	Hugley	P.O. Box 6342	Columbus	GA	31917
Georgia State Senate District 14	George	Hooks	P.O. Box 928	Americus	GA	31709
Georgia State Senate District 15	Ed	Harbison	P.O. Box 1292	Columbus	GA	31902
Georgia State Senate District 29	Seth	Harp	P.O. Box 363	Midland	GA	31820
Georgia, State House District 135	Lynmore	James	114 Walnut Street	Montezuma	GA	31063
Georgia, State House District 148	Bob	Hanner	9610 Plains Highway	Parrott	GA	39877
Georgia, U.S. House of Representatives, 10th District	Charlie	Norwood	2104 Rayburn HOB	Washington	DC	20515
Georgia, U.S. House of Representatives, 11th District	Phil	Gingrey, M.D.	119 Cannon HOB	Washington	DC	20515
Georgia, U.S. House of Representatives, 12th District	John	Barron	226 Cannon HOB	Washington	DC	20515
Georgia, U.S. House of Representatives, 13th District	David	Scott	417 Cannon HOB	Washington	DC	20515
Georgia, U.S. House of Representatives, 1st District	Jack	Kingston	2368 Rayburn HOB	Washington	DC	20515
Georgia, U.S. House of Representatives, 2nd District	Sanford	Bishop, Jr	2429 Rayburn HOB	Washington	DC	20515
Georgia, U.S. House of Representatives, 3rd District	Jim	Marshall	515 Cannon, HOB	Washington	DC	20515
Georgia, U.S. House of Representatives, 4th District	Hank	Johnson	1133 Longworth HOB	Washington	DC	20515
Georgia, U.S. House of Representatives, 5th District	John	Lewis	343 Cannon HOB	Washington	DC	20515
Georgia, U.S. House of Representatives, 6th District	Tom	Price	424 Cannon HOB	Washington	DC	20515
Georgia, U.S. House of Representatives, 7th District	John	Linder	1026 Longworth HOB	Washington	DC	20515
Georgia, U.S. House of Representatives, 8th District	Lynn	Westmorland	1213 Longworth HOB	Washington	DC	20515
Georgia, U.S. House of Representatives, 9th District	Nathan	Deal	2133 Rayburn HOB	Washington	DC	20515
Georgia, U.S. Senate	Saxby	Chambliss	416 Russell Senate Office Bldg.	Washington	DC	20510
Georgia, U.S. Senate	Johnny	Isakson	120 Russell Senate Office Bldg	Washington	DC	20510
Marion County Commission	Ronald	Graham	P.O. Box 481	Buena Vista	GA	31803
Marion County Commission	George	Neal	240 Cool Springs Road	Buena Vista	GA	31803

Elected Officials

Agency	First	Last	Address	City	State	Zip Code
	Ralph	Brown	P.O. Box 158	Buena Vista	GA	31803
	Jeff	Hardin	601 12th Street	Phenix City	AL	36867
	Jerry	Hays	P.O. Box 481	Buena Vista	GA	31803
	Julius	Hunter, Jr	139 Whippoorwill Lane	Columbus	GA	31906
	Robert S.	Poydasheff	100 10th St., 6th Floor, Government Center Tower	Columbus	GA	31901
	H.H.	Roberts	601 12th Street	Phenix City	AL	36867
	Evelyn	Turner Pugh	325 Jefferson Drive	Columbus	GA	31907

American Indian Tribal Representatives

First	Last	Title	Organization	Address	City	State	Zip Code
Debbie	Thomas		Alabama/Cousatta Tribe of Texas	571 State Park Road 56	Livingston	TX	77351
Tarpie	Yargee	Honorable	Alabama/Quassarte Tribal Town	P.O. Box 187 117 North Main Street	Wetumka	OK	74880
Augustine	Asbury	Honorable	Alabama/Quassarte Tribal Town	P.O. Box 187 117 North Main Street	Wetumka	OK	74880
Joanne	Battiste	Honorable	Alabama-Coushatta Tribe of Texas	571 State Park Road 56	Livingston	TX	77351
Bill	Anoatubby	Honorable	Chickasaw Nation	3rd Floor P.O. Box 1548	Ada	OK	74821
Gingy	Nail		Chickasaw Nation	124 South Broadway American Building, 3rd Floor P.O. Box 1548	Ada	OK	74821
Lovelin	Poncho	Honorable	Coushatta Tribe of Louisiana	P.O. Box 818, 1940 Bell Road	Elton	LA	70532
Kevin	Sickey	Honorable	Coushatta Tribe of Louisiana	P.O. Box 99	Elton	LA	70532
Gary	Bucktrot	Honorable	Kialegee Tribal Town	P.O. Box 332 108 N. Main Street	Wetumka	OK	74883
Evelyn	Bucktrot	Honorable	Kialegee Tribal Town	108 N. Main Street, P.O. Box 332	Wetumka	OK	74883
Marsey	Harjo		Kialegee Tribal Town	108 N. Main Street, P.O. Box 332	Wekumka	OK	74883
Phillip	Martin	Honorable	Mississippi Band of the Choctow Indians	P.O. Box 6010	Philadelphia	MS	39350
A.D.	Ellis	Honorable	Muscogee (Creek) Nation of Oklahoma	P.O. Box 580 HWY 75 & Loop 56	Okmulgee	OK	74447
Joyce	Bear		Muscogee (Creek) Nation of Oklahoma	P.O. Box 580 HWY 75 & Loop 56	Okmulgee	OK	74447
Bufford	Rolin	Honorable	Poarch Band of Creek Indians	HCR 69A, Box 85B 5811 Jack Springs Road	Atmore	AL	36502
Robert	Thrower		Poarch Band of Creek Indians	HCR 69A, Box 85B 5811 Jack Springs Road	Atmore	AL	36502
Kenneth	Chambers	Honorable	Seminole Nation of Oklahoma	P.O. Box 1498	Wewoka	OK	74884
Kelly	Haney	Honorable	Seminole Nation of Oklahoma	P.O. Box 1498	Wewoka	OK	74884
Emmain	Spain		Seminole Nation of Oklahoma	P.O. Box 1768	Seminole	OK	74868
Mitchell	Cypress	Honorable	Seminole Tribe of Florida	AH-THA-THI-KI Museum HC-61, Box 21A	Clewiston	FL	33440
Willard	Steele		Seminole Tribe of Florida	AH-THA-THI-KI Museum HC-61, Box 21A	Clewiston	FL	33440
George	Scott	Honorable	Thlopthlocco Tribal Town	P.O. Box 188	Okemah	OK	74859
Charles	Coleman		Thlopthlocco Tribal Town	P.O. Box 188	Okemah	OK	74859
George	Wickliffe	Honorable	United Keetoowah Band of the Cherokee Indians of Oklahoma	P.O. Box 189	Park Hill	OK	74451
Lisa	Stopp	Honorable	United Keetoowah Band of the Cherokee Indians of Oklahoma	P.O. Box 189	Park Hill	OK	74451
Lisa	Stopp		United Keetoowah Band of the Cherokee Indians of Oklahoma	P.O. Box 189	Park Hill	OK	74451

Interest Groups

First	Last	Organization	Address	City	State	Zip Code
		Audobon Society of Columbus	P.O. Box 442	Hamilton	GA	31811
		Chattahoochee Nature Center	9135 Willeo Road	Roswell	GA	30075
		Chattahoochee Riverkeeper, Inc.	30 W. 10th Street P.O. Box 1492	Columbus	GA	31909
Biff	Hadden	Columbus Chamber of Commerce	901 Front Ave	Columbus	GA	31901
Frank	Schnell	Columbus Museum	1251 Wynnton Road	Columbus	GA	31906
Dick	Ellis	Community and Economic Development/ Columbus Consolidated Government	100 10th St., 6th Floor, Government Center Tower	Columbus	GA	31809
		Georgia Bass Chapter Federation	11575 Northgate Trail	Roswell	GA	30075
E.J.	Williams	Georgia DNR	116 Rum Creek Drive	Forsyth	GA	31029
Claude	Yearwood	Georgia Forestry Association, Inc	505 Pinnacle Court	Norcross	GA	30071
		Georgia Trappers Association, Inc	Rural Route 1, Box 204A	Lutherville	GA	30251
Greg	Paxton	Georgia Trust for Historic Preservation	1516 Peachtree Street, NW	Atlanta	GA	30309
		Georgia Wildlife Federation	11600 Hazelbrand Road	Covington	GA	30014
		Georgia Woman Flyfishers	116 Kenninghall Ct.	Smyrna	GA	30082
Joy	Kramer	Greater Columbus Chamber of Commerce	P.O. Box 1200	Columbus	GA	31902
		National Wildlife Society	1401 Peachtree Street N.E. Suite 240	Atlanta	GA	30309
Mike	Gaymon	Phenix City-Russell County Chamber of Commerce	1107 Broad Street	Phenix City	GA	36887
		Sierra Club, Georgia Chapter	1447 Peachtree Street N.E. Suite 305	Atlanta	GA	30309
		The Georgia Conservancy, Inc	1776 Peachtree St., NW St. 400 South Tower	Atlanta	GA	30309
		The Nature Conservancy	303 12th Street, Chattahoochee Fall Line Office	Columbus	GA	31901
Laurel	Moore-Barnhill	USDA Forest Service, Savannah River	P.O. Box 700	New Ellento	SC	29809
		Wildlife Society, Georgia Chapter	2150 Dawnsonville Highway	Gainesville	GA	30501

Public Requests for Draft EIS

First	Last	City	State	Zip Code
David	Arrington	Columbus	GA	31902
Will	Burgin	Columbus	GA	31901
Myles B.	Caggins, Jr	Columbus	GA	31904
Patti	Cullen	Columbus	GA	31902
Jesse	Dashe	Columbus	GA	31907
Willie	Davis	Midland	GA	31820
Owen and Mabel	Ditchfield	Columbus	GA	31903
David	Erickson	Columbus	GA	31909
Wade	Harrison	Columbus	GA	31901
Lena	Hausel	Midland	GA	31820
Nate	Hunt	Atlanta	GA	30303
Chris	Hurst	Atlanta	GA	30334
Rick	Jones	Columbus	GA	31920
Dorothy	McDaniel	Columbus	GA	31901
Dana	Newman	Columbus	GA	31902
Bob	Poydasheff	Columbus	GA	31901
Burnie	Quick	Columbus	GA	31906
Brant	Slay	Omaha	GA	31821
Gena	Taylor	Columbus	GA	31902
Teresa	Tomlinson	Columbus	GA	31906

Repositories

Organization	Address	City	State	Zip Code
Chattahoochee Valley Regional Library	1120 Bradley Drive	Columbus	GA	31906
Columbus Public Library	3000 Macon Road	Columbus	GA	31906
Fort Benning Main Post Library	Building 93	Fort Benning	GA	31905
Harris County Public Library	138 N. College St.	Hamilton	GA	31811
Phenix City Public Library	1501 17th Ave.	Phenix City	AL	36867
Richland Public Library	112 Wall St	Richland	GA	31825
South Columbus Branch Library	2034 South Lumpkin Road	Columbus	GA	31903

Scoping Notice Recipients

First	Last	Address	City	State	Zip Code
Randy and Debbie	Addison	3841 Georgia Highway 355	Buena Vista	GA	31803
Paul	Anthony	2543 Backbone Ridge	Buena Vista	GA	31803
William and Bethany	Beasley	531 Young Road	Box Springs	GA	31801
Charles and Jane	Bentley	Route 3, Box 211 AA	Buena Vista	GA	31803
Velma	Bentley	7101 Georgia Highway 355	Box Springs	GA	31801
William	Birkhead	4225 University Avenue	Columbus	GA	31907
Congressman S.D.	Bishop	18th Ninth Street	Columbus	GA	31901
Paul	Bourff	408 George Cannon Road	Box Springs	GA	31801
Timothy and Sandra	Brown	58 George Cannon Road	Box Springs	GA	31801
Kevin	Brown	P.O. Box 138	Buena Vista	GA	31801
Charles	Bullard	31 Buck Lane	Box Springs	GA	31801
Stanley	Bullard	Route 3, Box 213	Buena Vista	GA	31803
Kenneth	Bullard	3925 Council Ct.	Columbus	GA	31909
James	Cannon	435 George Cannon Road	Box Springs	GA	31801
Elizabeth Turner and Doroty	Carson	403 George Cannon Road	Box Springs	GA	31801
William	Carter	273 Country Trail	Box Springs	GA	31801
Steve	Catrett	816 Country Trail	Box Springs	GA	31801
Hyun	Childers	2521 Cornell Avenue	Columbus	GA	31903
Wayne and Sandra	Church	P.O. Box 157	Box Springs	GA	31801
Kenneth	Clayton	P.O. Box 55	Box Springs	GA	30801
Mark	Cogar	P.O. Box 191	Box Springs	GA	31801
David	Costine	265 Fawn Drive	Box Springs	GA	31801
Jacqueline	Costine	265 Fawn Drive	Box Springs	GA	31801
Betty Jo	Cotton	533 Howard Ackiss Road	Buena Vista	GA	31803
Lisa	Culpepper	P.O. Box 271	Box Springs	GA	31801
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Helen	Dillard	327 Oliver Street	Buena Vista	GA	31803
Robert	Ferrell, Jr	3504 Vernon Drive	Columbus	GA	31909
David	Fielder	138 Pond Road	Buena Vista	GA	31803
Lewis	Fokes	P.O. Box 8	Buena Vista	GA	31803
James	Force	1881 Tiperary Lane	Newbury Park	CA	91320
Jeannette	Forsyth	Route 2, Box 33-D	Ellaville	GA	31806
Ralph	Forsyth	6642 Georgia Highway 355	Box Springs	GA	31801
Charles	Francis	89 Buck Lane	Box Springs	GA	31801
Harry	Franklin	2456 Elm Drive	Columbus	GA	31907
Cathy	Fussell	P.O. Box 553	Buena Vista	GA	31803
Charles and Gennie	Gartland	267 Pine Knot Loop	Buena Vista	GA	31803
Steve	Golden	900 Country Trail	Box Springs	GA	31801
Stan and Catherine	Goodroe	4100 Georgia Highway 355	Buena Vista	GA	31803
Charles	Goodwin	119 Gordy Mill Pond Road	Cussetta	GA	31805
Faron	Gosner	261 J.P. Hudson Road	Box Springs	GA	31803
La Dema	Graves	67 Lee Road #224-A	Smiths	AL	36877
Bobby	Gray	4749 Georgia Highway 352	Box Springs	GA	31801

Scoping Notice Recipients

First	Last	Address	City	State	Zip Code
Ann	Grieger	71 Jonquil Lane	Box Springs	GA	31801
James	Haas	133 Pond Road	Buena Vista	GA	31803
Lonnie	Hale	5575 Georgia Highway 41 North	Mauk	GA	31058
Martha	Hall	1215 Georgia Highway 41 North	Buena Vista	GA	31803
Sammie	Hall	P.O. Box 384	Buena Vista	GA	31803
Earl	Harbuck	4749 Georgia Highway 352	Box Springs	GA	31801
Kenneth	Harmon	263 Young Road	Box Springs	GA	31801
Larry	Harper	3300 Georgia Highway 355	Buena Vista	GA	31803
Frank	Hendricks	27 Parkers Mill Road	Buena Vista	GA	31803
Debra	Herrin	101 Michelle Lane	Buena Vista	GA	31803
Joanne	Horne	Route 3, Box 124	Buena Vista	GA	31803
Daniel	Hudson	92 Spike Place	Box Springs	GA	31803
Jeannette	Icard	73 Pecan Place	Buena Vista	GA	31803
Jim and Joan	Johnson	1265 Pine Knot Road	Buena Vista	GA	31801
Ken	Kahler	273 Hickory Nut Hollow	Box Springs	GA	31801
Frank	Lee	551 Jim Allen Road	Box Springs	GA	31801
Matt	Lord	7523 East Wynfield Loop	Midland	GA	31820
Terry	Mann	P.O. Box 150	Box Springs	GA	31801
Marion	Matthews	922 Pine Knot Farms Road	Box Springs	GA	31801
R.S.	Mattson	3466 Georgia Highway	Buena Vista	GA	31803
Matthew and Tracey	McKenzie	420 Dr. Brooks Road	Box Springs	GA	31803
Gayle	Miller	266 Georgia Highway 137 West	Box Springs	GA	31801
Rick	Morris	1244 L. Glass Br. Road	Lagrange	GA	31240
Elizabeth Turner and Doroty	Murray	P.O. Box 503	Buena Vista	GA	31803
Carol	Murray	214 Crawford Street	Buena Vista	GA	31803
Joseph	Nash	185 Broad Street	Buena Vista	GA	31803
Joanna	Nobles	5771 Georgia Highway 355	Box Springs	GA	31801
Luther	North	185 Pine Knot Loop	Buena Vista	GA	31803
Theo and Mary Taylor	Parker	324 Oliver Street	Buena Vista	GA	31801
Dennis and Norma	Parker	4461 Georgia Highway 41 North	Buena Vista	GA	31803
Bascom and Myra	Parker	4105 Georgia Highway 355	Buena Vista	GA	31803
Deborah	Pearce	P.O. Box 120	Columbus	GA	31903
Gordon	Pope	Route 3, Box 214 AA	Buena Vista	GA	31803
Kenny	Powell	2501 Techwood Drive	Columbus	GA	31906
Catherine	Prepton	1669 Georgia Highway 355	Buena Vista	GA	31801
Roger	Presnell	P.O. Box 44	Buena Vista	GA	31803
Druid	Preston	5784 Kentucky Downs Drive	Macon	GA	31210
Catherine	Preston	1669 Georgia Highway 355	Buena Vista	GA	31803
Robert and Amy	Price	4265 Georgia Highway 355	Buena Vista	GA	31803
Vernon and Sherrill	Prior	611 Hilyard Road	Buena Vista	GA	31803
Benny	Ramsey	434 Sunnyside Drive	Box Springs	GA	31801
Tina	Ramsey	Route 2, Box 38	Ellaville	GA	31806
Sam and Carol	Rigdon	320 Oliver Street	Buena Vista	GA	31803

Scoping Notice Recipients

First	Last	Address	City	State	Zip Code
Felix	Rivas	2113 Amber Drive	Columbus	GA	31907
Betty Jo	Robinson	6571 GA Highway 355	Box Springs	GA	31801
Jeff	Robinson	3120 Pine Knot Road	Box Springs	GA	31801
Deborah	Robinson	6739 Georgia Highway 355	Box Springs	GA	31801
Steve	Robinson	2991 Pine Knot Road	Box Springs	GA	31801
Cathy	Robinson	2991 Pine Knot Road	Box Springs	GA	31801
Darrell	Robinson	3229 Pine Knot Road	Juniper	GA	31801
Patricia	Roth	2921 Georgia Highway 355	Buena Vista	GA	31803
Edward and Verna	Rumph	171 Red Oak Drive	Box Springs	GA	31803
JoAnn	Schmidt	2460 Georgia Highway 355	Buena Vista	GA	31803
Kurt	Schmitz	4731 Champions Way	Columbus	GA	31909
Werner	Schurr	26 Schurr Lane	Buena Vista	GA	31803
Donna	Scott	145 South Broad Street	Buena Vista	GA	31803
Doyle	Simmons	2498 Georgia Highway 355	Buena Vista	GA	31803
Robert	Smart	Route 3, Box 209	Buena Vista	GA	31801
George	Stanton	4225 University Avenue	Columbus	GA	31907
Murry and Grace	Stone	9034 Lee Road 246	Smiths Station	AL	36877
Michael and Joyce	Strickland	498 Young Road	Box Springs	GA	31801
Bobby and Ginger	Swint	1141 Georgia Highway 41 North	Buena Vista	GA	31803
David	Taylor	555 George Cannon Road	Box Springs	GA	31801
Mary and Crystal	Thomas	156 George Cannon Road	Box Springs	GA	31801
Irene	Thomas	53 Pond Road	Buena Vista	GA	31803
Chris	Thomas	35 Pond Road	Buena Vista	GA	31803
Jackie	Thomaston	62 George Cannon Road	Box Springs	GA	31801
Tom	Tidd	909 Brighton Road	Columbus	GA	31904
Windell and Wendy	Timms	323 Country Trail	Box Springs	GA	31801
Clarence	Trivett	90 Fawn Drive	Box Springs	GA	31801
James	Trivett	120 Fawn Drive	Box Springs	GA	31801
William	Turner	236 George Cannon Road	Box Springs	GA	31801
Marcus	Turner	60 George Cannon Road	Box Springs	GA	31801
Daniel	Underwood	2305 Austin Drive	Albany	GA	31707
Kevin	Van	295 Leisure Cove Drive	Legrange	GA	30240
Bert	Veal	56 George Cannon Road	Box Springs	GA	31801
Brianna	Veenstra	7835 Gray Shoals Drive	Columbus	GA	31904
William	Warren	P.O. Box 287	Box Springs	GA	31801
JoAnne	Watson	703 Mauk Road	Mauk	GA	31058
Drew and Mary	Weed	6001 Georgia Highway 355	Box Springs	GA	31801
Kurt	Weigel	7935 114th Avenue	Largo	FL	33773
Yvonne	Wessner	5802 High Point Drive	Columbus	GA	31909
Hugh	Westbury	USAIS ATSH-OTR	Fort Benning	GA	31905
David	Wiese	133 Buck Lane	Box Springs	GA	31801
Linda	Wilkins	85 Pond Road	Buena Vista	GA	31803
Louie	Willett	6607 Widgen Drive	Buena Vista	GA	31803

Scoping Notice Recipients

First	Last	Address	City	State	Zip Code
Louis	Willett, Jr	4168 Windtree Lane	Columbus	GA	31907
Harry	Winters	43 Smoke Street	Mauk	GA	31058
Mark	Wray	333 Doe Drive	Buena Vista	GA	31803
Karl	Wright	1627 12th Place	Phenix City	AL	36867
Gaddy Developments		6824 Chaucer Lane	Box Springs	GA	31801
Residents		4105 Georgia Highway 355	Buena Vista	GA	31803
Residents		361 J.P. Hudson Road	Box Springs	GA	31801
Residents		120 Miller Road	Cussetta	GA	31805
Residents		363 J.P. Hudson Road	Box Springs	GA	31801
Residents		5522 Georgia Highway 355	Box Springs	GA	31803
Residents		3752 Georgia Highway 26 East	Buena Vista	GA	31803
Resident		1306 Georgia Highway 355	Buena Vista	GA	31803
Resident		Route 2, Box 298	Butler	GA	31006

Media Points of Contact

Organization	Address	City	State	Zip Code
WRBL TV 3 (CBS)	1350 13th Avenue	Columbus	GA	31901
WKCN (99.3 FM)	1253 13th Avenue	Columbus	GA	31901
WTVM TV 9 (ABC)	1909 Wynnton Road	Columbus	GA	31994
WGSY (100 FM)	1501 13th Avenue	Columbus	GA	31901
WXTX TV 54 (FOX)	6524 Buena Vista Road	Columbus	GA	31994
WOKS (1340 AM) and WXFE (105 FM)	P.O. Box 1998	Columbus	GA	31902
Columbus Times	2230 Buena Vista Road	Columbus	GA	31906
The Bayonet	1819 S. Lumpkin Rd.	Fort Benning	GA	31903
Tri-County Journal & Chattahoochee Chronicle	P.O. Box 850, 71 Webb Lane	Buena Vista	GA	31803
Mellow Times News	2904 Macon Road	Columbus	GA	31907

Fort Benning Distribution List

First	Last	Organization	Address	City	State	Zip Code
Walter	Wojdakowski	Commanding General	Infantry Hall (Bldg 4)	Fort Benning	GA	31905
		Commander, U.S. Army Infantry Center	Infantry Hall (Bldg 4)	Fort Benning	GA	31905
		Deputy CG/Assistant Commandant	Infantry Hall (Bldg 4)	Fort Benning	GA	31905
		PWD, Southeast Region, IMA	1593 Hardee Avenue SW	Fort McPherson	GA	30330
		Commander, 75th Ranger Regiment	Building 2834	Fort Benning	GA	31905
		Commander, 3rd Brigade, 3rd Infantry Division	Building 9050 (Kelley Hill)	Fort Benning	GA	31905
		Commander, 29th Infantry Regiment	Building 5500 (Harmony Church)	Fort Benning	GA	31905
		Commander, 11th Infantry Regiment	Building 2749	Fort Benning	GA	31905
		Commander, 36th Engineer Group	Building 2827	Fort Benning	GA	31905
		Commander, Ranger Training Brigade	Building 5024 (Harmony Church)	Fort Benning	GA	31905
		Commander, Infantry Training Brigade	Building 3410 (Sand Hill)	Fort Benning	GA	31905
		Commander, US Army TRADOC HQ Attn ATBO-GE	5A North Gate Road	Fort Monroe	VA	23651
		US Army, Northeast Region Office Attn: SFIM-NE-ER	5A North Gate Road	Fort Monroe	VA	23651
		US Army, Northeast Region Office Attn: ATJA	11 Bernard Road	Fort Monroe	VA	23651
Paul A.	Hird, PAHM	BRAC Project Manager, SAIC Contractor	USAMEDDAC	Fort Benning	GA	31905

CHAPTER 7

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CHAPTER 8

PERSONS CONSULTED

8.0 PERSONS CONSULTED

Bartlett, L. 2006. Logistics Management Specialist. Fort Benning, GA.

Barron, M. 2006. Wildlife Biologist, RCW Specialist. Fort Benning, GA.

Brent, J. 2006. Chief, Environmental Management Division. Fort Benning, GA

Brown, J.E. 2006. NEPA Coordinator. Fort Benning, GA.

Brown III, J.W. 2006. BRAC Coordinator. Fort Benning, GA.

Carlson, J. 2006. Radiation and Safety Officer. Fort Benning, GA.

Chauvey, P. 2006. Chief, Environmental Management Division, Compliance. Fort Benning, GA.

Clarke, M. 2006. PCB/Lead/Asbestos Program Manager, Environmental Management Division. Fort Benning, GA.

DeCarlo, D. 2007. Real Estate Division. Fort Benning, GA.

Gaines, G. 2006. CAA Program Manager. Fort Knox, KY.

Griffin, J. 2006. GIS Coordinator, Columbus Consolidated Government. Fort Benning, GA.

Gustafson, P. 2006. CAA/Noise Programs Manager. Fort Benning, GA.

Hamilton, C.E. 2006. Cultural Resources Manager. Fort Benning, GA.

Hines, B. 2006. Utilities Engineer. Fort Benning, GA.

Hollon, G. 2006. Soil Conservation. Fort Benning, GA.

Holloway, K. 2006. Facility Master Planner. Fort Benning, GA.

Jones, R. 2006. Columbus Consolidated Government, Planning/Zoning Division. Fort Benning, GA.

Kelly, J. 2006. Georgia Department of Natural Resources, Environmental Protection Division, Air Protection Branch, Planning and Regulatory Development Unit. Fort Benning, GA.

Mickey, C. 2006. Communications Programs Manager. Fort Benning, GA.

Mixon, G. 2006. Planning Director, Middle Flint Regional Development Council. Fort Benning, GA.

Morpeth, D. 2006. Solid Waste Program Manager. Fort Benning, Georgia.

Morris, R. 2006. Planning Director, Lower Chattahoochee Regional Development Council. Fort Benning, GA.

Pentecost, Colonel, B.M. 1999. Operations and Training Director. Fort Benning, GA.

Perkins, D. 2006. BRAC Environmental Program Manager, Installation Management Command - Southeast Region (IMCOM-SE). Fort McPherson, GA.

Poppert, J. 2006. Recycling Clerk. Fort Knox, KY.

Rynolds, D. 2006. Maneuver Center Realignment Coordination Cell. Fort Benning, GA.

Scott, B. 2006. Lee-Russell Council of Governments. Fort Benning, GA.

Seda, F. 2006. ISCP/SPCC/SWP3/EPCRA Program Manager, Environmental Management Division. Fort Benning, GA.

Shad, P. 2006. PBS&J (consultant preparing transportation studies for Fort Benning, GA.

Stoinoff, C. 2006. DAS-Strategic Planning Team. Fort Knox, KY.

Swiderek, P. 2006. Chief, Environmental Management Division, Conservation. Fort Benning, GA.

Veenstra, L. 2006. OSJA. Fort Benning, GA.

Weekley, F. 2006. Range Manager. Fort Benning, GA.

Wilkins, J. 2006. CWA/Waste Water Programs Manager. Fort Benning, Georgia.

Woodruff, A. 2006. Manager, Planning and Outreach, Office of Planning and Quality Growth, Georgia Department of Community Affairs. Fort Benning, GA.

CHAPTER 9

ACRONYMS AND ABBREVIATIONS

9.0 ACRONYMS AND ABBREVIATIONS

AAF	Army Airfield
AAFES	Army and Air Force Exchange Service
AAP	Army Alternative Procedures
ACHP	Advisory Council on Historical Preservation
ACM	Asbestos Containing Materials
ACP	Access Control Point
ACUB	Army Compatible Use Buffer
ADEM	Alabama Department of Environmental Management
ADNL	A-Weighted Day-Night Level
AGL	Above Ground Level
AIRFA	American Indian Religious Freedom Act
AL	Alabama
AMF	Army Modular Force
ANCOC	Armor Crewman/Scout Advanced NCO Course
APE	Area of Potential Effect
AR	Army Regulation
ARPA	Archaeological Resources Protection Act
ARTEP	Army Training and Evaluation Program
ASIP	Army Stationing and Installation Plan
AST	Aboveground Storage Tank
ASTM	American Society for Testing and Materials
BA	Biological Assessment
BCT	Brigade Combat Team
BFV	Bradley Fighting Vehicle
BGD	Buildings and Grounds Division
BMP	Best Management Practices
BO	Biological Opinion
BOLC	Basic Officer Leader Course
BRAC	Base Realignment and Closure
CAA	Clean Air Act
CAAA	Clean Air Act Amendments
CACTF	Combined Arms Collective Training Facility
CAP	Centralized Accumulation Point
CAV	Cavalry
CDI	Capabilities Development and Integration
CDNL	C-Weighted Day-Night Level
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFH	Cubic Feet per Hour
CFR	Code of Federal Regulation
cfs	Cubic Feet per Second
CHMCC	Centralized Hazardous Materials Control Center
CID	Criminal Investigation Command
CLFX	Convoy Live Fire Exercise
CO	Carbon Monoxide
COF	Company Operations Facility
CRBWPP	Chattahoochee River Basin Watershed Protection Plan
CRM	Cultural Resource Manager
CSE	Combat Support Equipment
CWA	Clean Water Act
CWW	City of Columbus Water Works
dB	Decibel
dBA	A-Weighted Decibel
dBC	C-Weighted Decibel
DDESB	Department of Defense Explosive Safety Board
DMPRC	Digital Multi-Purpose Range Complex
DNL	Day-Night Sound Level
DNR	Department of Natural Resources
DoD	Department of Defense
DOL	Directorate of Logistics
DOT	Department of Transportation
DPW	Directorate of Public Works
DRMO	Defense Reutilization and Marketing Office
DRMS	Defense Reutilization Market Service
DS/GS	Direct Support/General Support
DTDCD	Directorate of Training, Doctrine and Combat Development
EA	Environmental Assessment
EAP	Environmental Action Plan
ECS	Equipment Concentration Site
EIFS	Economic Impact Forecast System
EIS	Environmental Impact Statement
EMD	Environmental Management Division
ENG	Engineer Group
EO	Executive Order
EOD	Explosive Ordnance Disposal
EPCRA	Emergency Planning and Community Right to Know Act
EPD	Environmental Protection Division
ERA	Environmental Restoration, Army
ESA	Endangered Species Act
ESMP	Endangered Species Management Plan
ESPCP	Erosion, Sedimentation, and Pollution Control Plan
FAA	Federal Aviation Administration
FCS	Future Combat Systems
FHWA	Federal Highways Administration

FIRM	Flood Insurance Rate Map
FNSI	Finding of No Significant Impact
FORSCOM	Forces Command
FPPA	Farmland Protection Policy Act
ft	foot/feet
FTX	Field Training Exercise
FWPCA	Federal Water Pollution Control Act
FY	Fiscal Year
GA	Georgia
GADNR	Georgia Department of Natural Resources
GAO	Government Accounting Office
GDOT	Georgia Department of Transportation
GDPR	Global Defense Posture and Realignment
GEPD	Georgia Environmental Protection Division
GIS	Geographic Information System
Grp	Group
HEMTT	Heavy Equipment Mobile Transport Truck
HETT	Heavy Equipment Transport Truck
HMMWV	High Mobility Multipurpose Wheeled Vehicle
HPC	Historic Properties Component
HQ	Headquarters
HSMS	Hazardous Substance Management System
HUC	Hydrologic Unit Code
IAP	Installation Action Plan
ICP	Integrated Contingency Plan
ICRMP	Integrated Cultural Resource Management Plan
ID	Infantry Division
IET	Initial Entry Training
INRMP	Integrated Natural Resources Management Plan
IONMP	Installation Operational Noise Management Plan
IPBC	Infantry Platoon Battle Course
IRP	Installation Restoration Program
ISBC	Infantry Squad Battle Course
ISCP	Installation Spill Contingency Plan
ITAM	Integrated Training Area Management
JLUS	Joint Land Use Study
km^2	Square Kilometers
KY	Kentucky
LBP	Lead Based Paint
LEED	Leadership in Energy and Environmental Design
lf	Linear Feet
LOS	Level of Service
LRCOG	Lee-Russell Council of Governments
LUPZ	Land Use Planning Zone
M	Mechanized
MACH	Martin Army Community Hospital
MBTA	Migratory Bird Treaty Act
mcf	Thousand Cubic Feet
MCM	Minimal Control Measures
METRA	Metropolitan Transit (METRA) Columbus Transportation System
mgd	Million Gallons per Day
MIM	Maneuver Impact Miles
MM	Million
MOGAS	Motor Gasoline
MOU	Memorandum of Understanding
MOUT	Military Operations Urban Terrain
MP	Military Police
MPTR	Multi Purpose Training Range
MRBC	Multi-Role Bridge Company
MRF	Mateirals Recovery Facility
MSA	Metropolitan Statistical Area
MS4	Municipal Separate Storm Water Sewer System
MSL	Mean Sea Level
MWR	Morale, Welfare, and Recreation
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Repatriation Act
NCOA	Non-commissioned Officer Academy
NCO	Non-commissioned Officer
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NIOSH	National Institute for Occupational Safety and Health
NO_2	Nitrogen Dioxide
NOI	Notice of Intent
NOR	Notice of Registration
NOV	Notices of Violation
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resource Conservation Service
NRHP	National Register of Historic Places
NTU	Nephelometric Turbidity Unit
NWI	National Wetland Inventory
O_3	Ozone
OCS	Officer Candidate School
OMA	Operations and Maintenance, Army
OSHA	Occupational Safety and Health Administration
OSUT	One Station Unit Training

PAO	Public Affairs Office
Pb	Lead
PCB	Polychlorinated biphenyl
pCi/L	Picocuries per Liter
PCPI	Per Capita Personal Income
PIP	Public Involvement Plan
PK	Unweighted Peak
PL	Public Law
PM_{10}	Particulate Matter less than 10 Microns
$PM_{2.5}$	Particulate Matter less than 2.5 Microns
POI	Program of Instruction
POL	Petroleum, Oil, and Lubricant
PSD	Prevention of Significant Deterioration
PUAL	Pending Unit Action List
RCI	Residential Communities Initiative
RCRA	Resource Conservation and Recovery Act
RCW	Red-Cockaded Woodpecker
RDP	Range Development Plan
REC	Record of Environmental Consideration
RGR	Range Regiment
RMS	Range Maintenance Section
ROD	Record of Decision
ROI	Region of Influence
RRC	Regional Readiness Command
RS	Recovery Standard
RSO	Range Safety Officer
RTLP	Range and Training Land Program
RTV	Rational Threshold Value
SAP	Satellite Accumulation Point
SBV	Stream Buffer Variance
SC	South Carolina
SDWA	Safe Drinking Water Act
SDZ	Surface Danger Zone
SEMP	Strategic Ecosystem Management Plan
SERDP	Strategic Environmental Research & Development Program
SERO	Southeastern Regional Environmental Office
SHPO	State Historic Preservation Office
SIP	State Implementation Plan
SMS	Standard for Managed Stability
SO_2	Sulfur Dioxide
SOCOM	Special Operations Command
SOF	Special Operations Forces
SOP	Standard Operating Procedures
SPCC	Spill Prevention Control and Countermeasures
STX	Situational Training Exercise
SWMP	Solid Waste Management Plan
SWMU	Solid Waste Management Unit
SWP3	Stormwater Pollution Prevention Plan
TBD	To be determined
TC	Training Circular
TCE	Trichloroethylene
TMDL	Total Maximum Daily Load
TNC	The Nature Conservancy
Tpy	Tons per Year
TRADOC	Training and Doctrine Command
TSCA	Toxic Substances Control Act
TSM	Abrams Series of Tanks
UA	Unit of Action
UAC	Urban Assault Course
UEA	Unique Ecological Area
UPH	Unaccompanied Personnel Housing
U.S.	United States
USAAA	U.S. Army Audit Agency
USAARMS	U.S. Army Armor School
USACE	U.S. Army Corps of Engineers
USACHPPM	U.S. Army Center for Health Promotion and Preventive Medicine
USAEC	U.S. Army Environmental Center
USAIC	U.S. Army Infantry Center
USARC	U.S. Army Reserve Center(s)
USC	U.S. Code
USDA	U.S. Department of Agriculture
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	United States Geological Survey
UST	Underground Storage Tank
UXO	Unexploded ordnance
VEC	Valued Environmental Resources
VOC	Volatile Organic Compound
WMU	Watershed Management Unit
WWTP	Waste Water Treatment Plant