

**U.S. Army Corps of Engineers
Wilmington District**

Action Memorandum

**For Range Complex 1 – Area 4A, Area 4B,
Area 4D, Area 4E, Area 4 (remaining land),
and Lakeview Subdivision**

**Former Camp Butner
Butner, North Carolina**

January 2006

*U.S. Army Corps of Engineers,
Wilmington District
69 Darlington Avenue
Wilmington, North Carolina 28402-1890*

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I04NC000902 02.17 0003



**ACTION MEMORANDUM
FOR RANGE COMPLEX 1 – AREA 4A, AREA 4B, AREA 4D, AREA
4E, AREA 4 (REMAINING LAND), AND LAKEVIEW SUBDIVISION
FORMER CAMP BUTNER
BUTNER, NORTH CAROLINA**

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1.0 INTRODUCTION

The United States Army Corps of Engineers, Engineering and Support Center, Huntsville (USAESCH) issued a contract to Parsons for conducting an Engineering Evaluation/Cost Analysis (EE/CA) at the former Camp Butner, Butner, North Carolina. In order to fulfill the contract requirements, Parsons conducted an EE/CA of five areas of interest (AOIs) located within the former Camp Butner, as designated in the Archives Search Report (ASR, USACE 1993, revised 1997 & 2003) and final Statement of Work (SOW, May 2000, revised 10 December 2001 & 16 August 2002). The results of the EE/CA investigation were presented in the Final EE/CA Report (Parsons, July 2004). Given the language present in some of the deeds and transfer documents and the current circumstances surrounding the individual properties, the District believes it is in the best interest of the DoD to proceed with this project. Therefore, the following response actions are selected. This document specifically presents the Munitions and Explosives of Concern (MEC) subsurface removal action selected for Military Munitions Range (MMR) Range Complex 1 (comprised of Area 4A, Area 4B, Area 4D, Area 4E, Area 4 [remaining land], and Lakeview Subdivision) within the former Camp Butner. The EE/CA recommends a site-wide institutional control (or Land Use) plan for the site. Another decision document is being completed and will outline a site-wide Land Use Control plan. Selected MEC response actions for other areas within the former Camp Butner are addressed in separate Action Memoranda.

2.0 BACKGROUND

2.1. The former Camp Butner is a formerly used defense site (FUDS) located primarily in Granville County, North Carolina (75%), but does also include some parcels within Durham and Person Counties, North Carolina. For purposes of the MEC EE/CA characterization study, Camp Butner comprises approximately 40,384 contiguous acres; however, 4,750 acres currently under the jurisdiction of the North Carolina National Guard (NCNG) are used as active ranges and were excluded from the study. The present Town of Butner, formerly the facility cantonment area, resides within the site boundary. The site is located approximately 30 to 35 miles northeast of Raleigh-Durham, North Carolina, along Interstate I-85 and west of the Town of Stem (Figure 1). The boundary of the site is loosely defined by the old Range Road, which makes a contiguous loop around the site although identified by multiple names and County designations. The northern and eastern boundary roughly follows Range Road (County Road 1126). County Road 1721 (continuation of Range Road into Person County) defines the western boundary and continues southward onto Cassam Road. The Southern Railroad defines the southeastern border (Figure 2).

2.2 Camp Butner was established as a result of the War Department acquiring the property from private land owners in 1942 for use as a training and cantonment facility during World War II. Camp Butner was designed to house up to 40,000 troops and was primarily established for the training of infantry divisions (including 78th, 89th, and 4th) and miscellaneous artillery and engineering units. There were approximately 15

ammunition-training ranges, a grenade range, 1000-inch range, a gas chamber, and a flame-thrower training pad. In addition to infantry training, the facility was the location of the one of the Army's largest general and convalescent hospitals and the War Department's Army Redeployment Center. The ordnance used at Camp Butner included rockets, mortars, grenades, and artillery rounds up to 240mm. MEC that may be encountered within Camp Butner include: 2.36-inch rockets (practice and high explosive [HE]), rifle and hand grenades, 20mm through 155mm HE projectiles, 60mm and 81mm mortars, anti-personnel practice mines, and demolition items to include TNT.

2.3 Camp Butner was declared excess by the War Department in 1947 and property dispersal was initiated. Much of the property was sold back to the original owners; however, some parcels included provisions in the property deed restricting land use to 'surface use only'. Given the language present in some of the deeds and transfer documents and the current circumstances surrounding the individual properties, the District believes it is in the best interest of the DoD to proceed with this project.

2.4 Dedudiving operations were conducted in selected areas in 1947 and continued through 1950. The Recapitulation Dedudiving Report presented in the ASR stated that 1,366 MEC items had been discovered and destroyed by the completion of dedudiving operations. Six areas (designated A-F) were identified during dedudiving inspections as warranting land restrictions to 'surface use only' due to the numerous amounts of HE duds found (Figure 3). Periodic inspections of the six areas with land restrictions continued between 1958 and 1969. During the inspections and removal of ordnance from the restricted areas, other property owners identified ordnance for disposal that had been found in unrestricted areas. Table 1 lists the type of ordnance items found during the annual/semiannual inspections of restricted areas (as well as general findings within unrestricted areas) at the former Camp Butner Site:

AREA RESTRICTED TO 'SURFACE USE ONLY'	TYPE OF MEC RECOVERED
Area A	Rifle grenade, 2.36-inch rockets, 37mm, 40mm, 81mm mortar, 105mm, 155mm, and 240mm projectiles
Area B	2.36-inch rockets and 81mm mortars
Area C	81mm mortars, 37mm, 105mm, 155mm, and 240mm projectiles
Area D	2.36-inch rocket, 37mm and 40mm projectiles
Area E	2.36-inch rocket
Area F	No findings reported
Other "Unrestricted" Areas	Hand grenades, 37mm, 40mm, 60mm, 81mm, 105mm, and 155mm projectiles and 2.36-inch rockets

2.5 Although much of the site remains rural, unbridled residential development is occurring along artery roads and near Lake Butner. Current residential development is encroaching areas to the south and stretching north along the eastern boundary of the site. Sprawling development will continue to be experienced in these regions due to migration from Durham and Wake Counties. The cause of the development is the proximity to the growing Raleigh-Durham area. Many large family-owned tracts previously idle or used for agricultural purposes (for 50 years) are now being converted to single-family subdivisions. As growth and residential development continue throughout the region, land used for agriculture and forestry will consequently diminish. Several U.S. Army Corps of Engineers (USACE) tracts in the southern portion of the site, specifically the 2,300-acre Waterfowl Impoundment Reserve and Falls Lake State Park, are protected from residential development.

2.6 The USACE Rock Island District conducted a records search and reconnaissance of the project site in September 1993. The findings are documented in the Archives Search Report (ASR), (USACE, 1993/1997) and ASR Supplement (USACE, 2003). The former Camp Butner was subdivided into six areas, as depicted on Figure 1 (Areas 1: Cantonment Area and Vicinity, Area 2: Ammunition Storage Area and Dump, Area 3: Grenade Training Ranges, Area 4: Ammunition Training Ranges and Impact Areas, Area 5: Remaining Land, and Area 6: NCNG (not investigated) for evaluating purposes based on former land use, terrain, visual site inspection). Areas 1 and 4 were classified as having "confirmed" ordnance present. Areas 2 and 3 were classified as "potential" for ordnance presence. Area 5 was identified as "uncontaminated", and Area 6 was not assessed. Based on these recommendations the EE/CA investigation was initiated. Area 5 was included in the EE/CA investigation (in accordance with the project SOW) in order to confirm/disprove the ASR classification.

2.7 An EE/CA was conducted at the former Camp Butner to characterize the presence of MEC, analyze risk management alternatives, and recommend feasible MEC risk reduction alternatives for five of the six AOIs identified in the ASR. The EE/CA investigation results indicated the presence of MEC in several areas. As a result, the original AOI boundaries were modified in order to facilitate the appropriate selection of munitions response alternatives. Old AOIs 1 through 4 were combined and re-sectored to form nine AOIs including Area 1A (Flamethrower Range), Area 4 Proper, Area 4A, Area 4B, Area 4C, Area 4D, Area 4E, and Lakeview Subdivision (Figure 3). Area 5 was not changed. The re-sectored AOI boundaries were based on MEC type, MEC distribution, and current and near future land use.

2.8 Range Complex 1, the subject site for this Action Memorandum, is comprised of Area 4A, Area 4B, Area 4D, Area 4E, part of Area 4 (remaining land), and Lakeview Subdivision. The boundary of Range Complex 1 is generally defined as the property within the bounds of Range Road to the west (excluding the North Carolina National Guard) and east, south of Enon Road, and north of Highway NC 75 (Figures 3 and 4).

2.9 Area 4 (remaining land), the largest of the six areas of interest (AOIs) within Range Complex 1, includes all land within the Range Complex not otherwise designated for an individual munitions response action. Parts of Area 4 reside in both Range Complex 1 and 2 with approximately 10,000 acres in each. Five MEC items were recovered within Area 4 with all of the MEC and much of the MEC scrap presence concentrated in areas coincident with former firing ranges. Land use and terrain vary significantly throughout the AOI from flat agricultural and residential areas to mountainous undeveloped woodlands used primarily for hunting and hiking. MEC items identified included a 57mm high explosive (HE) projectile, a M-series nose fuze, a 2.36-inch rocket, a 105mm HE projectile, and a 155mm shrapnel round. A diversity of MEC scrap items were recovered during the EE/CA including a total of 1,118 items consisting of HE fragments from 2.36-inch rockets and 37mm, 57mm, 75mm, 105mm, and 155mm projectiles. All items were recovered from less than 24 inches below ground surface (bgs) with the majority recovered within 6 inches of the surface.

2.10 Area 4A encompasses the tract of land approximately 34 acres, bordered to the east by East Range Road, and within the general location associated with former bazooka and rifle grenade training ranges (Figure 3). As a result of the regular presence of MEC during post-closure deduinding inspections, described above, the area was deed restricted by the government for 'surface use only'. A single MEC item was recovered during the EE/CA intrusive investigation (a 2.36-inch HE bazooka rocket); however, sixteen MEC scrap items consisting of remnants of 2.36-inch rockets were also recovered. All ordnance related items were recovered within 0 to 6 inches bgs. This property has recently been partitioned for residential development.

2.11 Area 4B encompasses the tract of land of approximately 20 acres, bordered to the east by East Range Road and just north of Area 4A (Figure 3). Area 4B displays similar characteristics to Area 4A to include use as a bazooka training range as well as post-closure government deed restrictions. The primary difference is that the property is mostly undeveloped with a portion used for agricultural purposes. Although only one MEC item, a 2.36-inch HE bazooka rocket, was recovered during the EE/CA intrusive investigation, the majority property owner confirmed frequent findings of rockets and fragments in the farmed area.

2.12 Area 4D encompasses an area of land approximately 453 acres to the east of Isham Chambers Road, but is not within an area designated 'for surface use only' following facility closure (Figure 3). The AOI is, however, within the general location of the impact area for former Range 10 and Range 11 (designated as a 37mm and 60mm/81mm mortar firing ranges, respectively). The area is, currently, mostly undeveloped, consisting of forest with dense understory and rugged terrain with low residential density. A single MEC item (37mm projectile) and 27 MEC scrap items were recovered at a depth of 10 inches or less during the EE/CA investigation.

2.13 Area 4E is a parcel of land of approximately 152 acres bordered by Isham Chambers Road to the north and east, and forest to the west and south (Figure 3). Area

4E lies within the general location of impact areas associated with former Range 10. Similar to Area 4D, the single MEC item recovered during the EE/CA intrusive investigation was a 37mm HE projectile. However, this AOI is almost exclusively dedicated to the cultivation of tobacco. Further, the presence of MEC (ranging from 37mm to 40mm and 2.36-inch bazooka rockets) during post-closure deduinding inspections (discussed above) resulted in the area being deed restricted by the government for 'surface use only'.

2.14 The Lakeview Subdivision is defined as a unique AOI due to regional findings and the subsequent time critical removal action (TCRA). The Lakeview Subdivision Site encompasses approximately 26 acres, including 16 acres that comprise the subdivision, and 10 acres of buffer zone extending around the entire site (Figure 3). Placement of sampling grids at this site during the EE/CA investigation was in response to a reported 2.36-inch rocket finding made by a local property owner. Initially, no EE/CA actions were planned for this parcel since historic records do not identify any training activities in the area. Following the discovery of a live 37mm projectile near a residential dwelling during the EE/CA, the TCRA was initiated. Six MEC items including an electric blasting cap, an Mk II hand grenade, a 37mm HE projectile, an M1 A1 landmine fuze, a 2.36-inch bazooka rocket, and a 2.36-inch bazooka rocket warhead were recovered from within six inches of the ground surface during the TCRA. The TCRA was implemented to address the immediate public safety risk. As such, excavation depth was confined to six inches. Digital geophysical mapping of the site following the TCRA indicate additional ordnance may be present at greater depths.

3.0 STATEMENT OF BASIS AND PURPOSE

3.1 The purpose of this EE/CA Action Memorandum is to present the selected munitions response actions for AOIs within MMR Range Complex 1 - comprised of Area 4A, Area 4B, Area 4D, Area 4E, Area 4 (remaining land), and Lakeview Subdivision within the former Camp Butner.

3.2 Based on the results of the completed EE/CA, which included a qualitative baseline risk evaluation and comparative analysis of potential munitions response actions, the most appropriate alternative was selected for each of the nine AOIs. As a result of the comprehensive evaluation of alternatives, Land Use Controls were selected as the most appropriate and sole munitions response action for Area 5. This selection was primarily driven by the absence of hazardous ordnance-related contamination within this AOI. For Area 4D, Area 4E, and Area 4 (remaining land) Land Use Controls were also selected in tandem with a residential removal action component. To ensure public safety associated within the AOIs (excluding Area 5), a two-acre subsurface removal action around each existing homestead was also selected. This selection was primarily driven by the lack of complete public exposure pathways present throughout much of the AOIs. Mechanisms will be developed for requesting MEC construction support for new residential dwellings. Recurring reviews will be conducted on 5-year intervals to ensure the selected response alternative remains appropriate.

3.3 For the balance of the AOIs (inclusive of Area 4A and 4B), removal actions were selected with Land Use Controls intended to be an effective complement to the removal actions. This Action Memorandum addresses the selected munitions response action for those AOIs within MMR Range Complex 1 – Area 4B, Area 4D, Area 4E, and Area 4 (remaining land). Separate Action Memoranda have been prepared for the Land Use Controls remedial munitions response action as well as for other removal action sites in MMR Range Complex 2.

3.4 The Final EE/CA Report describes the potential response alternatives that were evaluated for each of the AOIs within the site and presents the recommended munitions response alternative. As stated previously, Land Use Controls strategies have been selected for several individual sites and subsequently expanded to cover the entire site. MEC removal actions are selected for five sites to include three in MMR Range Complex 1 (Area 4A, Area 4B, and Lakeview). The North Carolina Department of Environment and Natural Resources (NCDENR) and the U.S. Environmental Protection Agency (EPA) have been actively involved in the project and both agencies reviewed the EE/CA Report. Comments were received and addressed during multiple teleconferences and project team meetings held at NCDENR offices in Raleigh, North Carolina. Following comment resolution, NCDENR concurs with the EE/CA selected alternatives detailed in the Final EE/CA Report. All EPA comments were addressed and the agency has indicated they have no further comments.

3.5 The process for munitions response action selection is documented in the Administrative Record for the site. The project Administrative Record, which includes the ASR and other pertinent project documents, is maintained at two locations. The records are available for public access at the South Branch of the Granville County Library at 1547 S. Campus Drive, Creedmoor, North Carolina as well as the Town of Butner Operations Center, 205C West E Street, Butner, North Carolina.

4.0 PROJECT JUSTIFICATION

4.1 A variety of ordnance items were recovered within the AOIs during the EE/CA field investigation conducted at the former Camp Butner to include 13 MEC items. The presence of MEC was confirmed in all AOIs, except Area 5. MEC recovered during the EE/CA investigation at the former Camp Butner Site included one 155mm projectile, two 105mm projectiles, a 57mm projectile, three 2.36-inch bazooka rockets, three 37mm projectiles, an Mk II hand grenade, an M52-series nose fuze, and an M1 practice mine with spotting charge and fuze. Additionally, six MEC items were recovered during the TCRA at the Lakeview Subdivision. Ordnance scrap was found in all nine of the AOIs. All of the recovered ordnance items were consistent with the historical usage of the former Camp Butner.

4.2 The data collected during the EE/CA field investigation was used to perform a qualitative risk evaluation for assessing the MEC risk to public safety and the environment at the former Camp Butner. The qualitative risk analysis was completed

based on the USAESCH MEC Risk Impact Assessment (MEC RIA) evaluation tool. Results of the evaluation concluded that the overall explosive public safety risk in the MMR Range Complex varied from low to high. In Area 4D, Area 4E, and Area 4 (remaining land), the risk was characterized as low to moderate. For Area 4A, Area 4B, and Lakeview Subdivision, where MEC presence was confirmed during the EE/CA and public exposure pathways are potentially complete, the overall explosive public safety risk was considered high. Public access to the entire site is basically unrestricted.

5.0 ALTERNATIVES CONSIDERED

A non-time-critical removal action (NTCRA) was developed and evaluated to address the public safety risks associated with residual MEC within the former Camp Butner. Several munitions response action alternatives were considered for each of the AOIs investigated. The munitions response action alternatives considered were:

- No DoD Action Indicated (NDAI);
- Institutional Controls (ICs);
- Surface Clearance of MEC; and
- Clearance of MEC to Depth.

6.0 HIGHLIGHTS OF COMMUNITY PARTICIPATION

6.1 During the former Camp Butner EE/CA project, public meetings were conducted during project planning and Work Plan development through preparation of the Final EE/CA Report and recommendations. The first Public Meeting was conducted on 22 May 2001 at the Butner-Stem Elementary School as part of the Technical Project Planning (TPP) process. A second Public Meeting was held at the Town of Butner Operations Building (as were all subsequent meetings) on 26 June 2001 to kickoff the field investigation. Additional Public Meetings were held on 2 April 2002, 29 October 2003 (TCRA only), and 13 November 2003. The public participation process was coordinated with NCDENR.

6.2 A Public Meeting was held 16 December 2003 at the Town of Butner Operations Building located at 205-C West "E" Street to present the conclusions and recommendations of the Draft Final EE/CA to the public and to address any public concern. The meeting marked the beginning of the thirty-day period for public comment which expired (after extension) on 30 January 2004. No public concerns pertaining to the EE/CA recommendations were identified during the meeting nor were any received during the review period. All the requirements for public involvement have been met. A follow-up Public Meeting was held on 25 May 2004 to update the public on the status of the EE/CA and TCRA projects, present groundwater survey information, and kick off in the formation of the Restoration Advisory Board (RAB). Camp Butner has an active RAB, which include members of the community, regulatory officials, and USACE Wilmington District (CESAW). The RAB will make recommendations to the USACE

for implementation of the EE/CA recommended removal actions. The RAB has met five times to date with meetings continuing on a quarterly basis.

7.0 COORDINATION SUMMARY

7.1 Project activities for the former Camp Butner EE/CA have been coordinated with the USAESCH, USATCES, CESA, CESAD, NCDENR, EPA, various State of North Carolina agencies, and local (Granville, Person, Durham Counties, and Town of Butner) government officials. Project Work Plans (WP's) were reviewed by USAESCH and CESA with the review and development of the EE/CA Report including NCDENR and EPA. Project documents were made available to project stakeholders and property owners/public via a project website and the Administrative Record.

7.2 The initial Technical Project Planning (TPP) coordination meeting was conducted in conjunction with the project kickoff Public Meeting on 10 January 2001 to formally introduce the primary project stakeholders to the EE/CA process and solicit input and comment for development of the project WP's. Representatives from the NCNG, NCDENR, Town of Butner, Emergency Responders, County Officials, and several State agencies were in attendance. Subsequent TPP meetings were held in conjunction with Public Meetings on 26 June 2001 and 2 April 2002. The culmination of these meetings was project team concurrence on the Final project WP.

7.3 The Draft Final EE/CA was made available to public review initially for a 30-day period on 16 December 2003 and was opened for comments during the public meetings. During the Work Plan preparation stage, the appropriate regulatory bodies, including the State Historical Preservation Officer (SHPO) and the U.S. Fish and Wildlife Service, were contacted to ensure that historical features, endangered species, and sensitive habitats were not adversely affected by MEC survey and clearance activities.

7.4 The lead regulatory agency, NCDENR, reviewed several versions of the Draft Final EE/CA. Comments received from NCDENR were addressed and resolved via multiple project team meetings held via teleconference as well as in their offices in Raleigh, North Carolina. The Project Delivery Team met with NCDENR before the public meetings in order to ensure concurrence with the recommended munitions response actions. The NCDENR concurs with the recommendations of the Final EE/CA (July 2004). All EPA comments were addressed and the agency has indicated they have no further comments.

Key contacts for state officials included:

State Regulatory Agency – NCDENR

Marti Morgan, P.E. Project Manager

Arthur Shacter, Superfund Section, Division of Waste Management

Dave Lown, Chief of Federal Remediation Branch, Superfund

Federal Regulatory Agency – U.S. EPA

Doug Maddox, EPA HQ, Federal Facilities Restoration and Reuse Office

Kevin Oates, Munitions and Explosives Response, EPA HQ, Federal Facilities
Restoration and Reuse Office

Ken Lucas, Remedial Project Manager, North Site Management Branch, EPA
Region IV

8.0 SELECTION CRITERIA

The selection criteria used to evaluate the four response action alternatives consist of the effectiveness in reducing the public safety risks, the implementability of the alternative, and the cost of implementing the alternative. The effectiveness criterion involved consideration of four criteria: protection of public safety and the environment, compliance with Applicable or Relevant and Appropriate Requirements (ARARs), long-term effectiveness, and short-term effectiveness. The implementability criterion involved consideration of six criteria: technical feasibility, administrative feasibility, availability of services and materials, property owner acceptance, local agency acceptance, and community acceptance. These criteria are discussed further in Sections 6 and 7 of the Final EE/CA Report (Parsons, July 2004) and are available in the project Administrative Record.

9.0 DESCRIPTION OF SELECTED REMEDIES

9.1 MMR Range Complex 1 is comprised of six areas. For Area 4, Area 4D, and Area 4E, the selected munitions response alternative is Site-Wide IC. For Area 4A, Area 4B, and the Lakeview Subdivision, subsurface clearance to depth (inclusive of Site-Wide IC components) is the selected munitions response alternative.

9.2 The results of the EE/CA comparative analysis evaluation for MMR Range Complex 1 sites indicated there is a public safety risk associated with the presence of MEC in three areas (Area 4A, Area 4B, and Lakeview Subdivision). One or more MEC items were identified within the AOIs, and a public exposure pathway is complete based on land use. The MEC items recovered included a 2.36-inch rocket in each of Area 4A and Area 4B. A variety of MEC items were identified during the EE/CA and TCRA for Lakeview Subdivision to include a 37mm projectile, electric blasting cap, an Mk II hand grenade, an M1 practice landmine with spotting charge and fuze, and 2.36-inch rockets. Numerous MEC scrap items were identified, including 60mm mortar fins and inert/expended pieces of M4 landmines, and 2.36-inch rockets. All MEC items and MEC scrap were found at 6-inches or less bgs. The EE/CA findings suggest that the former military land use for Lakeview may have been as a dumpsite.

9.3 A subsurface removal to depth is selected for Area 4A and Lakeview Subdivision as well as the developed portion of Area 4B (approximately 10 acres). As a result of the comprehensive evaluation of alternatives, Land Use Controls were selected

as the most appropriate and sole remedial munitions response action for Area 4D, Area 4E, and Area 4. It should be noted that Land Use Controls components will also be implemented, although not selected as necessary via comparative analysis evaluation, for the entire site to include areas where removal action will be implemented. The discussion and costs associated with Land Use Controls are addressed in a separate Action Memorandum. To ensure public safety associated with the residential component in MMR Range Complex 1, a subsurface removal action is also selected (comprising a two-acre residential footprint) encompassing each existing residential dwelling. The overall estimated cost (in 2004 dollars) to implement the selected munitions response action for MMR Range Complex 1 is \$6,114,572. Detailed development of the estimated clearance cost is presented in the Final EE/CA (Parsons, July 2004).

9.4 Table 2 presents the selected munitions response alternative for Range Complex – Area 4A, Area 4B, Area 4D, Area 4E, and Area 4 (remaining land) within the former Camp Butner. The alternative selected, following a comparative analysis of alternatives, will provide significant protection to public safety and the human environment. Primary drivers of the selection process were the vertical distribution of MEC and MEC scrap, lack of access restrictions, and planned future land use.

Table 2
Range Complex 1 – Selected Alternative and Clearance Costs

Site	Selected Action	Clearance Acreage	Cost
Site 4A	Subsurface Clearance to Depth	34	\$654,622
Site 4B (Homesteads and agricultural acres)	Subsurface Clearance to Depth	10	\$199,159
Site 4D	Subsurface Clearance to Depth (6 Residential Dwellings Only)	12	\$194,202
Site 4E	Subsurface Clearance to Depth (5 Residential Dwellings Only)	10	\$161,835
Site 4 (remaining land south of Enon Road)	Subsurface Clearance to Depth (140 Residential Dwellings Only)	280	\$4,531,380
Lakeview	Subsurface Clearance to Depth	26	\$373,374
Total	RANGE COMPLEX 1	372	\$6,114,572

9.5 Based on the estimated costs presented in this Action Memorandum (See Table 2), the appropriate approval level for this project is the Major Subordinate Command (MSC) Commander.

10.0 TRADE OFF ANALYSIS

The alternatives recommended for the AOIs within MMR Range Complex 1 at the former Camp Butner are the best alternatives as determined from the available historical records and data gathered in support of the Final EE/CA Report (Parsons, July 2004). Also, these alternatives were developed in concert with USAESCH, CESAW, NCDENR, EPA, and other project stakeholders. Mitigative measures will be implemented to ensure that no resources are impacted due to the actions proposed.

11.0 RECURRING REVIEWS

A Recurring Review Plan was not part of the EE/CA for this site, and, therefore, has not yet been prepared. As described in Chapter 10 of the Final EE/CA Report, recurring reviews at the former Camp Butner are anticipated to be performed every 5-years after the implementation of the selected munitions response actions. This effort will be performed to determine if the munitions response actions for AOIs within MMR Range Complex 1 continues to be protective of human health, safety, and the environment. Recurring reviews will also provide an opportunity to assess the applicability of new technology for addressing previous technical impracticability determinations. The review will evaluate specific factors that may impact the continued effectiveness of the response. These factors may include such things as changes in physical conditions at the former Camp Butner site, or changes in public accessibility. The cost to conduct one recurring review is estimated to be approximately \$35,000. If no changes have taken place, the AOIs will be continually monitored at the specified intervals.

12.0 DOCUMENTATION OF SIGNIFICANT CHANGES

If the actions outlined in this EE/CA Action Memorandum are delayed or not taken at the former Camp Butner, the potential exists of continued and substantial endangerment to public health, welfare, and environment. Residential development continues in areas confirmed to have MEC presence. This trend is not expected to change. USACE will notify the public of any significant changes to this document.

13.0 RESPONSIVENESS SUMMARY

A responsiveness summary for the public meeting of 16 December 2003 is not necessary as no formal comments were received either at the meeting or during the 30-day public comment period. NCDENR and EPA comments on the Draft Final EE/CA

Report were resolved via project team meetings and teleconferences prior to the Final EE/CA Report issuance in July 2004.

14.0 AUTHORIZING SIGNATURE

This Action Memorandum presents the selected removal action of subsurface clearance to depth of selected areas at Military Munitions Range (MMR) Range Complex 1 (consisting of Area 4B, Area 4D, Area 4E, and Area 4 - remaining land) within the former Camp Butner, Butner, North Carolina. The U.S. Army Corps of Engineers (USACE) is the lead agency under the Defense Environmental Restoration Program (DERP) at the former Camp Butner Formerly Used Defense Site (FUDS), and has developed this Action Memorandum consistent with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended, and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). This decision document will be incorporated into the larger Administrative Record file for former Camp Butner, which is available for public view at both the South Branch of the Granville County Library at 1547 S. Campus Drive, Creedmoor, North Carolina, as well as the Town of Butner Operations Center, 205C West E Street, Butner, North Carolina. This document, presenting a selected remedy with a present worth cost estimate of \$6,114,572, is approved by the undersigned, pursuant to Memorandum, DAIM-ZA, 9 September 2003, Subject: Policies for Staffing and Approving Decision Documents (DDs), and to Engineer Regulation 200-3-1, Formerly Used Defense Sites (FUDS) Program Policy.

APPROVED:



Patricia A. Rivers, P.E.
Chief, Department of Defense
Support Team
Directorate of Military Programs

27 Jan 2006

Date

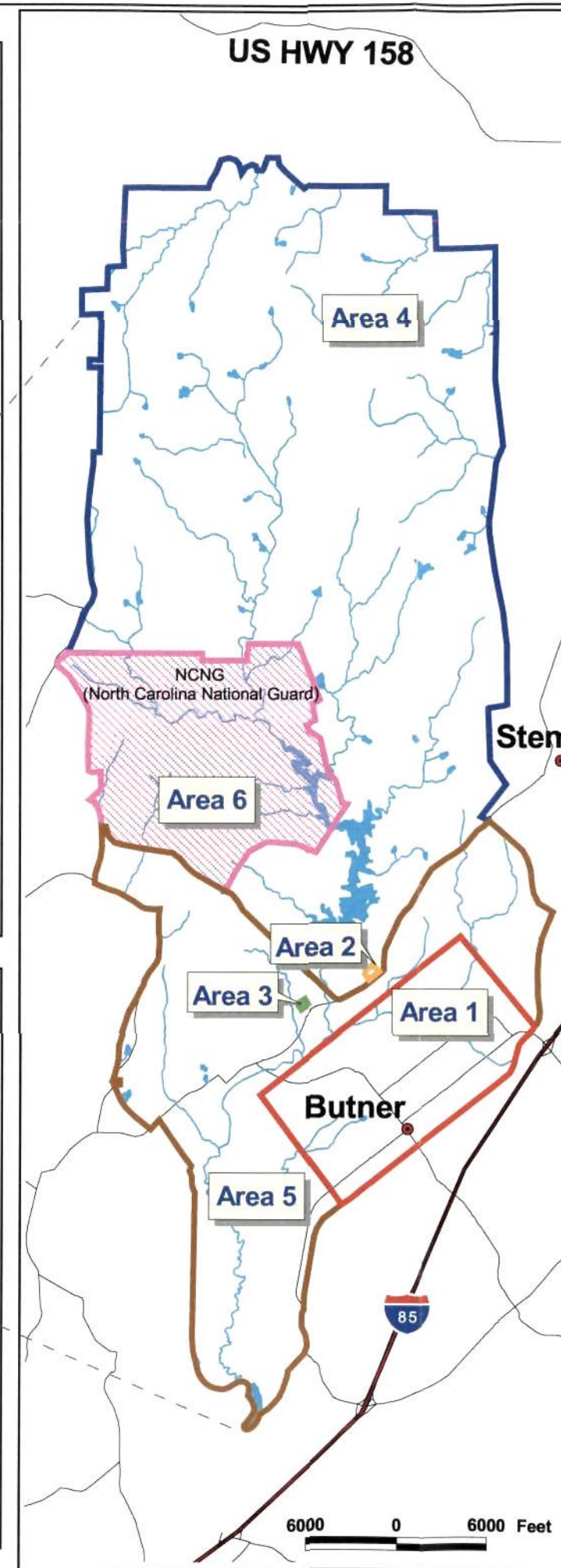
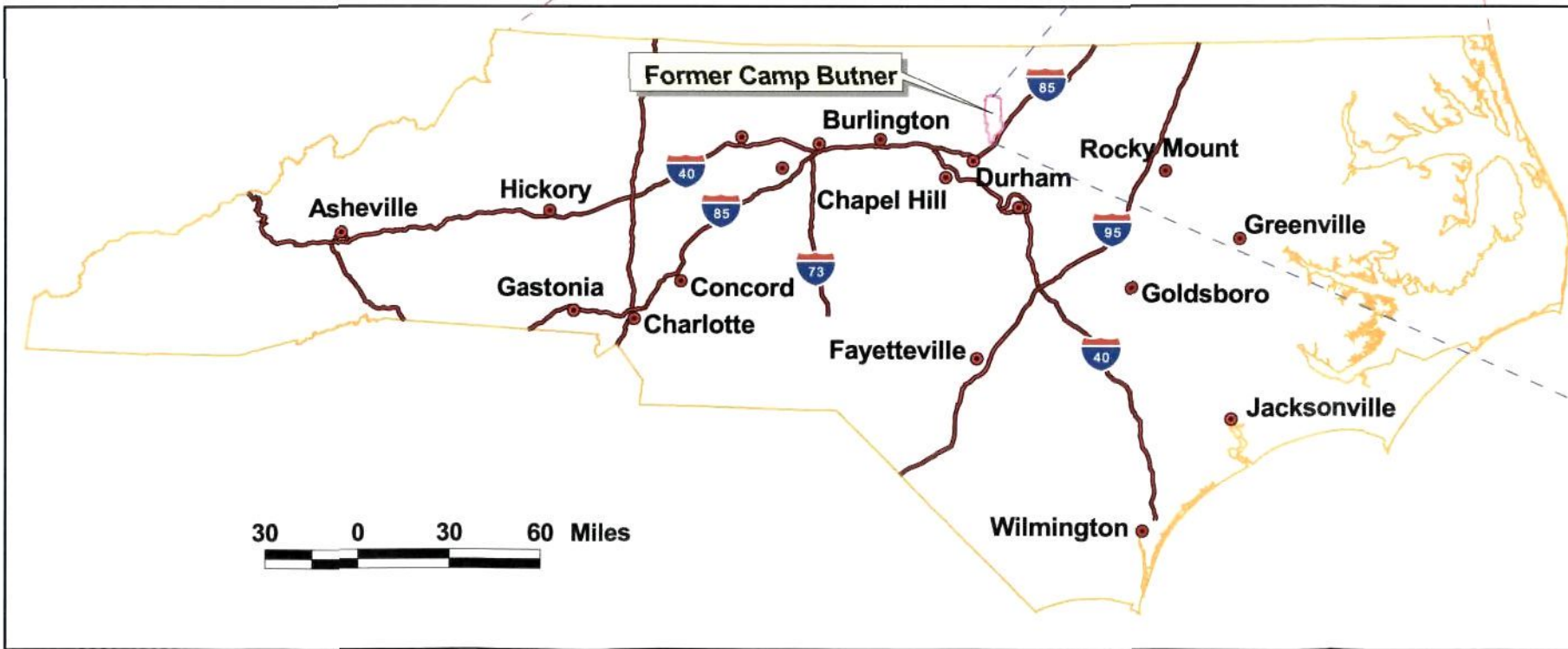
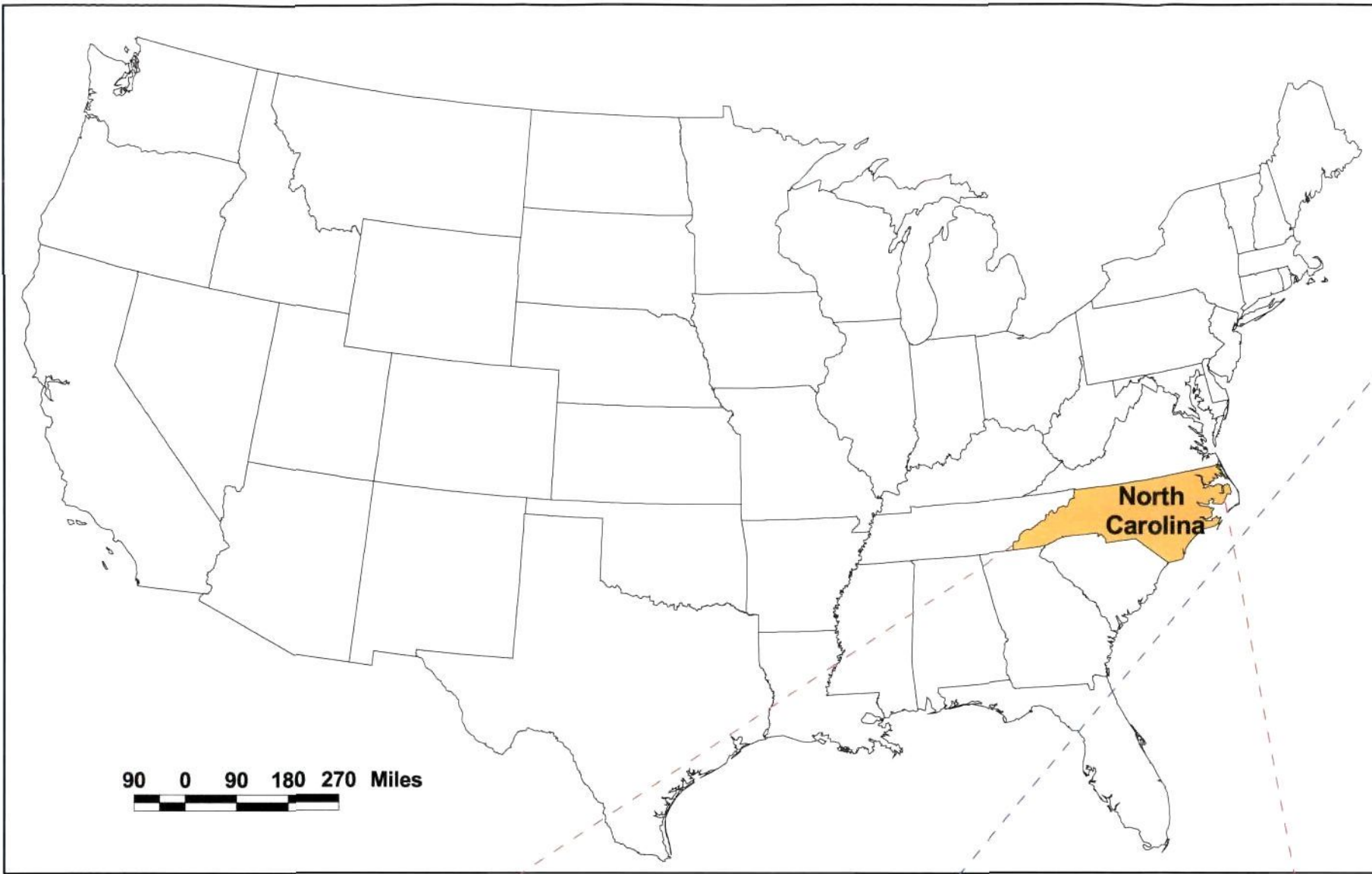


Figure 1
General Location Map
Former Camp Butner
Butner, NC

PARSONS		U.S. ARMY CORPS OF ENGINEERS HUNTSVILLE CENTER	
DESIGNED BY: BT	General Location Map		
DRAWN BY: BT	SCALE: As Shown	PROJECT NUMBER: 738001	
CHECKED BY: DS	DATE: July 2004	PAGE: 13	
SUBMITTED BY: DS	FILE: x:\gis\738001\av_project\EECA.apr		

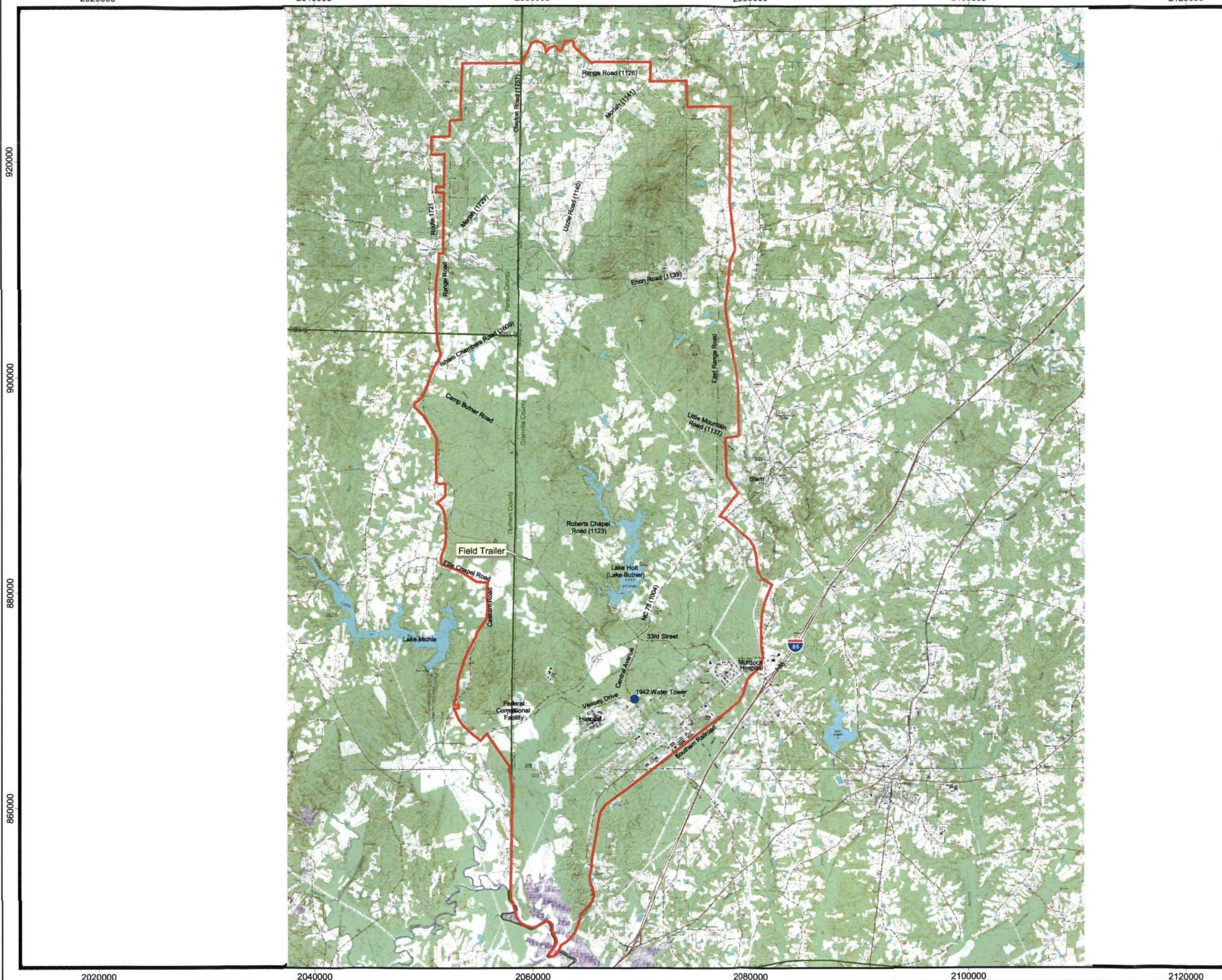


Figure 2
 Former Camp Butner
 Butner, NC
 General Layout

Legend

- Former Camp Butner Boundary
- Stream and Waterbody

Map Units: NAD 1983 North Carolina State Plane (Feet)

N

PARSONS		U.S. ARMY ENGINEERING AND SUPPORT CENTER, HUNTSVILLE	
DESIGNED BY:	BT	General Layout	
DRAWN BY:	BT		
CHECKED BY:	LK	SCALE: 1 inch equals 8,500 feet	PROJECT NUMBER: 738001
SUBMITTED BY:	DS	DATE: July 2004	PAGE NUMBER: 14
		FILE: x:\gis\738001\av_project\ TCRA_loc.apr	

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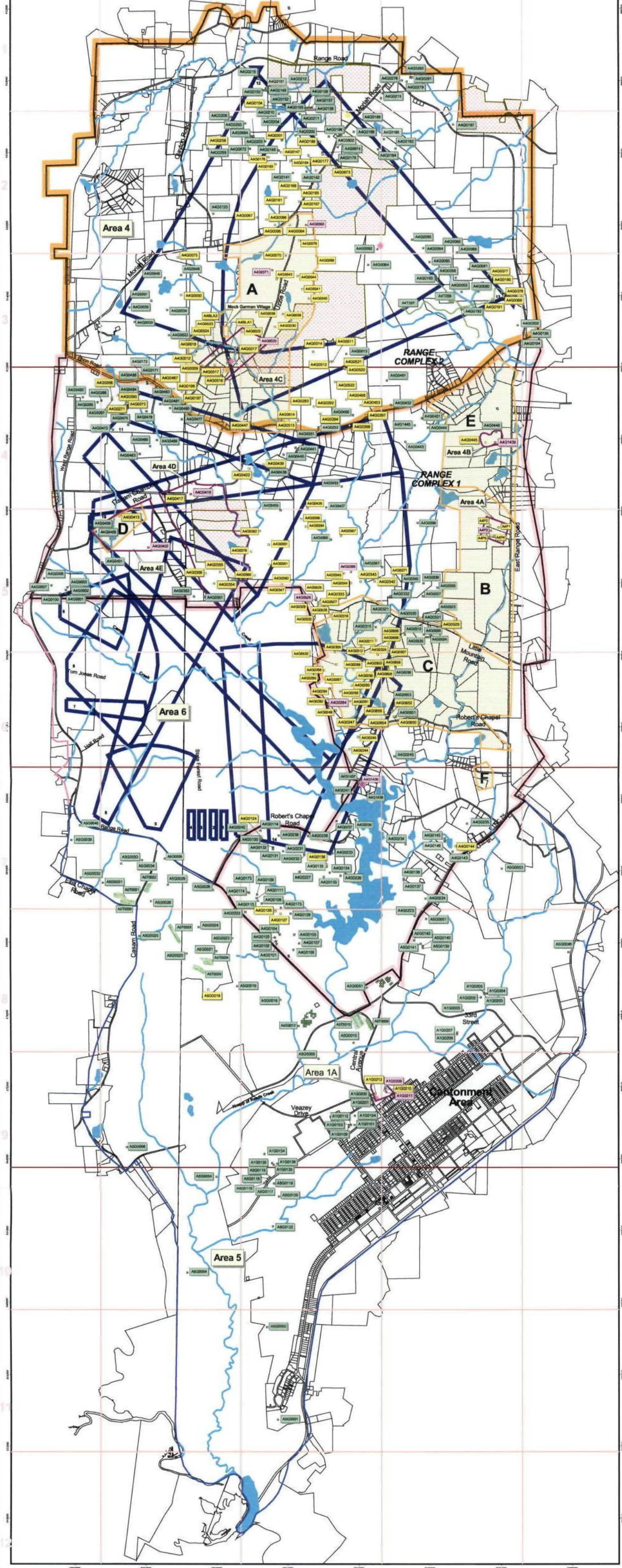
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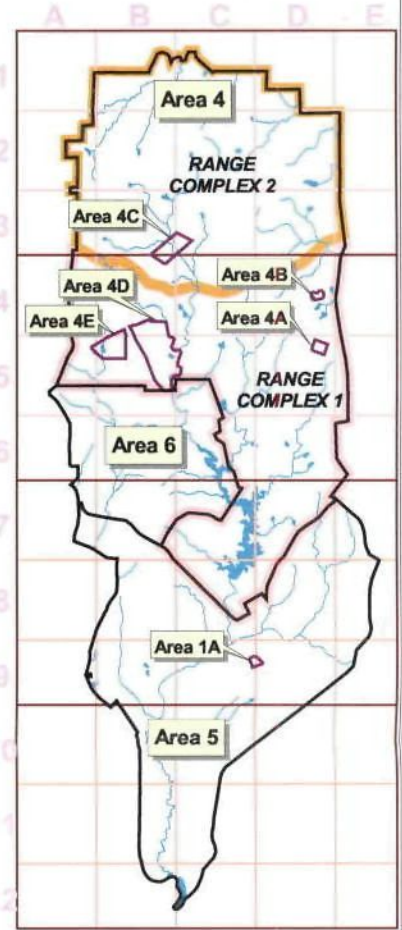
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Intrusively Investigated Grid Locations

Former Camp Butner
Butner, NC



Index Map



Legend

- Firing Fan
- Range Complex 1
- Range Complex 2
- Property Deed Restricted Prior to Government Release as "Surface Use Only" (Areas A - F) Due to Extensive Ordinance Presence (See Subchapter 2.3)
- Right of Entry Refused

Resected Areas of Interest

- Areas 4A through 4E and 1A
- Area 4
- Area 5
- Area 6
- Parcel Boundary

100'x100' Grid

- Intrusively Investigated - No OES
- Intrusively Investigated - OES Present/No UXO
- Intrusively Investigated - UXO Present
- Waterbody (SDTS Data, Buffered 50 Feet)
- Completed Transect (Intrusively Investigated - No OES)
- * Recent Non-EE/CA UXO Findings
- * Recent Non-EE/CA OES Findings
- * UXO Findings 10 Years Ago

List of Ranges:

- 1 - 9 Small Arms
- 10 37 mm
- 11, 14 Trench Mortar, 60 mm and 81 mm
- 12, 13 Heavy Artillery

Map Units: NAD 1983 North Carolina State Plane (Feet)

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U.S. ARMY CORPS OF ENGINEERS
HUNTSVILLE CENTER

DESIGNED BY: BT	Intrusively Investigated Grid Locations	
DRAWN BY: BT		
CHECKED BY: JK	SCALE: As Shown	PROJECT NUMBER: 738001
SUBMITTED BY: DS	DATE: July 2004	PAGE: 1/1

Figure 4

Selected OE Response Actions

Former Camp Butner
Butner, NC

Legend

- Areas of Interest**
- Areas 4A through 4E, 1A, and Lakeview
 - Areas 4 through 6
- Recommendation:**
- Site Wide IC (Areas 4D, 4E, and 5)
 - Subsurface Clearances (Areas 1A, 4A, 4B, 4C, and Lakeview)
 - Range Complex 1
 - Range Complex 2
 - Firing Fan
 - Stream and Lake
 - Road
 - Property Deed Restricted Prior to Government Release as "Surface Use Only" (Areas A-F) Due to Extensive Ordnance Presence (See Subchapter 2.3)

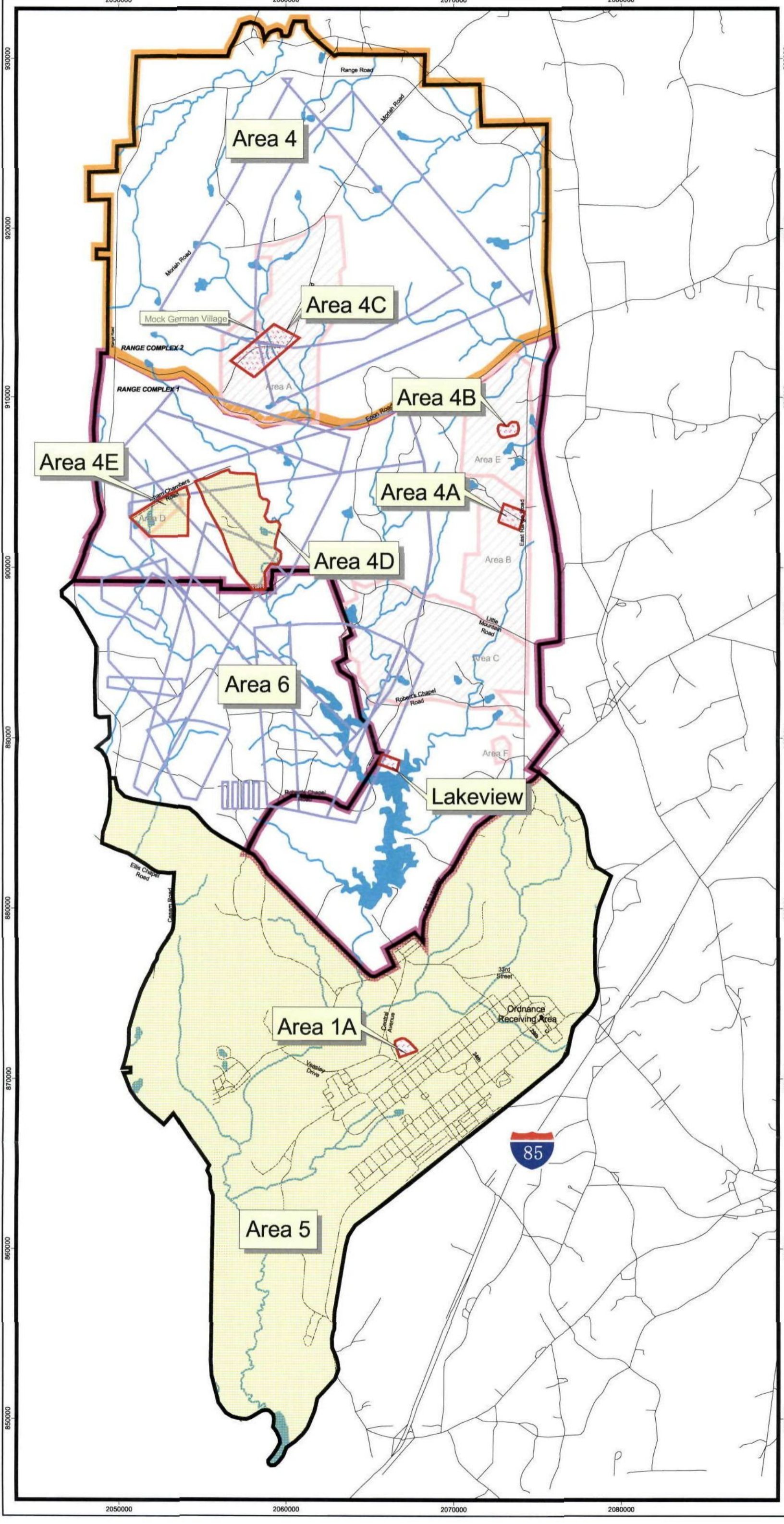


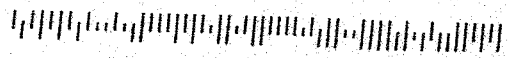
Map Units: NAD 1983 North Carolina State Plane (Feet)

0 5500 Feet

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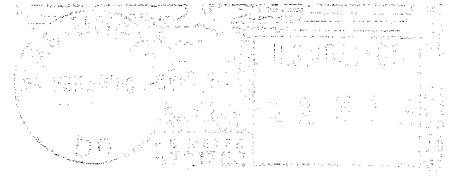
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CHECKED BY: DS	
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SCALE: As Shown	





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