FINAL

Environmental Assessment for Disposal and Reuse of Lone Star Army Ammunition Plant and Red River Army Depot, Texas

Prepared by:

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Environmental Assessment for Disposal and Reuse of Lone Star Army Ammunition Plant and Red River Army Depot, Texas

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EXECUTIVE SUMMARY

INTRODUCTION

The 2005 Base Closure and Realignment (BRAC) Commission made recommendations for realignment and closure actions for military installations on 8 September 2005, in conformance with the provisions of the Defense Base Closure and Realignment Act of 1990 (Base Closure Act), Public Law 101-510, as amended. These recommendations included the closure of the Lone Star Army Ammunition Plant (LSAAP) and the realignment of the Red River Army Depot (RRAD), Texas. In the absence of Congressional disapproval, the BRAC Commission's recommendations became binding on 9 November 2005. The LSAAP installation property and a portion of the RRAD installation property (the RRAD western excess property [RRAD-WEP]) were determined to be surplus to U.S. Department of Army (Army) needs.

This Environmental Assessment (EA), prepared in accordance with the National Environmental Policy Act (NEPA), analyzes the environmental and socioeconomic effects of disposal of the federal property, and considers reasonable foreseeable reuse alternatives. An initial EA was prepared and circulated in October 2007; however, several new elements associated with the proposed action were added after the EA was circulated, and the Army determined that the preparation and circulation of this revised EA was required.

BACKGROUND

LSAAP and RRAD are located in the northeast corner of Texas, approximately 12 miles west of Texarkana, Texas. LSAAP and RRAD share a common border, with RRAD to the west and LSAAP to the east. As of 2005, LSAAP comprised 15,546 acres; taken together, LSAAP and RRAD cover approximately 34,000 acres. LSAAP is a government-owned, contractor-operated installation that has produced a variety of munitions to support the joint war fighter. LSAAP's operations include loading, assembling, and packing of ammunition products for the Army. Day & Zimmermann, Inc. has operated on the installation since 1951.

RRAD comprises approximately 18,000 acres; the RRAD-WEP portion is located in the western portion of the installation, and totals 3,835 acres. RRAD's major operational missions include maintenance and rebuilding of light-tracked vehicles; demilitarization of out-of-specification ordinance; ammunition storage and renovation; maintenance, modification or recertification of the HAWK, Chaparrel, and Patriot missiles; and track- and road-wheel rebuild. Most of RRAD-WEP is used for timber harvesting and management, and for ammunition storage.

Implementation of the BRAC Commission's recommendations must be completed by no later than 15 September 2011.

PROPOSED ACTION AND ALTERNATIVES

The proposed action is to dispose of the property made available by the closure of LSAAP and realignment of RRAD mandated by the BRAC Commission. This action includes caretaker operations, cleanup of contaminated sites, and possible interim leasing. Reuse by others is a secondary action that may result from disposal.

Laws and regulations applicable to the proposed action include the Base Closure Act and the Federal Property and Administrative Services Act of 1949. The latter act is implemented by the Federal Property Management Regulations. Other major legislation governing the disposal and reuse of LSAAP and RRAD-WEP properties includes: 32 Code of Federal Regulations (CFR) Part 174 (Revitalizing Base Closure Communities); regulations issued by the U.S. Department of Defense (DoD) to implement BRAC law; the Pryor Amendment; and the President's Program to Revitalize Base Closure Communities. Additional relevant federal statutes include: the Clean Water Act (CWA); Clean Air Act (CAA); Noise Control Act; Endangered Species Act (ESA); National Historical Preservation Act (NHPA); Archaeological Resources Protection Act; Resource Conservation and Recovery Act (RCRA); Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA); Community Environmental Response Facilitation Act (CERFA); and Toxic Substances Control Act. The framework of these laws within the context of the NEPA analysis provides standards that guide environmental compliance and planning, and their consideration in the NEPA process helps ensure the preservation and promotion of environmental values in property transfer and reuse planning. Issues related to implementation actions consistent with several Executive Orders relevant to this BRAC action are also considered in this EA.

Alternatives for the proposed action are early transfer disposal, traditional disposal, caretaker status, and no action. The Army's preferred alternative for disposal of the LSAAP and RRAD-WEP properties is early transfer. Other actions associated with these disposal alternatives include execution of a forest harvest plan, transfer of land between LSAAP and RRAD, and the retention of a length of rail track on LSAAP for use by RRAD. Encumbrances such as those pertaining to munitions and explosives of concern, wetlands, cultural resources, threatened and endangered species, access easements, and remedial activities will be in effect as necessary for any disposal alternative.

The Army considers the Local Redevelopment Authority's (LRA) reuse plan as the primary source from which to determine reuse scenarios to be considered. Reuse alternatives for the LSAAP and RRAD-WEP properties are analyzed in terms of intensity-based probable reuse scenarios; specifically, this EA evaluates Medium-Low Intensity (MLIR) and Low Intensity (LIR) reuse scenarios for LSAAP and RRAD-WEP. The MLIR scenario, as determined for the purposes of this document and as described further in the EA, could result in a maximum of 5,500 employees at LSAAP and RRAD-WEP and the establishment of up to 5.5 million square feet of building space. The LIR scenario could result in a maximum of 2,700 employees at LSAAP and RRAD-WEP and the establishment of up to 2.7 million square feet of building space on the excessed properties. Both reuse scenarios encompass the anticipated redevelopment activities at the site, including the establishment of a regional, multi-modal warehouse/distribution center, with rail access and foreign trade zone designation; the construction of industrial

facilities, such as ethanol plant modules (two corn-processing facilities and one cellulose-processing facility) which would potentially include a CO_2 processing facility; the development of landfills and waste disposal sites; the construction of a portion of a new highway that would pass through the excessed properties; the construction of a new wastewater treatment plant and installation-wide utility upgrades, as well as subsequent operations at both LSAAP and RRAD-WEP.

The Army expresses no preference with respect to reuse scenarios because reuse planning decisions are not within its authority.

DISPOSAL PROCESS

Methods available to the Army for property disposal include: transfer to another federal agency; public benefit disposal conveyance; economic development conveyance; negotiated sale; competitive sale; and exchanges for military construction. The real estate screening process for the LSAAP and RRAD-WEP properties first invited expressions of interest by the DoD and other federal agencies (14 April 2006), then by the LRA (the Red River Redevelopment Authority [RRRA]) (9 May 2006) and state and local authorities and homeless providers (7 June 2006). In response to this screening, there were no declarations of interest in the properties by any other federal agencies. The RRRA reuse plan calls for multiple-use redevelopment of the area, including industrial, light industrial, warehouse, office, commercial, and forest management uses. Industrial uses could include waste disposal (landfills) and biofuel generation (ethanol plants).

In November 2006, the Army prepared Environmental Condition of Property reports for LSAAP and RRAD-WEP; these reports described the current environmental conditions of the excess properties (U.S. Army 2006a, U.S. Army 2006b). Remediation or cleanup of contaminated sites is guided by the Army's Installation Restoration Program and the Military Munitions Response Program. Remediation activities that may occur prior to disposal of surplus property at LSAAP and RRAD-WEP include cleanup of sites contaminated as a result of previous actions related to the handling and disposal of hazardous materials/substances. RRAD-WEP is not included on the U.S. Environmental Protection Agency's (USEPA) National Priorities List (NPL); however, one site at LSAAP, the Old Demolition Area (ODA), is listed on the NPL. LSAAP and RRAD are regulated under RCRA permits. The Corrective Action provisions of these permits guide remedial activities at these installations. A Federal Facilities Agreement pursuant to CERCLA (involving the Army, USEPA, and state of Texas) guides remediation activities at the ODA.

ENVIRONMENTAL CONSEQUENCES

The evaluated resource areas include land use, aesthetics and visual resources, air quality, noise, geology and soils, water resources, biological resources, cultural resources, socioeconomics, transportation, utilities, and hazardous and toxic substances. Direct and indirect impacts of each disposal alternative on the resource areas include a variety of short- and long-term impacts, both adverse and beneficial.

Early Transfer Disposal Alternative. As stated above, the preferred alternative is early transfer disposal, which would result in minor or moderate adverse effects for all resource areas. In particular, there would be short-term and long-term moderate adverse impacts to biological resources as a result of timbering practices that would occur as part of actions associated with disposal, as well as long-term potential moderate adverse impacts to land use, air quality, and cultural resources. Minor beneficial effects would occur for land use, aesthetics and visual resources, noise, geology and soils, water resources, transportation, utilities, and hazardous and toxic substances. Significant beneficial effects would occur for socioeconomics. Significant beneficial and minor adverse cumulative effects would also occur in the context of socioeconomics. Minor adverse and beneficial cumulative effects would occur in the context of land use, aesthetics and visual resources, noise, water resources, socioeconomics, and transportation. Moderate cumulative effects would be expected to occur in the context of air quality and biological resources.

Traditional Disposal Alternative. For traditional disposal, minor or moderate adverse effects would occur for all resource areas. These effects would occur over a longer period as compared to early transfer disposal alternative. Moderate adverse impacts would occur in the areas of air quality, biological resources, and cultural resources. Minor beneficial effects would occur for land use, aesthetics and visual resources, noise, geology and soils, water resources, transportation, utilities, and hazardous and toxic substances. Significant beneficial effects would occur for socioeconomics. Significant beneficial and minor adverse cumulative effects would also occur in the context of socioeconomics. Minor adverse or beneficial cumulative effects would occur in the context of land use, aesthetics and visual resources, noise, water resources, socioeconomics, and transportation. Moderate cumulative effects would be expected to occur in the context of air quality and biological resources.

Caretaker Status Alternative. For the caretaker status alternative, minor adverse impacts would occur for land use, aesthetics and visual resources, geology and soils, water resources, biological resources, cultural resources, socioeconomics, transportation, utilities, and hazardous and toxic substances. Minor beneficial effects would also occur for land use, air quality, noise, geology and soils, water resources, biological resources, transportation, and hazardous and toxic substances. Minor beneficial cumulative effects would occur in the context of land use, aesthetics and visual resources, air quality, noise, water resources, biological resources, socioeconomics, and transportation and utilities; minor adverse cumulative impacts would also occur for socioeconomics.

No Action Alternative. The no action alternative would result in no adverse or cumulative impacts.

Reuse. The two evaluated reuse scenarios could result in a variety of adverse and beneficial short- and long-term direct, indirect, and cumulative effects. To bound potential effects under reuse, the MLIR scenario for LSAAP and RRAD-WEP represents a development intensity higher (approximately double) than that proposed in the RRRA reuse plan. The MLIR scenario for LSAAP and RRAD-WEP would result in short-term minor adverse effects for all resource areas except cultural resources, for which the scenario would result in moderate adverse effects. Minor beneficial effects would occur

for land use, aesthetics and visual resources, noise, geology and soils, socioeconomics, transportation, utilities, and hazardous and toxic substances. In addition, moderate adverse effects to land use, air quality, biological resources, and cultural resources (principally as a result of increased timbering practices on LSAAP and RRAD-WEP) would occur. Significant beneficial effects would also occur for socioeconomics (economic development). Reuse of LSAAP and RRAD-WEP at such an intensity level, representing greater amounts of built space and higher levels of employment, would add jobs and increase population in the ROI.

Reuse of the installation at low intensity, similar to the level of intensity presented in the RRRA's reuse plan, would result in effects identical to those under the MLIR scenario on all resource areas, but the LIR scenario would result in a lower level of effects overall than the MLIR scenario.

Cumulative effects related to reuse would be most noticeable with respect to achievement of the MLIR scenario. Minor adverse cumulative effects would occur to land use, aesthetics and visual resources, noise, water resources, socioeconomics, and transportation. Moderate adverse cumulative effects would be expected to occur relative to air quality and biological resources. Net increases in air emissions from both stationary and mobile sources would occur at LSAAP, RRAD-WEP, and throughout the region. Minor beneficial cumulative effects could occur for land use. Significant cumulative beneficial changes in economic development, the sociological environment, and quality of life would occur as more jobs were created and the tax base increased. Cumulative effects under the LIR scenario would be similar to those under the MLIR scenario.

Table ES-1.1 presents an overview of the environmental and socioeconomic effects associated with each of the alternatives evaluated in this EA (with the exception of the no action alternative, for which no effects were identified).

MITIGATION AND RECOMMENDATIONS FOR PLANNING AND MANAGEMENT

Beyond the placement of encumbrances on the land and adherence to sustainable timber practices to ensure the protection of natural and cultural resources as described in this document, no specific mitigation is required of the Army with the exception of possible wetlands mitigation. Wetlands mitigation may be required as part of planned timbering actions (e.g., road construction). Relative to property redevelopment, federal, state, and local regulations and policies will govern to a large extent the proper use and conservation of the environment including air quality, wetlands resources, water quality, cultural resources, and other resources. Certain other management measures beyond these may also be implemented by the Army or the RRRA to successfully manage the disposal and redevelopment of LSAAP and RRAD-WEP according to the principles of sound and sustainable planning. Unlike wetlands mitigation which may be required, these other additional management measures would not be required to reduce potential effects to a level that is less than significant, and would therefore not constitute mitigation measures, but could be applied by the Army or RRRA as management measures to reduce or avoid adverse effects.

Table ES-1.1 No Action, Disposal, and Reuse Effects Summary

RESOURCE AREAS	CARETAKER STATUS			EARLY TRANSFER DISPOSAL			TRADITIONAL DISPOSAL			REUSE SCENARIOS				
	Direct	Indirect	Cumulative	Direct	Indirect	Cumulative	Direct	Indirect	Cumulative	Medium-Low Intensity Direct	Medium-Low Intensity Indirect	Low -Intensity Direct	Low-Intensity Indirect	Cumulative
Land Use	●	■●	●	■⏢●	■●	■●	■●	■●	■●	■●	■⏢●	■●	■⏢●	■●
Aesthetic/Visual Resources	■		●	■●		■	■●		■	■●	■	■●	■	■
Air Quality	●		●	⏢	■⏢	⏢	■⏢	■⏢	⏢	⏢	■	⏢	■	⏢
Noise	●	●	●	■●	■	■	■●	■	■	■●	■	■●	■	■
Geology and Soils	■	●		■	■●		■	■●		■	●	■	●	
Water Resources	■●	●	●	■	■●	■	■	■●	■	■	■	■	■	■
Biological Resources	■	●	●	■⏢	■⏢	⏢	■⏢	■⏢	⏢	■⏢	■⏢	■⏢	■⏢	⏢
Cultural Resources	■			■⏢	■		■⏢	■		⏢		⏢		
Socioeconomics	■⏢	■⏢	■●	■●○	■●	■○	■●○	■●	■○	■●⊖○	■●⊖○	■●⊖○	■●⊖○	■○
Transportation	■●		●	■●	■	■	■●	■	■	■●	■	■●	■	■
Utilities	■		●	■●	■		■●			■●		■●		
Hazardous/Toxic Substances	●	■		■	■●			■●		■●	●	■	●	

● Beneficial Effect (Minor)
⊖ Beneficial Effect (Moderate)
○ Beneficial Effect (Significant)
[BLANK] No Effects Expected

■ Adverse Effects (Minor)
⏢ Adverse Effects (Moderate)
◘ Adverse Effects (Significant) NOTE: No significant adverse effects have been identified.

In keeping with the assumptions of this EA, specific measures will be enacted by the Army and RRRA, along with, potentially, optional management measures to ensure successful management of environmental resources according to the principals of sound and sustainable planning. These measures are formulated based on a detailed analysis of potential impacts to resources as described in this EA. The associated mitigation, encumbrances and management recommendations to reduce adverse effects are presented below for each alternative.

Early Transfer/Traditional Disposal. Beyond the placement of encumbrances on the land and adherence to sustainable timber practices to ensure the protection of natural and cultural resources, no specific mitigation is required of the Army with the exception of wetlands mitigation. Wetlands mitigation may be required as part of planned timbering actions (e.g., road construction) as further described below. In addition, management measures that the Army will take to avoid, reduce, or compensate for adverse effects that might occur as a result of early transfer or traditional disposal are outlined below.

- It is possible that a small percentage of wetlands on LSAAP and RRAD-WEP could be impacted through road construction or modification to existing road networks to ensure necessary access to remote areas for timbering, as well as limited disturbance from timbering operations (particularly in upland areas). To mitigate adverse impacts to this resource, project-specific wetlands delineations, permitting, and wetlands avoidance and/or mitigation requirements will be necessary prior to road construction and other types of disturbances that would trigger wetlands permitting actions. Adherence to timber management measures outlined below and proper sequencing of mitigation requirements will ensure that impacts will be avoided if possible, then minimized if unavoidable, and as a last resort mitigated through creation, restoration, banking and other means in consultation with the USACE, Fort Worth District. In addition, timbering in upland forested wetlands should be limited to dry periods to protect these important resources.

- Execute the planned timber harvest in accordance with sustainable timber practices, including:

    - Harvest stands such that at least 10 seed trees, at 16 inches DBH, would be left per acre harvested, in order to allow for natural regeneration.

    - Avoid and protect areas around water resource features, including wetlands. Actions to achieve this would include the establishment of undisturbed buffer zones of at least 100 feet in width next to streams and riparian wetlands.

    - Utilize existing road networks to the extent possible for timber access to minimize impacts to habitat, water resources, and wetlands. Wetlands delineation and possibly mitigation would be required in the event that new roads are constructed in close proximity to wetlands, in consultation with USACE, Fort Worth District as previously discussed.

- Avoid and protect areas where designated cultural resources are located. Measures to achieve this would include the establishment of fences and buffer zones around sites where cultural resources listed or eligible for listing on the National Register of Historic Places (NRHP) have been identified. Buffer zones could include areas with a radial arc of between 50 and 100 meters (330 feet) in width around identified cultural resources sites, depending on consultation with the Texas State Historical Preservation Office.

- Avoid areas undergoing cleanup for hazardous waste.

- Maintain forested areas that would act as buffers for the potential impacts of timbering activities related to sensitive land uses, visual resources, and noise.

- Impose in transfer or conveyance of BRAC property appropriate language to identify past hazardous substance activities at each site, as required by CERCLA and CERFA.

- Continue to work with the RRRA to ensure that disposal transactions are consistent with the adopted community reuse plan.

- Continue to manage BRAC property in accordance with Army policies that require the identification, delineation, and, where appropriate, abatement of hazardous conditions.

- Until final disposal, maintain installation buildings, infrastructure, and natural resources in caretaker status to the extent provided by Army policy and regulations.

Caretaker Status Alternative. Beyond adherence to Army policy and procedures relative to long-term caretaker conditions, no specific mitigation is required of the Army to avoid significant adverse effects. The longer the LSAAP and RRAD-WEP properties were to remain in caretaker status, the greater the potential would be for adverse effects on various resources. The Army would implement the following measures to reduce or avoid adverse effects associated with caretaker status as they might occur:

- Conduct installation security and maintenance operations to the extent provided by federal policies and regulations.

- Identify clean or remediated portions of the installation excess properties for disposal and reuse, and prioritize restoration and cleanup activities. Recycle solid waste and debris where practicable.

- Maintain necessary natural resources management measures, including continued close coordination with other federal agencies such as the U.S. Fish and Wildlife Service (USFWS).

No Action Alternative. Under the no action alternative, the Army would continue operations at LSAAP and RRAD-WEP at levels similar to those that occurred before the BRAC Commission's recommendations for closure and realignment. No effects would therefore occur due to continuation of the Army's mission relative to November 2005 conditions, and thus, no mitigation or management measures would be necessary.

MLIR and LIR Reuse Scenarios. Under the MLIR and LIR reuse scenarios, non-Army entities conduct reuse planning and execution of redevelopment actions. Recommended measures for intensity-based reuse scenarios (except for those related to federally protected interests, remediation, or other Army concerns) are not the responsibility of the Army. The following identifies general management measures that could be implemented by other parties for the reduction, avoidance, or compensation of effects resulting from their actions. Other than adherence to specific encumbrances imposed by the Army and compliance with federal, state, and local regulations and policies, no specific mitigation actions are required to reduce adverse effects below levels of significance. Encumbrances and management measures that are most important for reducing adverse effects from reuse are outlined below.

Land Use. Adverse effects associated with development of the BRAC properties at LSAAP and RRAD-WEP to a level of intensity equal to the MLIR or LIR scenarios could be at least partially reduced through sound site planning and the design and creation of appropriate buffer zones. County and city officials could also evaluate the desirability of establishing new land use zoning mechanisms to provide for orderly growth throughout the ROI.

Aesthetics and Visual Resources. Similar to land use, adverse effects to aesthetics and visual resources at LSAAP and RRAD-WEP associated with the level of development representative of the MLIR or LIR scenarios could be at least partially reduced through sound site planning, such as the location of industrial facilities on interior parcels, establishment and maintenance of adequate forested buffers between industrial uses and adjacent viewsheds, and screening of potential sources of light and glare.

Air Quality. The permit process established by the CAA provides effective controls over potential stationary air emission sources. Adherence to the State Implementation Plan's provisions for mobile sources could address that source category. Additional mechanisms, such as the application of traffic controls to minimize mobile air emission sources and best management practices to control fugitive dust during construction and demolition, could be used to control airborne contaminants.

Noise. Measures to reduce potential impacts related to noise include the establishment of buffers around noise-producing uses, or between the installation properties and surrounding uses. Hearing protection for ethanol plant workers, per Occupational Safety and Health Administration standards, could also help reduce adverse impacts.

Geology and Soils. Disturbance of highly erodible soils should be avoided wherever possible. Should soil be disturbed, desilting basins, sediment traps, silt fences, straw barriers, and other erosion control measures could be constructed. Geotechnical studies required prior to construction could also result in fewer potential impacts.

Water Resources. Application of best management practices (BMP) to reduce sediment loading to surface waters could aid in reducing effects on water quality. Construction of stormwater retention systems could help mitigate impacts associated with stormwater runoff from impervious surfaces. Business practices designed to reduce potential effects of operations on water resources, such as measures to prevent the release of engine oil into storm drains, could also be implemented at the installation properties during and after redevelopment.

Biological Resources. Disposal could result in additional loss of high-quality communities and large quantities of historically important communities that once were widespread across the region. It is recommended that the RRRA and others implement the following measures to address and protect biological resources:

- Implement state-recommended forest management practices and industry standards for the management of timber resources, including application of sustainable forest management practices (e.g., select cut timbering techniques).

- Establish, maintain, and conserve sufficient habitat buffer zones to ensure proper conservation and protection of wetlands, high-quality habitat, stream corridors, and other water bodies. Conserve large tracts of forest habitat (beyond the acreage required for riparian buffer zones for the protection of wetlands).

- Follow project-specific wetlands delineations, permitting, and wetlands avoidance and/or mitigation requirements prior to redevelopment and timbering of specific parcels, in consultation with the U.S. Army Corps of Engineers (USACE), Fort Worth District. As required under Section 404 of the CWA, the sequencing of wetlands mitigation requirements would ensure that impacts would be avoided if possible, and then minimized if unavoidable. As a last resort, wetlands mitigation, such as creation, restoration, banking, and other means would be required, in consultation with the USACE, Fort Worth District.

- Implement erosion and sediment controls, stormwater controls, and other appropriate BMPs to reduce or even avoid any potentially adverse effects on wetlands from construction activities.

- Construct physical barriers (e.g., fencing) around sensitive natural areas, including wetlands, to prevent intrusion and damage.

Cultural Resources. The RRRA and others will take measures to protect and preserve existing and potentially eligible cultural resources at LSAAP and RRAD-WEP. These measures would include:

- Consistent with the NHPA, continue to maintain and protect properties deemed eligible for inclusion in the NRHP.

- Consult with the Texas State Historic Preservation Officer prior to soil disturbing activities or any actions affecting cultural resources, and implement appropriate mitigations, as necessary.

Transportation. Redevelopment of the BRAC properties under the MLIR or LIR scenario levels would require sound planning to meet increased traffic and raw material hauling needs using rail. Extensive improvements to roads and railway are planned by the RRRA for the 15-year planning horizon.

Utilities. Redevelopment will require an almost wholesale renovation of many utilities at LSAAP and RRAD-WEP. As outlined in the reuse plan (RRRA 2007), the RRRA will exercise careful planning to minimize system capacity stress, to ensure that sufficient utility service is provided to current and new tenants. Specific measures that would be taken by the RRRA to reduce adverse effects include:

- Construct a new water distribution system on RRAD-WEP to serve the areas that would undergo redevelopment, as the property currently contains no water distribution facilities.

- Upgrade and/or replace the wastewater treatment plant at RRAD (as it has reached the end of its serviceable life).

- Replace/upgrade the existing sewer line and construct new sewer line, at both LSAAP and RRAD-WEP, to accommodate future development.

- Construct new stormwater systems in areas proposed for new impermeable development (e.g., the proposed industrial/ warehouse/ commercial area in the northwestern portion of LSAAP).

- Replace the secondary electrical distribution system and the natural gas distribution system.

- Modify the existing telecommunications infrastructure at LSAAP and RRAD-WEP.

CONCLUSION

Analyses in the EA show that implementation of the proposed action, with the inclusion of mitigation to address potential impacts to wetlands, would not result in significant adverse environmental effects, and that redevelopment of LSAAP and RRAD-WEP would result in significant beneficial effects related to economic development. Issuance of a Finding of No Significant Impact would be appropriate, and an Environmental Impact Statement is not required prior to implementation of the proposed action.

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1 PURPOSE, NEED, AND SCOPE

1.1 INTRODUCTION

The Base Realignment and Closure (BRAC) process affords the U.S. Department of the Army (Army) the opportunity to reshape its physical plant – installations and associated weapons ranges – as well as the organization and stationing of its forces. Through the BRAC process, the U.S. Department of Defense (DoD) evaluates its current stationing plan against multiple variables, including changes in threat, force structure, technologies, doctrine, organization, business practices, and plant inventory (Defense Base Closure and Realignment Commission [DBCRC] 2005). The Army is realigning and closing installations to produce a more efficient and cost-effective base structure for achieving dynamic national military objectives.

Recommendations of the BRAC Commission made on 8 September 2005 in conformance with the provisions of the Defense Base Closure and Realignment Act of 1990 (Base Closure Act), Public Law 101-510, as amended, included the closure of the Lone Star Army Ammunition Plant (LSAAP) and the realignment of the Red River Army Depot (RRAD), Texas. In the absence of Congressional disapproval, the BRAC Commission's recommendations became binding on 9 November 2005. The LSAAP installation property and a portion of the RRAD installation property, referred to as the RRAD western excess property (RRAD-WEP), have been determined to be surplus to Army needs, and will be disposed of according to applicable laws, regulations, and national policy. Pursuant to the National Environmental Policy Act of 1969 (NEPA) and its implementing regulations, the Army has prepared this revised Environmental Assessment (EA) to evaluate the environmental and socioeconomic impacts of disposing of the federal property and to consider reasonable foreseeable reuse alternatives. An initial EA was prepared and circulated in October 2007; however, several new elements associated with the proposed action were added after the initial EA was circulated, and the Army determined that the preparation and circulation of this revised EA was required.

In its 2005 report to the President (DBCRC 2005), the BRAC Commission recommended the following actions for LSAAP:

- Close Lone Star Army Ammunition Plant, Texas.
- Relocate the storage and demilitarization functions to McAlester Army Ammunition Plant (AAP), Oklahoma.
- Relocate the 105MM and 155MM ICM artillery, Multiple Launch Rocket System (MLRS) artillery, hand grenades, 60MM and 81MM mortars functions to Milan AAP, Tennessee.
- Relocate mines and detonators/relays/delays functions to Iowa AAP, Iowa.
- Relocate demolition charges functions to Crane Army Ammunition Activity (AAA), Indiana.

The BRAC Commission further recommended the following actions for RRAD relative to realignment:

- Realign Red River Army Depot, Texas.
- Relocate the storage and demilitarization functions of the Munitions Center to McAlester AAP, Oklahoma.
- Relocate the munitions maintenance functions of the Munitions Center to McAlester AAP, Oklahoma and Blue Grass Army Depot, Kentucky.
- Relocate the depot maintenance of Tactical Missiles to Letterkenny Army Depot, Pennsylvania.
- Disestablish the supply, storage, and distribution functions for tires, packaged Petroleum, Oil, and Lubricants, and compressed gases.

Pursuant to these recommendations, all Army missions at LSAAP, and certain Army missions at RRAD, must cease or be relocated. This, however, does not preclude the continued operation of private-sector contracting activities in support of the Army mission. Following closure, the property (approximately 15,471 acres at LSAAP and 3,835 acres at RRAD-WEP) will be excess to Army needs. Accordingly, the Army proposes to dispose of its real property interests at LSAAP, and some of its interests at RRAD. Several actions, including implementation of a forest harvest plan, a transfer of land between LSAAP and RRAD, and the retention of a length of rail track on LSAAP for use by RRAD, are also associated with the disposal action. The proposed action of disposal is more fully described in Section 2.0, Description of the Proposed Action. The purpose of the proposed action is to carry out the BRAC Commission's recommendations. The proposed action supports the Army's need to comply with the Base Closure Act and to transfer the surplus property to new owners.

1.2 PURPOSE AND NEED

The purpose of the proposed action is to implement the BRAC Commission's recommendations addressing LSAAP and RRAD. The need for the proposed action is to improve the ability of the nation to respond rapidly to the challenges of the 21st century. The Army is addressing this need through its facilitation of the ongoing transformation of U.S. Armed Forces; its implementation of global force reposturing; and its restructuring of important support functions to capitalize on advances in technology and business practices, including sustainable practices in installation planning.

To carry out its mission of providing necessary forces and capabilities to the Combatant Commanders in support of the National Security and Defense Strategies, the Army must adapt to changing world conditions and must improve its capabilities to respond to a variety of circumstances across the full spectrum of military operations. The current BRAC initiative addresses these requirements.

The Secretary of Defense's justifications for the BRAC recommendation at LSAAP, from Volume I of the DBCRC's Base Closure and Realignment Report (DBCRC 2005), are as follows:

Capacity and capability for Artillery, Mortars, Missiles, Pyro/Demo, and Storage exists at numerous munitions sites. There are 8 sites producing Artillery, 5 producing Mortars, 9 producing Pyro-Demo, 15 performing storage, and 13 performing Demilitarization. To reduce redundancy and remove excess from the Industrial Base, the closure allows DoD to create centers of excellence, avoid single point failure, and generate efficiencies. Goal is to establish multi-functional sites performing Demilitarization, Production, Maintenance, and Storage. Lone Star primarily performs only one of the four functions.

The Secretary of Defense's justifications for the BRAC recommendation at RRAD relative to realignment are as follows:

This recommendation relocates storage, demilitarization, and munitions maintenance functions to McAlester Army Ammunition Plant, and thereby reduces redundancy and removes excess from Red River Munitions Center.

This recommendation allows DoD to create centers of excellence, generate efficiencies, and create deployment networks servicing all Services.

1.3 SCOPE

This EA has been developed in accordance with NEPA and implementing regulations issued by the Council on Environmental Quality (CEQ) (40 Code of Federal Regulations [CFR] 1500—1508) and the Army (32 CFR Part 651). Its purpose is to inform decision-makers and the public of the likely environmental consequences of the proposed action and alternatives. The EA identifies, documents, and evaluates the potential environmental effects of property disposal and future uses of LSAAP and RRAD-WEP.

The Base Closure Act specifies that NEPA does not apply to actions of the president, the BRAC Commission, or 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."[1]

The BRAC Commission's deliberations and decision, as well as the need for closing or realigning a military installation, are also exempt from NEPA.[2] Accordingly, this EA does not address the need for closure or realignment. NEPA does, however, apply to disposal of excess property as a direct Army action and to reuse of such property as an indirect effect of disposal; therefore, those actions are addressed in this document.

[1] Public Law 101-510, Sec. 2905(c)(2)(A). The Base Closure Act further specifies in Section 2905(c)(2)(B) 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 that has been recommended for closure or realignment by the Commission, (ii) the need for transferring functions to any military installation, or (iii) military installations alternative to those recommended or selected.

[2] Public Law 101-510, Sec. 2905(c)(2).

Two disposal alternatives (early transfer and traditional disposal) are identified in the EA, as well as a caretaker status alternative (which might arise prior to disposal) and the no action alternative. Two reuse scenarios, based on low and medium-low intensity uses, encompass the community's reuse plan and are evaluated as secondary actions. These alternatives and scenarios, and the rationale for their selection, are further described in Section 3.0, Alternatives.

An interdisciplinary team of environmental scientists, biologists, planners, economists, engineers, archaeologists, historians, and military technicians performed the impact analysis. The team identified the affected resources and topical areas, analyzed the proposed action against the existing conditions, and determined the relevant beneficial and adverse effects associated with the action. Section 4.0, Affected Environment and Consequences, describes the baseline conditions of the affected resources and other areas of special interest at LSAAP and RRAD-WEP as of November 2005. The environmental consequences of disposal and reuse are also described in Section 4. Conclusions regarding potential environmental and socioeconomic effects of the proposed action are presented in Section 5, Findings and Conclusions.

1.4 PUBLIC INVOLVEMENT

The Army invites full public participation in the NEPA process to promote open communication and better decisionmaking. All persons and organizations that have a potential interest in the proposed action, including minority, low-income, disadvantaged, and Native American groups, are urged to participate in the NEPA environmental analysis process.

Public participation opportunities with respect to the proposed action and this EA are guided by the provisions of 32 CFR Part 651, Environmental Analysis of Army Actions. An initial final EA and a draft Finding of No Significant Impact (FNSI) were made available for a 30-day comment period, from 29 October to 28 November, 2007. Several new elements associated with the proposed action were added after the initial EA was circulated, however, and the Army determined that the preparation and circulation of this revised EA was required. These elements are more fully described in Section 2, Description of the Proposed Action. The revised Final EA and a revised draft FNSI, if appropriate, will be made available for a 30-day comment period. During this time, the Army will consider all comments submitted by agencies, organizations, and members of the public on the proposed action, the EA, and the draft FNSI. At the conclusion of the comment period, the Army may, if appropriate, execute the FNSI and proceed with the proposed action. If it is determined that implementation of the proposed action would result in significant impacts, the Army will publish in the Federal Register a notice of intent to prepare an Environmental Impact Statement (EIS).

1.5 FRAMEWORK FOR DISPOSAL

Numerous factors contribute to Army decisions relating to disposal of installation property at LSAAP and RRAD-WEP. The Base Closure Act triggers action under several other federal statutes and regulations. In addition, the Army must adhere to specific rules and procedures pertaining to transfer of federal property, as well as executive branch policies.

There are also practical concerns, such as identifying base assets to allow for disposal in a manner most consistent with statutory and regulatory guidance. These matters are further discussed below.

1.5.1 BRAC Procedural Requirements

Statutory Provisions. The two laws that govern real property disposal in BRAC are the Base Closure Act (Public Law 101-510, as amended) and the Federal Property and Administrative Services Act of 1949 (Title 40 of the United States Code [USC], Sections 471 and following, as amended). The latter is implemented by the Federal Property Management Regulations at Title 41 CFR, Subpart 101-47. The disposal process is also governed by 32 CFR Part 174 (Revitalizing Base Closure Communities), regulations issued by DoD to implement BRAC law and matters known as the Pryor Amendment and the President's Program to Revitalize Base Closure Communities (see below).

Screening Process. Having been recommended for closure and realignment, the LSAAP and RRAD-WEP properties have been determined to be excess to Army needs and, therefore, subject to specific procedures to identify potential subsequent public sector users. That is, the properties have been offered to a hierarchy of potential users through procedures called the screening process. This process and its results to date are discussed in Section 2.3.4, Real Estate Disposal Process.

The President's Program to Revitalize Base Closure Communities. On 2 July 1993, President Clinton announced a major new program to speed the economic recovery of communities near closing military installations. The president pledged to give top priority to early reuse of each closing installation's most valuable assets. A principal goal of the initiative was to provide for rapid redevelopment and creation of new jobs. In announcing the program, the president outlined the five parts of his community revitalization plan:

- Job-centered property disposal that puts local economic redevelopment first;
- Fast-track environmental cleanup that removes delays while protecting human health and the environment[3];
- Appointment of transition coordinators at installations slated for closure;
- Easy access to transition and redevelopment help for workers and communities; and
- Larger economic development planning grants to base closure communities.

The Army is fully committed to the President's Program to Revitalize Base Closure Communities. BRAC Environmental Coordinator and a Base Transition Coordinator have

[3] Fast-track cleanup per the President's Program to Revitalize Base Closure Communities is no longer being exercised by the Army.

been appointed for the LSAAP and RRAD-WEP properties, and the Army has taken an active role in providing assistance to local officials in the community.

The Pryor Amendment. Congress endorsed the president's plan by enacting the Base Closure Communities Assistance Act (contained in Title XXIX, Public Law 103-160), popularly known as the "Pryor Amendment" in recognition of its principal legislative sponsor. This act, as amended, provides legal authority to carry out the president's plan by granting conveyances of real and personal property to a Local Redevelopment Authority (LRA). In the case of LSAAP and RRAD-WEP, the Red River Redevelopment Authority (RRRA) acts as the LRA. Specifically, the act created a new federal property mechanism, the Economic Development Conveyance (EDC). An EDC can help induce a market for the property, thereby enhancing economic recovery and generating jobs. The Army is required to seek fair market value consideration for EDC conveyance of property on installations that were approved for closure or realignment after 1 January 2005. Some flexibility is given to the military departments and the communities to negotiate the terms and conditions of the EDC. A detailed application, including the approved community redevelopment plan, serves as the basis for determining an LRA's eligibility for an EDC. The DoD's regulations implementing the Pryor Amendment appear at 32 CFR Parts 174 and 175. The EDC is further described in Section 2.3.4, Real Estate Disposal Process.

1.5.2 Relevant Statutes and Executive Orders

A decision on whether to proceed with the proposed action rests on numerous factors, such as mission requirements, schedule, availability of funding, and environmental considerations. In addressing environmental considerations, the Army is guided by several relevant statutes (and their implementing regulations) and Executive Orders (EO) that establish standards and provide guidance on environmental and natural resources management and planning. These include, but are not limited to, the Clean Air Act (CAA), Clean Water Act (CWA), Noise Control Act (NCA), Endangered Species Act (ESA), National Historic Preservation Act (NHPA), Archaeological Resources Protection Act, Resource Conservation and Recovery Act (RCRA), Toxic Substances Control Act (TSCA), EO 11988 (Floodplain Management), EO 11990 (Protection of Wetlands), EO 12088 (Federal Compliance with Pollution Control Standards), EO 12898 (Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations), and EO 13045 (Protection of Children from Environmental Health Risks and Safety Risks). Key provisions of these statutes and EOs are described in more detail, as needed, in the text of this EA.

1.5.3 Other Reuse Regulations and Guidance

DoD's Office of Economic Adjustment published its Community Guide to Base Reuse in May 1995. The guide describes the base closure and reuse processes that have been designed to help with local economic recovery and summarizes the many assistance programs administered by DoD and other agencies. In 2006, DoD published its DoD Base Reuse Redevelopment and Realignment Manual (DoD 4165.66-M) to serve as a handbook for the successful execution of reuse plans.

2 DESCRIPTION OF THE PROPOSED ACTION

2.1 INTRODUCTION

The proposed action (Army primary action) is to dispose of the surplus federal property generated by the BRAC-mandated closure of LSAAP and realignment of RRAD. In 2005, LSAAP consisted of 15,546 acres of land located to the east of RRAD. RRAD-WEP consists of 3,835 acres of excess property located along the western boundary of RRAD. RRAD-WEP is not contiguous with LSAAP. Associated with disposal are several additional elements, including the implementation of a forest harvest plan, a transfer of land between LSAAP and RRAD, and the retention of approximately 1.06 miles of rail track on LSAAP for use by RRAD. The land transfer results in the addition of approximately 180 acres of RRAD property to the excess area at LSAAP, and the withdrawal of approximately 255 acres from the LSAAP excess property and reassignment of this property to RRAD. The land swap decreases the area of the LSAAP excess property to 15,471 acres (the area of RRAD-WEP would remain unchanged). Reuse of the LSAAP and RRAD-WEP properties by others is a secondary action resulting from disposal.

LSAAP and RRAD are located approximately 12 miles west of the city of Texarkana, in Bowie County, in northeastern Texas (Figure 2.1-1). LSAAP and RRAD share a common border, with RRAD on the west and LSAAP on the east; together, they cover approximately 34,000 acres of semi-improved lands primarily consisting of pine and hardwood forests, storage facilities, and industrial/production facilities. LSAAP and RRAD are also located approximately 40 miles northwest of the Texas/Louisiana border, and approximately 20 miles southwest of the Texas/Oklahoma border. Towns and municipalities bordering the installation properties include New Boston, the Bowie County seat (population 4,808, U.S. Census 2000); Hooks (population 2,973, U.S. Census 2000); and Leary (population 555, U.S. Census 2000). Other nearby communities include Victory City, Maud, and Redwater. The cities of Texarkana, Texas and Texarkana, Arkansas comprise the metropolitan area closet to LSAAP and RRAD.

U.S. Highway 82 (U.S. 82) bounds the installations to the north, and U.S. 67 runs south of the installations. Interstate 30 (I-30) also runs parallel to the installations, to the north of U.S. 82. The Union Pacific Railroad owns the track north and south of LSAAP, and leases the north track to the Texas North Eastern Railroad Service (TNER), which serves LSAAP from the north. LSAAP and RRAD are located approximately four miles south of the Red River, which marks the boundary between the states of Texas and Arkansas. Land surrounding the installations is sparsely populated, and primarily consists of agricultural land and mixed soft and hardwood forest. There is no land use zoning in Bowie County.

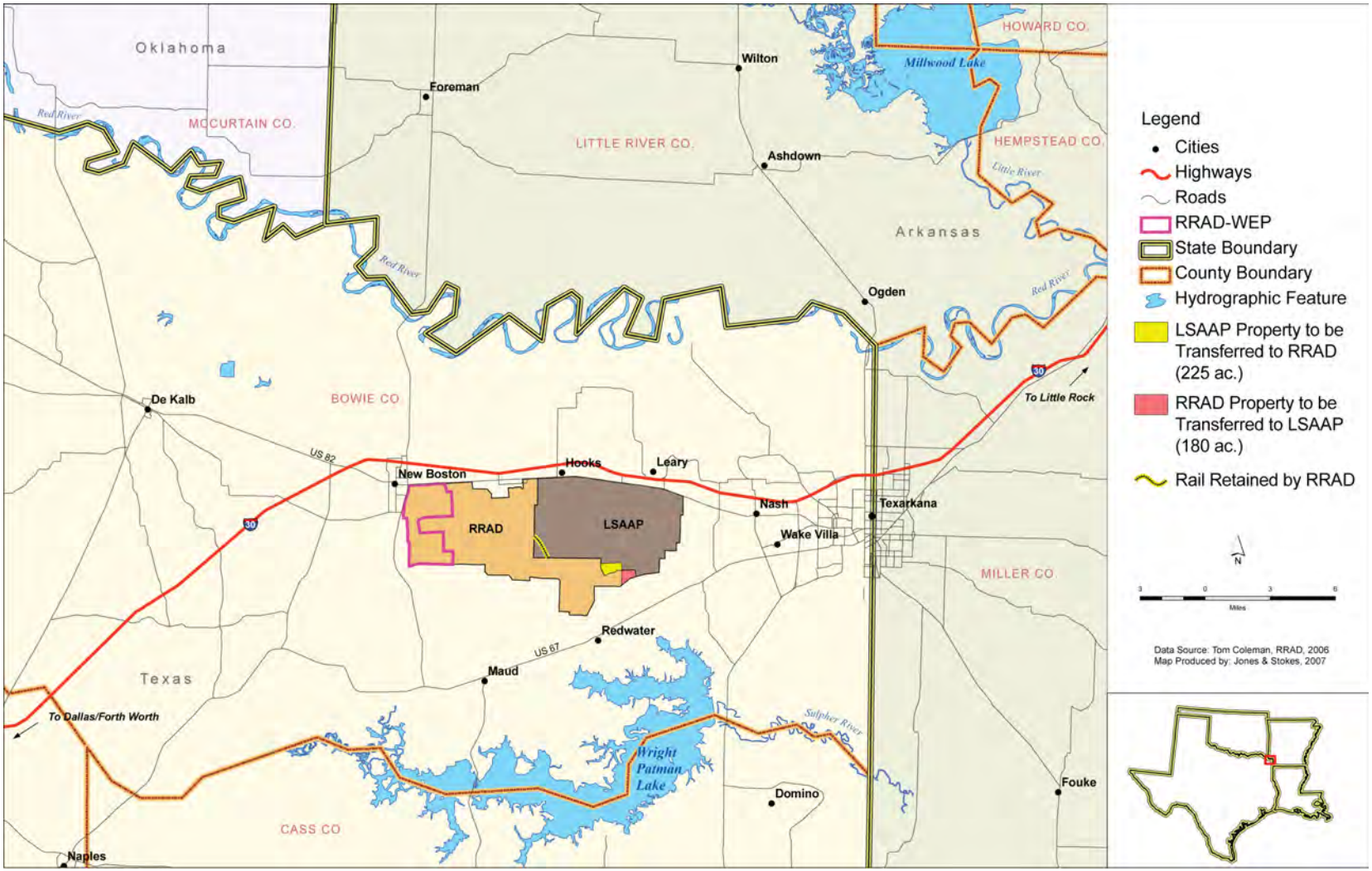

Figure 2.1-1 Location Map of LSAAP and RRAD, Texas

LSAAP is a government-owned, contractor-operated (GOCO) installation that has produced a variety of munitions. The installation's mission is to support the joint war fighter by producing high-quality explosive items in a safe and secure manner at a competitive price (LSAAP 2006a). The installation's operations include loading, assembling, and packing ammunition products for the Army. LSAAP contains areas used for administrative and support functions; 13 production areas that support, or supported in the past, operations of ammunitions items; areas used for storage of both inert materials and munitions and raw materials; a wastewater treatment plant; demolition areas; a high explosives burning ground; active and closed landfills, and a fire-fighting pumping station. Day & Zimmermann, Inc. (DZI) has operated on the installation since 1951. DZI also oversees five non-government tenants and one government tenant on the installation, as described in Section 4.2.1, Affected Environment.

In 2005, LSAAP comprised approximately 15,546 acres, including approximately 161 acres of outgrants. The installation has over 1,200 structures, totaling approximately 3.8 million square feet of building space, including igloos/ammunition storage areas. Installation infrastructure also includes approximately 153 miles of roadway, comprising 141 miles of surfaced roads and 12 miles of unsurfaced roads. The site also contains approximately 38 miles of railroad tracks, 9 miles of which are active, and 1.06 miles of which will be retained as active rail track for use by RRAD (as part of actions associated with disposal). This rail is located at the southwest portion of LSAAP, as shown on Figure 2.1-1.

RRAD is a government-owned, government-operated installation. The installation's mission is to:

- Conduct (Light) Ground Combat and Tactical Systems Sustainment Maintenance Operations, Air Defense Systems Certification, and related support services worldwide for the U.S. Armed Forces and Allied/Friendly Nations,
- Train and employ the Army's Emerging Sustainment Maintenance Companies,
- Provide essential base support services to Red River Industrial Complex Missions, and
- Be an active and viable partner in Bowie County, the greater Texarkana Community, and the four states area at large (RRAD 2006).

The major operational missions of RRAD include maintenance and rebuilding of light-tracked vehicles; demilitarization of out-of-specification ordnance; ammunition storage and renovation; maintenance, modification, or recertification of the HAWK, Chaparrel, and Patriot missiles; and track- and road-wheel rebuild. Most of the RRAD property is used for timber harvesting and management and ammunition storage. RRAD also oversees one non-government tenant and nine government tenants at the installation, as described in Section 4.2.1, Affected Environment.

RRAD is currently the Center of Industrial Technical Excellence for tactical wheeled vehicles, the Small Emplacement Excavator, Bradley Fighting Vehicle series, MLRS chassis Patriot Missile re-certifications, and rubber products.

Overall, RRAD covers approximately 18,000 acres, plus approximately 249 acres of outgrants. RRAD-WEP comprises 3,835 acres. One inactive landfill, the Ordinance Training Center (OTC) landfill, is located on RRAD-WEP. RRAD-WEP contains 159 igloos (ammunition storage areas) and several small structures, including a guard shack and two structures associated with the Southwest Surveillance Function Test Range (a protective test shelter and storage building). Forested areas in RRAD-WEP are currently harvested for timber by contracted vendors. The RRAD Forestry Division provides supervision, inspection, and harvest specifications for all harvest activities. Provisions are included in each contract to ensure that each vendor takes appropriate steps to comply with applicable best management practices to protect soil and water quality (U.S. Army 2006a). There are no industrial facilities and no production or demilitarization activities at RRAD-WEP.

During the 1995 round of BRAC closures and realignments, the RRRA oversaw reuse planning for an approximately 765-acre area of RRAD determined to be excess to the Army's needs. This property, located northeast of the current RRAD facility, has been developed into the Red River Commerce Park (RRCP) by the RRRA with industrial (manufacturing and warehousing), commercial, and office uses. The RRRA also operates and maintains an industrial wastewater treatment plant (IWTP) and potable water plant on RRAD property, and a wastewater treatment plant on LSAAP property.

2.2 PROPOSAL IMPLEMENTATION

2.2.1 Army Disposal Action

The Army proposes to implement the BRAC recommendations, which became law when Congress approved, in entirety, the list of military installations recommended by the BRAC Commission for closure and/or realignment that was approved by President Bush on 15 September 2005. Installation properties on the BRAC list must close within six years. LSAAP and RRAD are among the installations on the list slated for closure and/or realignment.

Under provisions of the Base Closure Act, Public Law 101-510 mandates the initiation of closures and realignments no later than two years after the President transmits the recommendation to the Congress, and to complete closures no later than six years after the President transmits the recommendation to the Congress. The proposed action for these installations will be the disposal and reuse of surplus federal property. Some additional elements associated with disposal include the implementation of a five-year forest harvest plan, the Army's retention of a portion of the rail track at LSAAP for use by RRAD, and a transfer of land between LSAAP and RRAD. The transfer of land between LSAAP and RRAD results in a decrease in the area of the LSAAP excess property to 15,471 acres. These actions are described further in Section 3.2.1. The rail track to be retained and the areas of land transfer between LSAAP and RRAD are shown on Figure 2.1-1.

Identification of recipients of the property being disposed of at LSAAP and RRAD is governed by expressions of interest submitted by potential recipients in response to the Army's Declaration of Excess Property and Determination of Surplus Property (71 FR 26930, May 9, 2006). As a result of the screening process (see Section 2.3.4, Real Estate Disposal Process), the installation properties would be available for transfer or conveyance to, and subsequent reuse by, the RRRA or other entities.

2.2.2 Community Reuse

The DoD has recognized the RRRA as the LRA for the reuse planning associated with LSAAP and RRAD-WEP. The RRRA developed a comprehensive reuse plan (reuse plan, RRRA 2007) for the LSAAP and RRAD BRAC surplus property, an extract of which is provided in Appendix A. The reuse plan focuses on achieving the following primary goals (RRRA 2007):

- The primary purpose for the redevelopment of the LSAAP and RRAD-WEP is the creation of new employment opportunities that will enhance the quality and diversification of Bowie County's employment base;
- The redevelopment of LSAAP and RRAD-WEP should be accomplished in a fiscally prudent manner that includes the active financial involvement of the RRRA, Bowie County, the state of Texas, and the federal government;
- The retention of existing jobs at LSAAP is a top priority and every effort will be made to incorporate these companies into future redevelopment plans;
- Implement a reuse strategy that utilizes public resources to leverage private sector investment in the redevelopment of LSAAP and RRAD-WEP;
- The redevelopment of LSAAP and RRAD-WEP should not involve residential or related types of land development in prime economic development areas; and
- Initiate an early transfer of the two facilities to expedite environmental clean-up activities and job creation, and where possible the redevelopment of LSAAP and RRAD-WEP will support the existing military mission at RRAD.

As of the date of preparation of this document, the RRRA has completed a draft of the reuse plan, including reuse alternatives, which will undergo review by the Department of Housing and Urban Development (HUD) and community stakeholders. As described further in Section 3.3, Reuse Alternatives, redevelopment of the LSAAP and RRAD-WEP properties could include the establishment of a regional, multi-modal warehouse/distribution center, with rail access and foreign trade zone designation; the construction of up to three ethanol plant modules (two corn-processing facilities and one cellulose-processing facility) which would potentially include a CO_2 processing facility; the development of landfills and waste disposal sites; the construction of a portion of a new highway that would pass through the excessed properties; the construction of a new wastewater treatment plant and installation-wide utility upgrades, as well as subsequent operations at both LSAAP and RRAD-WEP.

The community's adoption of preferred redevelopment at LSAAP and RRAD-WEP will be based on considerations of two phased alternatives for redevelopment of LSAAP, and

one phased redevelopment plan for RRAD-WEP. The site development phasing plan for LSAAP includes three phases and assumes that, during the first five years, the level of utility and infrastructure investment would be substantial due to the construction of one to three new ethanol production modules. The alternative development phasing plan for LSAAP assumes a more modest investment and development scenario, commensurate with the RRRA's reuse plan (RRRA 2007). The development phasing plan for RRAD-WEP also includes three phases, in which parcels would be progressively developed with commercial, industrial, and office/flex space uses, according to market demands for such uses.

Additional information regarding reuse scenarios evaluated in the EA is provided in Section 3.3, Reuse Alternatives.

2.2.3 Implementation

Under the Base Closure Act, closure is required by no later than the end of the six-year period beginning on 15 September 2005, the date on which the president transmitted his report to Congress containing the recommendations of the BRAC Commission.

The BRAC process of property disposal includes predisposal activities and real estate disposal, which in turn allow for subsequent reuse development. Predisposal activities may include, but are not limited to, NEPA compliance, Section 106 coordination in accordance with the NHPA, property inventories and title reviews, completion of RCRA actions (unless early transfer is negotiated), contaminated site cleanup, interim uses, and caretaking of vacated facilities until disposal. Actions associated with disposal at LSAAP and RRAD include execution of a forest harvest plan, transfer of land between LSAAP and RRAD, and the retention of a length of rail track on LSAAP for use by RRAD. In transferring or conveying federally-owned property at LSAAP and RRAD, the Army would identify encumbrances consistent with requirements of law, agency negotiation, and protection of environmental values. Section 3.2.4, Encumbrances Applicable to Either Disposal Alternative, provides details on the encumbrances expected to exist at the time of transfer.

2.3 DISPOSAL PROCESS

2.3.1 Caretaking of Property Until Disposal

Prior to disposal, the Army may find it necessary to maintain LSAAP and RRAD-WEP properties for an undetermined period. Though it is the goal of this round of BRAC to quickly dispose of federal properties for reuse, if disposal of BRAC properties were delayed, the Army would employ two levels of maintenance.

Initial Maintenance. From the time of operational closure until conveyance of the property, the Army would provide for maintenance procedures to preserve and protect those facilities and items of equipment needed for reuse in an economical manner that facilitates redevelopment. In consultation with the RRRA and consistent with available funding, the Army would determine required levels of maintenance of facilities and equipment for an initial period following operational closure. The levels of maintenance

during this initial period would not exceed maintenance standards in effect before approval of the closure decision. Maintenance would not include any property improvements such as construction, alteration, or demolition. In an appropriate case, however, demolition could occur if required for health, safety, or environmental reasons, or if it were economically justified in lieu of continued maintenance.

Long-Term Maintenance. In the unlikely event that the property were not transferred, the Army would reduce maintenance levels to the minimum level for surplus government property required by 41 CFR 101-47.402, 41 CFR 101-47-4913, and Army Regulation 420-70 (Building and Structures). Long-term maintenance would not be focused on keeping the facilities in a state of repair to permit rapid reuse. Rather, maintenance during this period would consist of minimal activities intended primarily to ensure security and to avoid deterioration. This reduced level of maintenance would continue indefinitely until disposal. Activities that would occur during this maintenance period are identified in Section 3.2, Disposal Alternatives.

2.3.2 Cleanup of Contaminated Sites

Unless the requirements under RCRA are otherwise deferred, all site remediation activities must be completed before federal property at LSAAP and RRAD-WEP is transferred. To determine the baseline nature of contamination at LSAAP and RRAD-WEP as a result of past activities that may have released contaminants, the U.S. Army prepared Environmental Condition of Property (ECP) reports for the two installation properties to be excessed (U.S. Army 2006a, U.S. Army 2006b). The findings of the ECPs are presented in Section 4.13, Hazardous and Toxic Substances.

2.3.3 Interim Uses

Pending issuance of a FNSI following the NEPA analysis for disposal and reuse of LSAAP and RRAD-WEP, the Army will not make commitments that would significantly affect the quality of the human environment or irreversibly alter the environment in a way that precludes any reasonable alternative for disposal of the property. The Army may, however, enter into an interim lease that would terminate at the time the property conveys to its new owner, if the Army determines that the lease would facilitate state and local economic efforts and not interfere with or delay property disposal (USDoD 2006). In such a case, the Army would consult with the RRRA before entering into such a lease. Interim leases would allow limited use of the property and facilities such that no reasonable reuse options would be eliminated or compromised before the publication of the conclusions of the NEPA analysis.

The extensive environmental and other requirements to ensure that property is suitable for such an interim lease could, however, detract from the Army's ability to accomplish actions needed to dispose of the property (USDoD 2006); as a result, the Army will not lease base closure property should such leasing potentially delay the disposal of the property. Before entering into such a lease, the Army must meet certain environmental requirements, including consultation with the appropriate regulatory agencies to determine whether the environmental condition of the property is such that a lease is advisable.

2.3.4 Real Estate Disposal Process

The Army may dispose of property as a single entity or in parcels. The Army's preference for the LSAAP and RRAD-WEP properties is to dispose of the property in parcels. After identification of parcels, disposal may occur to meet objectives related to reuse goals, tax revenue generation, and job creation. Methods available to the Army for property disposal include EDC, public benefit discount conveyance, negotiated sale, competitive sale, and exchanges for military construction.

- *Economic Development Conveyance (EDC)*. The 1994 Defense Authorization Act provides for conveyance of property to an LRA to promote economic development and job creation in the local community. An EDC is not intended to supplant other federal property disposal authorities. The Army is required to seek fair market value consideration for EDC conveyance of property on installations that were approved for closure or realignment after 1 January 2005. To qualify for an EDC, the LRA must submit an application to the Army describing its proposed economic development and job creation program.

- *Public Benefit Disposal Conveyance*. State or local government entities may obtain property when sponsored by a federal agency for uses that would benefit the public, such as education, parks and recreation, wildlife conservation, or public health.

- *Negotiated Sale*. The Army would negotiate the sale of the property to state or local governmental entities, including tribal governments, or private parties at fair market value.

- *Competitive Sale*. Sale to the public would occur through either an invitation for bids or an auction.

- *Exchanges for Military Construction.* Section 2869 of Title 10 USC provides an alternative authority for disposal of real property at a closing or realigning installation. This authority allows any real federal property not subject to reversion at such an installation to be exchanged for military construction on that or another location. The Military Department may seek offers of military construction in exchange for real property.

Although the Army may make use of several different mechanisms in its final disposition plan for LSAAP and RRAD-WEP, disposition would likely include the transfer of the majority of the property on LSAAP, and the RRAD-WEP property, to the RRRA via a proposed EDC process. Final disposition of the property would also likely include the transfer of much of the northeast portion of the LSAAP property to DZI for continued production operations, and could include the public/competitive sale of parts of the LSAAP property. Regardless of the disposition mechanism or mechanisms employed, redevelopment would be guided by the goals and proposed land uses described in the RRRA's reuse plan.

DoD and Federal Agency Screening. The Army began the screening process by offering its excess properties to other DoD agencies and federal agencies for their potential use. That screening process for the properties resulted in no requests for use by other agencies.

LRA Screening. Pursuant to the Base Closure Community Redevelopment and Homeless Assistance Act of 1994, federal property not subject to reversion that is surplus to the federal government's needs is to be screened through an LRA's soliciting notices of interest from state and local governments, representatives of the homeless, and other interested parties. An LRA's outreach efforts to potential users or recipients of the property include working with the HUD and other federal agencies that sponsor public benefit transfers under the Federal Property and Administrative Services Act. The LRA's reuse plan incorporates the notices of interest submitted to the LRA and reflects an overall reuse strategy for the installation properties.

Public Agency Screening. Consistent with the Federal Property and Administrative Services Act, screening notices have been sent to federal agencies that approve or sponsor public benefit conveyances and appropriate state and local agencies in the vicinity of the property. The Army initiated this screening after coordination with the LRA. In response to this screening, the Army received no requests for transfer of federal property.

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3 ALTERNATIVES

3.1 INTRODUCTION

This section addresses alternatives to the Army's primary action of disposal of federal property and the secondary action of property reuse by other entities. Pursuant to the Base Closure Act and the BRAC 2005 Commission's recommendations pertaining to LSAAP and RRAD, continuation of full Army operations at LSAAP and RRAD is not feasible. There is no alternative to closure at LSAAP and realignment at RRAD as described by the BRAC Commission's recommendation without further legislative action. For federal property, the Army has identified two disposal alternatives (early transfer and traditional disposal), a caretaker status alternative, and the no action alternative. Several additional elements are associated with the early transfer, traditional disposal and caretaker alternatives; these associated actions are further described below in Section 3.2.1. Two reuse scenarios, based on low and medium-low intensity uses, encompass the community's reuse plan and are evaluated as secondary actions. Future reuse of the LSAAP and RRAD-WEP properties is analyzed in the context of land use intensity categories, as described in Section 3.3, Reuse Alternatives.

The RRRA's reuse plan is the primary factor that guides the development of the reuse scenarios and effects analysis. Taking into consideration both the reuse plan and the proposed federal action allows both the community and Army to make informed decisions on reuse issues. The Army expresses no preference with respect to reuse scenarios because decisions implementing reuse will be made by other entities.

As discussed in Section 1, Purpose, Need, and Scope, the Army is closing LSAAP and realigning RRAD in compliance with BRAC 2005. Federal property at the installations is surplus and will be disposed of. Predisposal activities may include but are not limited to NEPA compliance, Section 106 coordination in accordance with the NHPA, property inventories and title reviews, identifying and cleaning up hazardous substance contamination and caring for vacated facilities. (Appendix B contains information on the current status of the ongoing biological and Section 106 cultural resources consultation at LSAAP and RRAD.)

3.2 DISPOSAL ALTERNATIVES

3.2.1 Early Transfer Alternative

Under this alternative, the Army has available various property transfer and disposal methods that allow the reuse of the property to occur before environmental remedial action has been completed. One possible method of early disposal, allowable under the provision of Section 120 (h)(3)(C) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), would be to defer the requirement of complete environmental cleanup and allow an early transfer of the property. This provision, known as early transfer authority (ETA), authorizes the deferral of the CERCLA covenant that requires remedial actions to be completed before federal property is

transferred. For LSAAP and RRAD-WEP, the governor of Texas must concur with the deferral request for property not listed on the National Priorities List (NPL).

RRAD is not listed on the NPL. The Old Demolition Area on LSAAP, however, is a listed NPL site. Because of this NPL site, the deferral will have to be approved by the Regional Administrator of the U.S. Environmental Protection Agency (USEPA) with the concurrence of the governor. The property must be suitable for the new owner's intended use, and that use must be consistent with protection of human health and the environment. ETA is not an actual conveyance mechanism, just a deferral of the CERCLA covenant based on a finding that:

- The property is suitable for transfer for the use intended by the transferee, and the intended use is consistent with protection of human health and the environment.

- The deed or other agreement proposed to govern the transfer between the U.S. and the transferee of the property contains specified assurances.

- The federal agency requesting deferral has provided notice, by publication in a newspaper of general circulation in the vicinity of the property, of the proposed transfer and of the opportunity for the public to submit, within a period of not less than 30 days after the date of the notice, written comments on the suitability of the property for the transfer.

- The deferral and the transfer of the property will not substantially delay any necessary response action at the property.

The property could also be transferred to a new owner who agrees to perform all environmental remediation, waste management, and environmental compliance activities required for the property under federal and state requirements.

Under the early transfer alternative, property transfer may also occur prior to the completion of the Army missions at LSAAP and RRAD-WEP.

As part of early transfer, the Army may dispose of property as a single entity or in parcels. The Army's preference for the LSAAP and RRAD-WEP properties is to dispose of the property in parcels. After identification of parcels, disposal may occur to meet objectives related to reuse goals, tax revenue generation, and job creation. Methods available to the Army for property disposal include EDC, public benefit discount conveyance, negotiated sale, competitive sale, and exchanges for military construction.

The early transfer alternative also includes several additional elements associated with property disposal. These measures include:

Five-Year Forest Harvest Plan. The Army proposes to implement a plan for the forest resources at LSAAP and RRAD-WEP that would result in the harvest of the timber over a five-year period. The Army proposes to use sustainable forestry practices to enable sufficient seed stock for natural regeneration and to avoid and/or minimize impacts to natural and cultural resources, including wetlands, at the site. The Army would sell the

timber as individual tracts attaching a five year timber deed to each tract. The deed would specify that each tract would be broken into five cut units averaging slightly over 400 acres each. The timber plan would ensure that the timber would be harvested in patches across the installation each year (as opposed to harvesting a uniform area) providing for increased edge effect for wildlife purposes and creating uneven-aged growth across the installation for a diversity of age classes, stand heights, and habitat types. The Army would sell the timber prior to transfer, and would make first offer to the RRRA at fair market value. If the RRRA elects not to acquire the timber, the Army would seek sale of the timber to other entities. The timber would be harvested under a contract with a forest products company over five years, during which other disposal and reuse activities could be implemented at the site. Specific features of the five-year forest harvest plan are outlined below.

1. For the purposes of natural resources management, timber across LSAAP and RRAD-WEP is divided into compartments, as shown on Figure 3.2-1. Under the five-year management plan, timber would be harvested in five of these compartments, as shown on Figure 3.2-1.

2. Timber would be harvested such that at least 10 seed trees, at 16 inches diameter at breast height (DBH), would be left per acre harvested. Conservative upper-bound estimates of timber volumes proposed as part of the Army's timbering plan are presented in Table 3.2-1 The Army's proposed phasing plan for timber harvesting activities is presented in Table 3.2-2. Due to several factors not fully accounted for in the estimates in Table 3.2-1, it is likely that the total volumes of timber actually harvested may be much lower (as much as 25 percent below the estimates shown in the table for RRAD-WEP and slightly below the estimates for LSAAP).

3. Timber harvesting activities would take place over five years in a sustainable manner, such that impacts to natural resources would be minimized. Measures to avoid impacts would follow standards such as those defined by the state of Texas (Texas Forest Service and Texas Forestry Association 2004), the U.S. Department of Agriculture's Natural Resources Conservation Service, and the Sustainable Forestry Initiative (SFI Sustainable Forestry Board and American Forest and Paper Association 2004). Measures would include:

    - Avoidance and protection of areas around water resource features, including wetlands. Actions to achieve this would include the establishment of undisturbed buffer zones of at least 100 feet in width next to streams and riparian wetlands.

    - Utilizing existing road networks to the extent possible for timber access to minimize impacts to habitat, water resources, and wetlands. Wetlands delineation and possibly mitigation would be required in the event that new roads are constructed in close proximity to wetlands in consultation with USACE, Fort Worth District. In addition, timbering in upland forested wetlands should be limited to dry periods to protect these important resources.

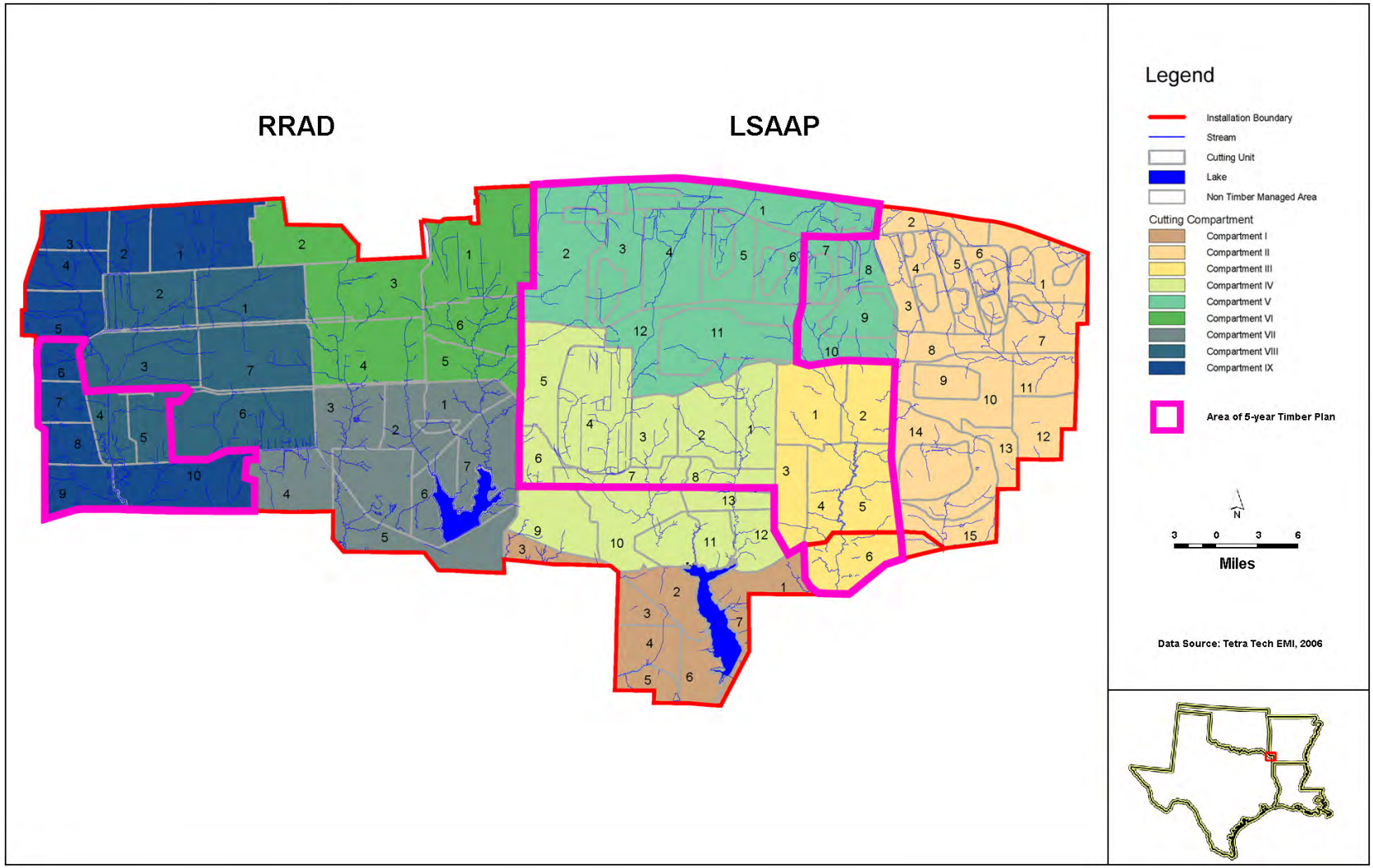

Figure 3.2-1 Timber Compartments and Five-Year Timber Harvesting Plan

Table 3.2-1 Forest Inventory of LSAAP/RRAD and New Five-Year Timber Plan

Excess Property Area	Acreage of Total Available Timber Area (Percent of Resource)	Timber Volume Harvested (2007 Plan)				Estimated Percent of Timber Harvested versus Conserved within Timbered Areas (%)			
		Pine		Hardwood		Timber to be Harvested (%)	Timber to be Reserved (%)		
		Pine TBF	Pine Cords	Hardwood TBF	Hardwood Cords		Seed trees	SMZs	Cultural Resources Protection
LSAAP	9,148	59,957	36,345	14,399	40,690	60	27	13	<1
RRAD-WEP	1,823	8,477	5,221	853	2,191	49	41	10	<1
Total	10,971	68,434	41,567	15,252	42,880	58			

TBF = Thousands of board feet
SMZs = Stream Management Zones
Source: U.S. Army 2006d; 2008

Table 3.2-2 Forest Harvest Phasing Plan

Excess Property Area	Year of Timber Plan	Timber Compartments	Cutting Unit
LSAAP	1	III	6
		IV	7, 8
		V	2, 6
	2	III	3, 4
		IV	3, 6
		V	11
	3	III	2
		IV	1
		V	3, 5
	4	III	5
		IV	2, 5
		V	12
	5	III	1
		IV	4
		V	1, 4
RRAD-WEP	1	IX	6, 7
	2	IX	8, 9
	3	IX	10
	4	VIII	4
	5	VIII	5

- Avoidance and protection of areas where designated cultural resources are located. Measures to achieve this would include the establishment of fences and buffer zones around sites where cultural resources listed or eligible for listing on the National Register of Historic Places (NRHP) have been identified. Buffer zones could include areas with a radial arc of between 50 and 100 meters (330 feet) in width around identified cultural resources sites, depending on consultation with the Texas State Historical Preservation Office.

- Avoidance of areas undergoing cleanup for hazardous waste.

- Maintenance of forested areas that would act as buffers for the potential impacts of timbering activities related to sensitive land uses, visual resources, and noise.

Retention of Rail at LSAAP. The Army will retain approximately 1.06 miles of active rail at LSAAP for use by RRAD. This rail is located at the southwest portion of LSAAP, as shown on Figure 2.1-1, Location Map of LSAAP and RRAD, Texas.

Transfer of Land Between LSAAP and RRAD. A transfer of land, or "land swap," between LSAAP and RRAD, is shown on Figure 2.1-1, in the southeast portion of LSAAP. This land swap represents the addition of approximately 180 acres of RRAD property to the excess area at LSAAP, and withdrawal of approximately 255 acres from the LSAAP excess property and reassignment of this property to RRAD, decreasing the area of the LSAAP excess property to 15,471 acres. The purpose of the land swap is to maintain the existing small arms range fan at RRAD. Features in these areas include roads, forest resources and water resources, and very few structures.

3.2.2 Traditional Disposal Alternative

The Army is also given broad authority to transfer the property to other government agencies or to dispose of it to non-government organizations. Under this alternative, the Army would transfer or dispose of property once environmental remediation and other environmental requirements are completed for individual parcels of the installation. The Army is required under CERCLA to speedily identify uncontaminated property. This requirement is being completed; the Army has completed categorization of contaminated properties through the analysis documented in the ECP reports for LSAAP and RRAD-WEP. The Army has prepared the Community Environmental Response Facilitation Act (CERFA) reports for LSAAP (dated 20 November 2006) and RRAD (dated 30 November 2006). Uncontaminated property is defined as areas where no release or disposal of hazardous substances or petroleum products has occurred, including no migration of these substances from adjacent areas. Such property would be available for transfer or disposal fairly quickly. For property on which hazardous substances were known to have been released or disposed of, other provisions may apply.

If a property has been or is contaminated, and the Army opts for traditional disposal, it must be able to certify that actions necessary to protect human health or the environment have been taken before the transfer or disposal, which may include land use restrictions to preclude contact with environmental media that is still undergoing remediation. Transfer of property not fully remediated is allowed if a long-term environmental remedy is shown to be operating properly and successfully. Specifically, under traditional disposal, properties that have been classified as Categories 1, 2, 3 or 4 per the American Society for Testing and Materials (ASTM) 5746-98 Standard Classification of Environmental Conditions of Property Area Types for Defense Base Closure and Realignment Facilities would be suitable for transfer (for properties classified as Categories 2 and 3, a release of contaminants may have occurred, but because of the nature of the release, no response or cleanup actions would be required).

Some environmental remedial actions may take a long time to be selected, approved, and implemented. Because of that, there may be a prolonged period under this alternative during which parcels are not available for transfer or disposal.

For LSAAP and RRAD-WEP, the traditional disposal alternative would also include the associated elements as described above under the early transfer alternative.

3.2.3 Caretaker Status Alternative

The caretaker status alternative would arise if the Army were unable to dispose of any or all portions of the federal property within the period of initial maintenance (refer to Section 2.3.1, Maintenance of Property Until Disposal). Once the time period for initial maintenance elapses, and if the Army has not yet disposed of its property, the Army would then reduce maintenance to levels consistent with federal government standards for excess and surplus properties (i.e., 41 CFR 101-47.402 and 101-47.4913) and Army Regulation 420-70 (Buildings and Structures). This long-term maintenance, or "caretaker status" stage, would no longer be focused on keeping the facilities in a state of repair to facilitate rapid reuse. Rather, maintenance during this period would consist of minimal activities intended primarily to ensure security, health, and safety, and to avoid physical deterioration.

For LSAAP and RRAD-WEP, the caretaker status alternative would also include most of the associated elements described above under the early transfer alternative, but would not include implementation of the five-year forest harvest plan.

3.2.4 Encumbrances Applicable to Either Disposal Alternative

The Army's methodology for ensuring environmentally sustainable redevelopment of BRAC disposal property includes identifying natural and man-made resources that must be protected after ownership transfers out of federal control. The Army develops this information from the environmental baseline information early in the NEPA process and provides it to the LRA, with the recommendation that the reuse plan consider protecting these valuable resources and any other conditions that might influence reuse. Using this methodology, the LRA develops a reuse plan that satisfies community reuse goals and objectives.

Encumbrances are legal constraints imposed to protect environmental values, to meet requirements of federal law, to implement results from Army negotiations with regulatory agencies, or to address specific Army needs. Encumbrances can also arise as a result of past Army management of real property. For example, the presence of special hazardous materials such as asbestos-containing material (ACM), lead-based paint (LBP), radon, polychlorinated biphenyls (PCB), and radiological material might require specific handling or management strategies. In most cases, these conditions will not materially and adversely affect redevelopment. Some other types of conditions may be identified to an LRA as potentially limiting redevelopment but not classified as legal encumbrances because they are not within the ability of the Army to control or modify (U.S. Army 2006c).

In general, encumbrances that the Army would consider if found applicable in this analysis include the protection and preservation of natural resources such as sensitive habitat, special natural areas, and sensitive species. Encumbrances could also involve historic properties and sites, archaeological sites, legacy resources, land use restrictions relative to public health and safety concerns, and access to remediation sites.

Encumbrances are not imposed for other facets of environmental protection and conservation, such as endangered species protection, Coastal Zone Management, wetlands protection, hazardous waste remediation, and other issues, as these concerns are already regulated by local, state, and/or federal statutes and must be complied with regardless of property ownership. Furthermore, special easements, rights-of-way, and leases will continue to run with the property under new ownership; thus, specific encumbrances are not necessary.

Consistent with this methodology and as part of the disposal process, the Army will also meet all applicable requirements of federal law necessary to carry out agreements reached in negotiations with regulatory agencies, or to address specific Army needs.

3.2.4.1 Types of Encumbrances

Major categories of encumbrances, outlined below, can be identified on federal properties (U.S. Army 2006c).

- *Easements and rights-of-way.* Real estate might be burdened with utility system, other infrastructure-related, roadway, or access easements and rights-of-way.

- *Use restrictions*. Activities on property might be limited by existing conditions or in recognition of adjacent land uses. For example, use of a former landfill site would preclude ground disturbance of a clay cap but could permit passive uses such as recreation. The presence of munitions and explosives of concern (MEC) would preclude many uses of a parcel because of the potential safety hazards. In other cases, restrictive covenants could impose or maintain buffer zones between incompatible uses. Use restrictions might also require that transferees of property take certain actions (e.g., remediate ACMs or LBP prior to use of buildings for residential purposes) or refrain from certain actions (e.g., prohibit use of on-site groundwater pending completion of cleanup activities).

- *Habitat and wetlands protection*. The presence of federally listed threatened or endangered species of wildlife, plants, or wetlands might constrain unlimited use of property.

- *Historic building or archeological site protection.* Negotiated terms of transfer or conveyance might result in requirements for new owners to maintain the status quo of historic buildings or archeological sites or might impose a requirement for consultation with the State Historic Preservation Office (SHPO) before any actions affecting such resources take place.

- *Water rights*. Protective covenants might be required to protect existing well fields or aquifers.

The Army's identification and imposition of encumbrances takes into consideration opportunities for the protection and preservation of sensitive environmental resources, as well as the requirements of federal law and specific Army requirements. Consistent with the stewardship principles by which it operates its installations, the Army has a vital

interest in perpetuating important resource protections, which in some cases the Army is able to do by use of encumbrances. Identification of encumbrances reflects the Army's objective of returning property to public and private sector use in a manner that will result in continued stewardship of environmental resources, protection of public health and safety, and promotion of Army and reuse interests.

3.2.4.2 Encumbrances Identified at LSAAP and RRAD-WEP

The following specific encumbrances would be expected to apply at the time of transfer or conveyance of LSAAP and RRAD-WEP:

Land Use Restrictions. The Army's environmental restoration efforts at LSAAP and RRAD-WEP will attempt to facilitate the land use and reuse needs stated by the community's reuse plan. As a component of remedy implementation, the Army may restrict certain types of future land use, impose institutional controls, or take other actions affecting land use to protect human health and the environment. Restrictions such as those on the use of groundwater, provisions against disturbing surface soil, restrictions on residential development, and access controls for certain parcels could be included in conveyance documents as restrictions on future land use.

Protection of National Register Properties. Some buildings at LSAAP have been found to be eligible for the NRHP (see Section 4.9, Cultural Resources). The Army has entered into a Memorandum of Understanding (MOU) with the SHPO and the Advisory Council on Historic Preservation (ACHP) concerning the eligibility of these buildings for the NRHP; the MOU requires that deed restrictions involving the protection of historic properties on the installations be passed on to the new owners as a condition of the sale or property transfer. If the new owners desire to lessen or remove the deed restrictions requiring preservation, the deed will delineate a process for the new owners to consult with the SHPO to arrive at mutually agreeable and appropriate measures for mitigating the adverse effects of their proposed undertaking. Sample provisions that would typically be included in deeds to protect historic structures are shown in Appendix C.

Floodplains. Portions of the LSAAP and RRAD-WEP properties lie within 100-year floodplains of several creeks and other waterways that traverse LSAAP and RRAD-WEP. In consideration of EO 11988, Army property conveyance documents will notify property transferees of their obligations to adhere to applicable restrictions on the property imposed by federal, state, or local floodplain regulations.

Munitions and Explosives of Concern (MEC). As a result of on-site operations (especially the Open Detonation Grounds at LSAAP), buried shells and munitions may be encountered on the LSAAP and RRAD-WEP properties during excavations. The presence of MEC could present a hazard to numerous types of activities such as construction and some types of landscaping operations. Prior to transfer or conveyance, the Army would establish some form of administrative or other land use controls to ensure safety and protection of human health and the environment.

Asbestos-containing Materials (ACM). Ongoing surveys at LSAAP and RRAD reveal the presence of ACMs in installation buildings, including the suspected presence of ACMs in

all installation buildings on LSAAP (specific details on buildings containing ACMs may be found in the ECP reports for each installation). Before transfer or conveyance, the Army may remove, enclose, or encapsulate all friable ACMs posing a risk to human health, or may negotiate agreements with transferees to remediate ACMs. Transfer or conveyance documents would notify new owners or lessees of the property that they would be responsible for any future remediation of ACMs found to be necessary. Appendix E shows the notification the Army would typically provide.

Lead-based Paint (LBP). Paints used at LSAAP and RRAD between 1930 and 1970 contained lead. LBP is assumed to be present in buildings constructed before 1978 (the vast majority of the buildings at the installations). Consistent with the Residential Lead-Based Paint Hazard Reduction Act of 1992 (Public Law 102-550), the Army may provide notice in transfer and conveyance documents addressing buildings containing LBP. Appendix E shows LBP provisions the Army would typically use for BRAC leases and deeds.

Easements for Public Access to Cemeteries. Several active cemeteries, including the Tiller Family Cemetery, are located on the installation properties. To ensure continued public access to these sites, the Army would include in conveyance documents, as a condition of acceptance of title, an affirmative obligation on the part of the transferee to provide public access to these cemeteries. The Army would further require that the public access granted by the property recipient meet any regulatory standards established by the State of Texas for public access to cemeteries, as well as maintenance in perpetuity.

Easements and Rights-of-Way. Existing easements and rights-of-way benefiting or burdening the LSAAP and RRAD-WEP properties would continue after transfer or conveyance. An example of such easements is one located on LSAAP held by the Southwestern Electric Power Company (SWEPCO) for an electricity transmission line serving private-sector customers as well as LSAAP.

Groundwater Use Prohibition. The ECP reports indicate that groundwater contamination has been found below some of the areas comprising LSAAP and RRAD. There is currently no on-base use of groundwater. Transfer or conveyance of the LSAAP and RRAD-WEP properties would include a prohibition on the use of groundwater. This encumbrance on the property would extend until such time as appropriate regulatory agencies certified the completion of remedial action pertaining to the groundwater.

Natural Resource Protection. In keeping with standard commercial timbering practices and state requirements, forest buffers at least 100 feet in width will be maintained along transportation networks, riparian areas, wetlands, and facility operations that generate noise concerns, as well as along parcel boundaries, to ensure land use compatibility both on- and off-site. Project-specific wetlands delineations, permitting, and wetlands avoidance and/or mitigation requirements will be necessary prior to redevelopment and timbering of specific parcels with suspected wetlands habitat in consultation with the U.S. Army Corps of Engineers (USACE), Fort Worth District, as required under Section 404 of the CWA.

3.3 REUSE ALTERNATIVES

Consistent with Congress's mandate, the Army must cease performance of its active Army missions at LSAAP and RRAD-WEP no later than 15 September 2011. The Army's preference is to dispose of the LSAAP and RRAD-WEP properties in parcels. Regardless of the disposition mechanism or mechanisms employed, reuse of the LSAAP and RRAD-WEP properties is reasonably foreseeable, and redevelopment would be guided by the goals and proposed land uses described in the RRRA's reuse plan. Consistent with statutory requirements, this EA analyzes the impacts of closing LSAAP and realigning RRAD, disposing of the federal property, and reuse of federal property associated with the installation. Reuse of federal property is treated as a secondary action resulting from closure.

The RRRA's draft reuse plan involves federally-owned land subject to disposal. CEQ regulations require evaluation of reasonably foreseeable actions, without limitation on the party conducting them, and evaluation of consequent environmental impacts. Accordingly, reuse of federal property is evaluated as a secondary action in time, following the Army's primary action of disposal.

The following subsections discuss the methodology used to define the reuse scenarios to be considered. Because of the speculative and changeable nature of reuse planning, specific activities cannot be precisely identified at this time. The Army considers the RRRA's reuse plan to be the primary factor in defining the reuse scenarios to be considered, and evaluates that reuse plan for potential environmental effects. Redevelopment of the LSAAP and RRAD-WEP properties is expected to take place in a manner consistent with the nature and intensity of the uses described in the RRRA's reuse plan, although certain factors, such as the ultimate disposition of the property, may affect whether certain uses as described in the reuse plan are developed at the site. Encumbrances as described above for the disposal alternatives would also apply under reuse.

3.3.1 Development of Reuse Alternatives

The reuse planning process is dynamic and is often dependent on market and general economic conditions beyond the control of the reuse planning authority. In recognition of the complexities attending reuse planning, the Army uses intensity-based probable reuse scenarios to identify the range of reasonable reuse alternatives required by NEPA and by DoD implementing directives. That is, rather than speculatively predicting exactly what will occur at a site, the Army establishes ranges or levels of activity that reasonably might occur. These levels of activity, referred to as intensities, provide a flexible framework capable of reflecting the different kinds of uses that could result at a location. Reuse intensity levels also take into account the effects that encumbrances exert on reuse.

3.3.1.1 Land Use Intensity Categories Described

Five intensity-based levels of reuse can be evaluated for their potential environmental and socioeconomic impacts, as outlined in BRAC Guidelines for Compliance with the National Environmental Policy Act (U.S. Army 2006c). These are Low Intensity Reuse (LIR),

Medium-Low Intensity Reuse (MLIR), Medium Intensity Reuse, Medium-high Intensity Reuse (MHIR), and high intensity reuse. At any given installation, however, analysis of all five levels of intensity might not be appropriate due to historical usage, physical limitations, or other compelling factors.

Levels of reuse intensity can be viewed as a continuum. At LSAAP and RRAD-WEP, an LIR level of reuse could be represented by demolition, conversion, or replacement of existing modern era and non-eligible older structures, and the establishment of some new industrial and light industrial uses; some continued use of existing facilities (primarily on LSAAP) in the same way that they have been used (i.e., some continued DZI operations); and open-space or conservation functions occurring over substantial portions of the installations. A MLIR level of reuse, in the context of LSAAP and RRAD-WEP, would represent a greater level of use intensity than LIR, with more area on the installation dedicated for industrial uses, for example. Levels of use of existing facilities at the time of the BRAC 2005 Commission's recommendations for closure and realignment would represent a low intensity use.

Indicators of levels of intensity can be quantified by counting the number of people at a location (employees or residents), the potential number of vehicle trips generated as a result of the nature of the activity, or the number of dwelling units. Other indicators of the intensity of use are the rates of resource consumption (e.g., electricity, natural gas, water) and the amount of building floor space per acre (identified as the Floor Area Ratio [FAR], and expressed as the amount of square feet of built space per acre).

Development of intensity parameters is based on several sources, including existing land use plans for various types of projects and planning jurisdictions, land use planning reference materials, and prior Army BRAC land use planning experience (U.S. Army 2006c). Private sector reuse of property subject to BRAC action, on the other hand, seeks different objectives and uses somewhat different planning concepts in that it focuses on the creation of jobs and capital investment costs, and typically uses traditional community zoning categories (e.g., residential, industrial).

Upon evaluating various types of indicators and their applicability to Army lands subject to BRAC action, the Army has selected four representative, illustrative intensity parameters: residential density, employee density (general spaces), employee density (warehouse spaces), and FAR (U.S. Army 2006c). These intensity parameters aid in evaluating environmental effects at various levels of reuse (see Table 3.3-1).

Table 3.3-1 Land Use Intensity Parameters

Intensity Level	Residential Intensity[1]	Square Feet per Employee (General Space)	Square Feet per Employee (Warehouse Space)	Floor Area Ratio
Low	<2	>800	>15,000	<0.05
Medium-Low	2-6	601-800	8,001-15,000	0.05-0.10
Medium	6-12	401-600	4,000-8,000	0.10-0.30
Medium-High	12-20	200-400	1,000-4,000	0.30-0.70
High	>20	<200	<1,000	>0.70

[1] Dwelling Units per Acre
Source: U.S. Army 2006c

The intensity parameters are discussed below.

- *Residential density.* This parameter identifies the number of dwelling units per acre. It indicates the number of people who might reside or work in an area.

- *Square feet per employee (general space).* This parameter indicates the number of square feet available per employee in all types of facilities at an installation, except family housing and warehouses or storage structures.

- *Square feet per employee (warehouse and storage space).* This parameter indicates the number of square feet available per employee engaged in warehouse or storage activities at an installation. Only built, fully enclosed and covered storage space is calculated; sheds and open storage areas are excluded from computation. In describing Army uses of facilities, estimates of the number of employees engaged in warehouse or storage operations are used to determine the portion of the installation workforce in this employee density category.

- *Floor Area Ratio.* This ratio reflects how much building development occurs at a site or across an area. For example, a three-story building having a 7,500-square foot footprint on a 4-acre site would represent a FAR of 0.13 (22,500 square feet of floor space within a 174,240 square foot property).

Employee density, FAR, and development ratio considerations shown in Table 3.3-1 are appropriate to describe intensity levels for reuse planning at LSAAP and RRAD-WEP. The intensity parameters shown in Table 3.3-1 reflect generalized values or ranges appropriate to describe the variety of installations subject to Army management, as well as the variety of reuse situations. The intensity parameters should be considered together in evaluating the intensity of reuse of a site so as to provide full context. Use of any single parameter, without considering the others, could unduly emphasize certain aspects of a site or preclude a broader understanding. As applied to any particular parcel or area, or the whole of the installation, the values given might require some adjustment to account for the context in which an activity is located. For example, the size of a redevelopment

project might result in distorting effects on the generalized values for the parameters provided.

3.3.2 Baseline Land Use Intensity

Use of LSAAP as of November 2005 is characterized as low intensity. The total floor area of all buildings as of 2005 is 3.8 million square feet over 15,546 acres, resulting in an FAR of <0.01 (which represents a very low intensity use). The employee density in general space (approximately 10,000 square feet per employee) is also a very low intensity value. The presence of approximately 300 employees at the time of the BRAC Commission closure recommendation reflects a workforce much smaller than the historical workforce employed at the site. Considered together, these factors indicate a low intensity level of use at the time of the BRAC closure announcement.

Use of RRAD-WEP can be characterized as very low intensity as of the time of the BRAC closure announcement. RRAD-WEP principally consists of undeveloped lands, with limited structures (e.g., storage igloos). Other than the storage igloos, there are only a few structures on the 3,835-acre property area, representing a FAR of <0.05 (which represents a very low intensity use). No on-base employees are exclusively associated with RRAD-WEP; thus, the employee density in general space and in warehouse and storage space is also considered low intensity.

3.3.3 Local Reuse Plan

The following text is excerpted from the RRRA's reuse plan, and provides a brief summary of the reuse plan process (RRRA 2007). An excerpt from the reuse plan discussion of proposed alternatives for the LSAAP and RRAD-WEP properties is also provided in Appendix A.

1. *INTRODUCTION*

   A. *INTRODUCTION*

      Without question the redevelopment of 19,335 acres at Lone Star Army Ammunition Plant (LSAAP) and Red River Army Depot West Excess Property (RRAD-WEP) will be the single largest and most ambitious economic development initiative that the people of Bowie County, TX have ever undertaken in their history. In fact, such a challenge would be daunting for even the largest and most entrepreneurial of communities. However, the people of Bowie county strongly believe that they are on the verge of a "once in a lifetime" opportunity. And if planned properly, this project could become the centerpiece for regional economic development for decades to come….

   B. *PUBLIC PROCESS*

      The public outreach process for LSAAP and RRAD-WEP property transfer was designed to provide ample information without raising undue concern about job loss and worker displacement. Many small-scale meetings were held to provide maximum opportunity for questions and interaction. As a result of all of the meetings held throughout the area, many changes were made to the initial

redevelopment plans to accommodate the community vision for the future of the area.

1. *Homeless Housing Initiative*

   As with many depots and ammunition plants throughout the country, homeless housing is not available at either LSAAP or RRAD-WEP. A significant amount of housing was never built at either facility and the area does not lend itself to the construction of housing projects for the foreseeable future.

   The 90-day period for interest in facilities at LSAAP and RRAD-WEP by homeless and non-profit providers began on 7 June 2006 and concluded on 7 September 2006. Two public meetings were held for the providers on 17 July 2006 at the Red River Redevelopment Authority, with over three dozen people attending the meetings. Many questions of a general nature were asked about the Base Realignment and Closure (BRAC) process and specifically about the preservation of wetlands and environmentally sensitive areas. Little interest was shown in obtaining any property by any of the groups who were present at the meetings. At the end of the 90-day period, no formal requests had been made to obtain property at LSAAP or RRAD-WEP.

2. *Restoration Advisory Board*

   On 6 September 2006, a notice was placed in the Texarkana Gazette advertising a public information meeting to determine interest in forming a Restoration Advisory Board (RAB) at LSAAP and RRAD-WEP. The meeting was held on 13 September, 2006 at the Red River Commerce Park at 6:00 p.m. No members of the public attended the meeting and it was determined that a RAB would not be formed at LSAAP or RRAD-WEP due to a lack of public interest.

3. *Community Leadership Meetings*

   During September of 2006, the consultant team met with hired and elected officials from each of the communities surrounding the Lone Star and Red River facilities. Representatives from New Boston, Maud, Redwater, Nash, Hooks, Leary and Wake Villahe participated in these meetings. Consultants provided an overview of the reuse planning process and solicited input from each community about what they would like to see occur at the Lone Star and Red River facilities in the future. While complete consensus on all issues was not achieved, there seemed to be universal support for a redevelopment strategy that emphasized new opportunities for economic development. Most people believed that the BRAC 2005 decision to close LSAAP and RRAD-WEP created a "once-in-a-lifetime" opportunity for Bowie County to attract new industry. In that regard, a number of people supported the creation of a regional warehouse/distribution center.

   The City of Hooks, which is located directly across from the Lone Star facility, was interested in the road frontage along U.S. Highway 82, which runs the length of their community. They would like to annex this area and increase the size of their commercial tax base. The City of New Boston, located adjacent to RRAD-WEP property, had an interest in seeing commercial development occur at the corner of Route 8 and U.S. Highway 82. They also expressed an interest in pursuing new

industrial development opportunities in the future and wanted to reserve land at RRAD-WEP to meet that need.

Other individuals were concerned about the future of the two facilities, particularly the preservation of the forested areas and continued site access for hunters and outdoorsmen. Preserving the natural character of this site is viewed as an important goal for many people in Bowie County.

Of particular interest to all community leaders was accommodating the future operations of Day and Zimmermann, Inc., (DZI) the contractor at LSAAP. Officials at Day and Zimmermann have expressed interest in continuing operations at LSAAP and have existing government contracts that will extend the mission at LSAAP until the first quarter of 2009. Maintaining DZI at LSAAP would indeed reduce job loss in the area and many meetings were held between DZI and RRRA to determine the best way to accommodate these operations without losing the future redevelopment potential at LSAAP for the RRRA.

4. *RRRA Board of Directors Meeting*

   A meeting was held on 24 October 2006 with members of the redevelopment team and the RRRA to review the preliminary redevelopment plans with the RRRA Board of Directors. The meeting was open to the public and some members of the public did attend. This was the first formal opportunity for RRRA board members to comment on the preliminary land use concepts, ask questions, and make suggestions for changes. Subsequently, the RRRA staff have had many opportunities to comment on the redevelopment plans and to suggest changes to improve the potential for redevelopment of these areas.

   While meetings were held with the community about the redevelopment of LSAAP and RRAD-WEP, additional meetings were held by the Texas Workforce Commission and the Arkansas Department of Workforce Services about the needs of potential employees in the Texarkana area who would lose their jobs as a result of the base closure decisions. The exact number of individuals who would require these services is unknown, but these agencies wanted to be prepared for any needs of the workforce at LSAAP and RRAD-WEP.

5. *Civic and Business Interviews*

   In October 2006, the consultants met with the economic development committee of the Texarkana Chamber of Commerce organized by the Chamber's Director of Economic Development. The committee represented a broad cross-section of civic leaders, educators, and business owners committed to bringing economic development to the region. The committee members were uniformly behind the reuse of LSAAP and RRAD-WEP and saw it as a major economic engine for the Bowie and Miller Counties region. The group also expressed concerns about the region's labor force, primarily its size and ability to meet high skill needs of companies, including those that may be interested in moving to the Lone Star and Red River facilities. In response to this concern, the Chamber and the local community college system had begun instituting new workforce training programs and curriculum to position students to move into emerging employment opportunities.

3.3.4 Alternatives to be Evaluated in Detail

Low Intensity Reuse

The proposed level of intensity of reuse presented in the RRRA's reuse plan is considered commensurate with the LIR scenario (presented in Table 3.3-2). The site development plan in the RRRA's draft reuse plan (RRRA 2007) describes approximately 2.2 million square feet of new building development and approximately 1,900 jobs resulting from reuse. Assuming a standard weighted average of general and warehouse space per employee of 1,000 square feet, and an estimated FAR of 0.025, the scenario described in the Table 3.3-2 is commensurate with an LIR level of reuse.

Table 3.3-2 Reuse Scenarios to be Evaluated in the EA

Intensity Level	Residential Population	Employees	Square Feet per Employee (Weighted Average of General and Warehouse Space)	Building Space (square feet)	Floor Area Ratio
LSAAP					
Low (LIR)	NA[1]	2,200	1,000	2,200,000	0.025
Medium-Low (MLIR)	NA[1]	4,400	1,000	4,400,000	0.05
RRAD					
Low (LIR)	NA[1]	500	1,000	500,000	0.025
Medium-Low (MLIR)	NA[1]	1,100	1,000	1,100,000	0.05
[1] Residential uses are not planned for LSAAP or RRAD					

Medium-Low Intensity Reuse

To accurately capture, or "bracket," the higher end of the potential reuse of the LSAAP and RRAD-WEP properties, a MLIR scenario is also evaluated in this EA. Although it is less likely that this level of intensity of reuse would ultimately be established at the LSAAP and RRAD-WEP properties, this scenario is also included to ensure that potential impacts resulting from reuse are evaluated conservatively.

Table 3.3-2 shows the attributes of the LIR and MLIR reuse scenarios to be evaluated in the EA. These scenarios are formulated to define a reasonable upper-bound intensity of reuse planned for the LSAAP and RRAD-WEP properties after closure for the purposes of the analysis in the EA. Specific assumptions relative to the LSAAP and RRAD-WEP properties are discussed below.

LSAAP Reuse Scenarios

The intensity levels for the scenarios shown in the table above for LSAAP are considered to be conservatively high, and are based on the following assumptions:

1. The LIR scenario is commensurate with the current reuse intensity described in the RRRA's reuse plan for LSAAP. The MLIR is intended to bracket the higher end of possible reuse intensity at LSAAP (double the development planned for LSAAP).

    - Redevelopment of the LSAAP property is expected to take place in a manner consistent with the nature and intensity of the uses described in the RRRA's reuse plan. Some of the specific uses described in the reuse plan, however, may not ultimately be developed at the site, depending on a number of factors, including the Army's ultimate plan for disposition of the property. For the purposes of the analysis in this document, development is assumed to be commensurate with the intensity and general character of the development outlined in the RRRA's parcelization map for LSAAP, shown in Figure 3.3-1 (slightly more than half of the acreage of the installation).

    - For calculating projected building square footage using the FAR metric, it was estimated that approximately 2,000 acres of land would likely be developed at LSAAP based on current and projected development patterns (i.e., this acreage does not include green space, buffer areas, storage areas, landfills, demo areas, forest management areas, natural areas, access roads, etc.). Applying a low (0.025) and medium low (0.05) intensity FAR to the calculated number of 2,000 acres yields approximately 2.2 and 4.4 million square feet of developed building area, respectively.

    - To calculate the number of employees for both the LIR and MLIR scenarios, estimated building square footage was divided by 1,000 square feet per employee. This number represents the weighted average of estimated building square footage per employee for general and warehouse space. These statistics are based on intensities commensurate with the LIR and MLIR reuse scenarios provided in the Army BRAC NEPA Guidelines.

2. No residential development would take place on LSAAP.

    - The centerpiece of the RRRA's reuse plan is the marketing of the LSAAP property as a regional, multi-modal warehouse/distribution center, with rail access and foreign trade zone designation (RRRA 2007). The distribution center will cater to both domestic and foreign companies, and may involve the use of a direct rail (Kansas City Southern Railroad) link with the deepwater port Lazaro Cardenas in southern Mexico. The warehouse/distribution center would occupy nearly 3,000 acres on the site, and development sites would range in size from 89 to 300 acres. Successful development of this reuse component could also increase truck and rail traffic in the area and the region considerably over existing levels of traffic.

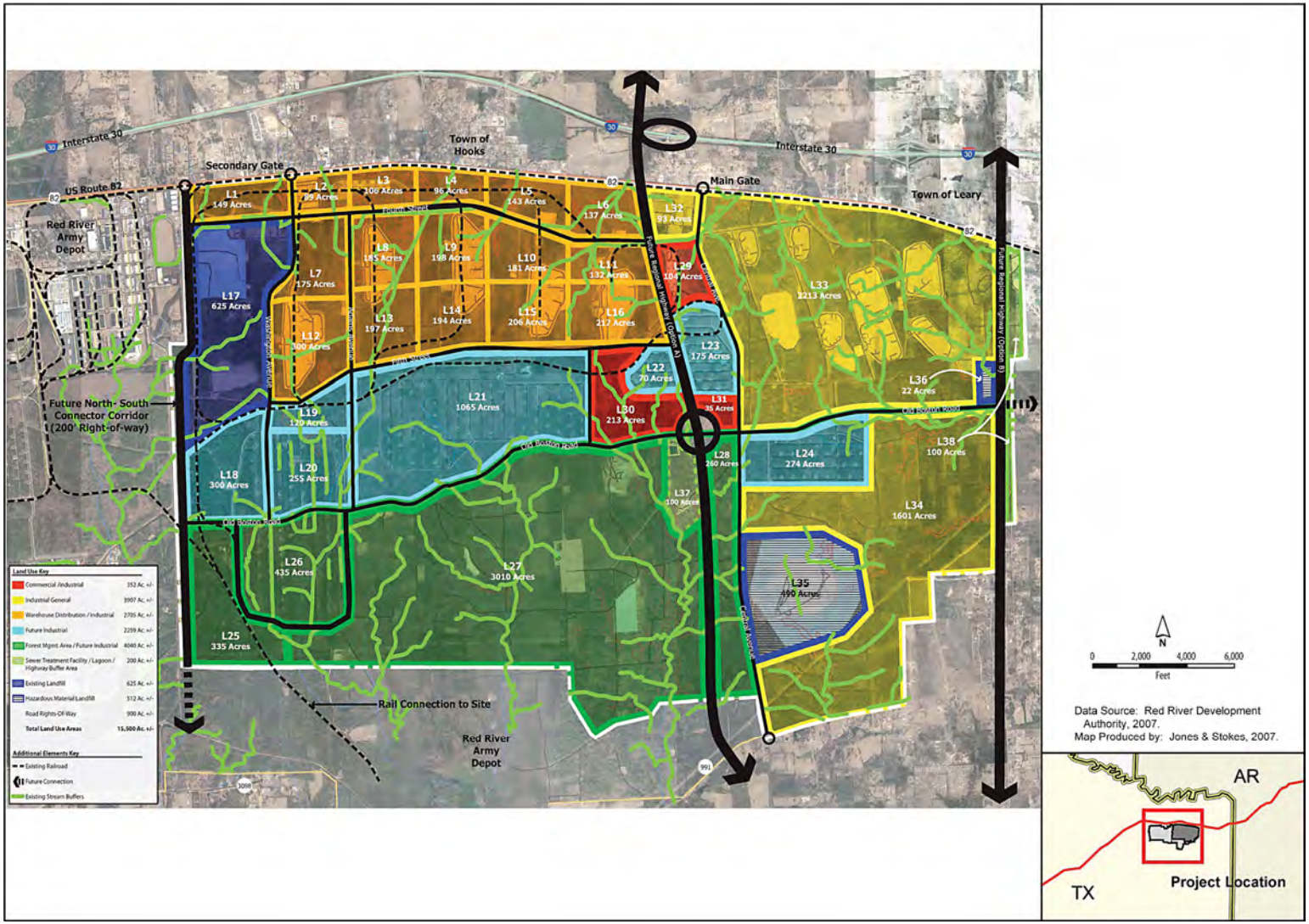

Figure 3.3-1 Land Parcelization Map for LSAAP

- Construction of the new I-69 may also take place either across the LSAAP site or to the east of the site, as shown in Figure 3.3-1. A proposed interchange for this new interstate may also be constructed on parcels within the LSAAP site. No decision has yet been made regarding the future location of this transportation corridor. If it were to be developed across, or east of, the LSAAP site, it would provide connections between areas and roads (such as I-30) north of the installation with areas and roads (such as US-67) south of the installation property. Development of the new I-69 across or near the LSAAP site could also stimulate truck and rail traffic in the area and the region.

3. Some commercial uses are also likely to be developed at the site.

It is likely that DZI will be the future occupant with the largest presence at LSAAP. The primary land uses at the former LSAAP would be related to light industrial, warehouse, and distribution uses. The extent to which existing buildings associated with prior operations at LSAAP will be reused is likely to be fairly low; the majority of existing buildings will likely be demolished, and new buildings likely will house new uses at the site. Existing road and rail infrastructure will, for the most part, remain to serve the new uses at the site. Igloos (except for those retained and used by DZI), formerly used for storage at the site, may be welded shut if they are determined not to have an anticipated reuse. Igloos may also be determined to be viable for future adaptive reuse, and/or some igloo doors may be removed.

Other specific site uses are described below.

Day and Zimmermann Operations. DZI is anticipated to ultimately occupy a large portion of LSAAP (as much as 5,000 acres), in the northeastern area of the property. Operations that previously took place across the installation would be consolidated in this area. DZI may also occupy (lease) an additional area, which would primarily support storage (including ammunition storage in igloos) administrative, and detonation disposal functions.

Ethanol Plant. One or two corn-processing ethanol plant modules may be constructed on the surplus property (probably on the LSAAP portion), and a third, cellulose-processing module may be planned for a site in the near vicinity of these plants (RRRA 2007) Although factors such as market conditions may preclude the development of these ethanol modules, other industrial uses with a similar level of intensity and operational requirements may ultimately be developed at the site.

While there are few design details relative to the ethanol plant modules at this stage of reuse plan development, the two corn-processing plant modules likely would each generate up to 50 million gallons of E85 (85 percent ethanol, 15 percent gasoline) of fuel per year (for a total of 100 million gallons per year for both modules); the cellulose-processing module would be much smaller in size as compared to either of the corn-based modules, and would generate well below 50 million gallons of E85 per year. Each module would occupy approximately 40 acres (consisting of an industrial area, storage areas for feedstock, truck areas, fuel storage farms, and buffer areas) within a 200-acre tract (which may include green space and further buffer areas, transportation access, and

limited storage facilities). Feedstock for the modules would consist of grain and biomass (dry grind), and co-products could include distiller grains.

The ethanol modules could include one or more carbon dioxide (CO_2) processing facilities, for the purpose of capturing CO_2 that would otherwise be vented into the atmosphere. The benefits of constructing such accessory facilities would include reducing air pollution and selling the CO_2 to the food industry. These CO_2 processing facilities would occupy a relatively small area within the main industrial area of the ethanol plants (perhaps approximately 1,000 square feet per plant), and could include a shed housing processing equipment, including compressors, and/or several large storage tanks. Any increased activities – such as traffic related to shipping CO_2 from the site, or additional emissions related to CO_2 processing – related to such a facility would be largely incidental to the other operations of the ethanol plant.

The power source for the modules would be natural gas, and the two corn-based processing plant modules combined would also require up to one million gallons per day (Mgd) of water for processing. The planned source for processing water would likely be Wright Patman Lake; discharge would be treated with a newly constructed wastewater treatment plant. Between 4,000 and 6,000 temporary employees would be associated with construction of the modules (RRRA 2007).

Landfills/Former Demolition Grounds. The areas of parcels L17 and L36 on the RRRA's parcelization map are proposed to be set aside for use as landfills, and may be expanded in the future (RRRA 2007). The RRRA has targeted parcel L36 for disposal of building demolition debris. The High Explosive Burning Ground (HEBG) in the area of parcel L21, and the High Explosive Demolition Ground (HEDG) in the area of Parcel L35, as well as surrounding areas, will continue to be used by DZI to support their operations (although use of these areas by DZI would ultimately be reduced), and/or may be retained by the Army until the environmental restoration of these areas are complete; the RRRA may also at some point wish to use the area of parcel L35 as a hazardous waste landfill (subject to permit approval and MEC removal). Long-term plans for these parcels in any case would include remediation, to the extent possible, of existing MEC in this area, and the capping of portions of the site as necessary to contain possible MEC hazards. The RRRA may also evaluate the feasibility of creating several cells in this area for the disposal of other hazardous waste. If the RRRA determines that this site is not suitable for these purposes, another hazardous waste disposal area may be established in another area of LSAAP.

The Old Demolition Area (ODA), a former disposal location for detonated munitions, is located in the area of parcel L27. Remedial actions at the ODA included the initial disposal of explosive debris, the placement of a soil cap over MEC left in place, and erosion control measures.

Forest Management. Areas planned as "Forest Management Area/Future Industrial" and "Future Industrial" at the site are most likely to undergo long-term timber and natural resource management, following the timber harvesting activities that the Army's selected contractor will carry out at the site as described above in Section 3.2.1. Some limited hunting may be allowed in these areas; general use by the public for recreational

purposes would not be permitted. Long-term uses of these areas may include industrial activities. Timber buffers will be maintained along existing roads, water bodies, wetlands, sensitive cultural and natural resources sites, and the installation boundary.

RRAD Reuse Scenarios

The intensity levels for the scenarios shown in the table above for RRAD are considered to be conservatively high, and are based on the following several assumptions, including the following:

1. Redevelopment of the RRAD-WEP property is expected to take place in a manner consistent with the nature and intensity of the uses described in the RRRA's reuse plan. Some of the specific uses described in the reuse plan, however, may not ultimately be developed at the site, depending on a number of factors, including the Army's ultimate plan for disposition of the property. For the purposes of the analysis in this document, development is nevertheless assumed to likely be concentrated in the upper northwest part of RRAD-WEP, as shown in Figure 3.3-2. Development in this area would consist of low or medium-low intensity uses (light industrial and possibly commercial). Forest management and natural resource management activities would take place over most of the site (as shown in Figure 3.3-2), following the timber harvesting activities that the Army's selected contractor will carry out at the site as described above in Section 3.2.1.

2. Assuming roughly the same proportion of RRAD-WEP would be "highly" developed as at LSAAP (approximately 13 percent of the total acreage) the area of highly developed acreage at RRAD would amount to approximately 500 acres.

3. Applying a low (0.025) and medium-low (0.05) intensity FAR to the calculated number of 500 acres yields approximately 0.5 and 1.1 million square feet of developed building area, respectively.

4. To arrive at an estimate of employees, estimated building square footage was divided by 1,000 square feet/employee, which represents an average estimated building square footage per employee for general and warehouse space commensurate with levels at LSAAP.

5. No residential development would take place on the RRAD-WEP.

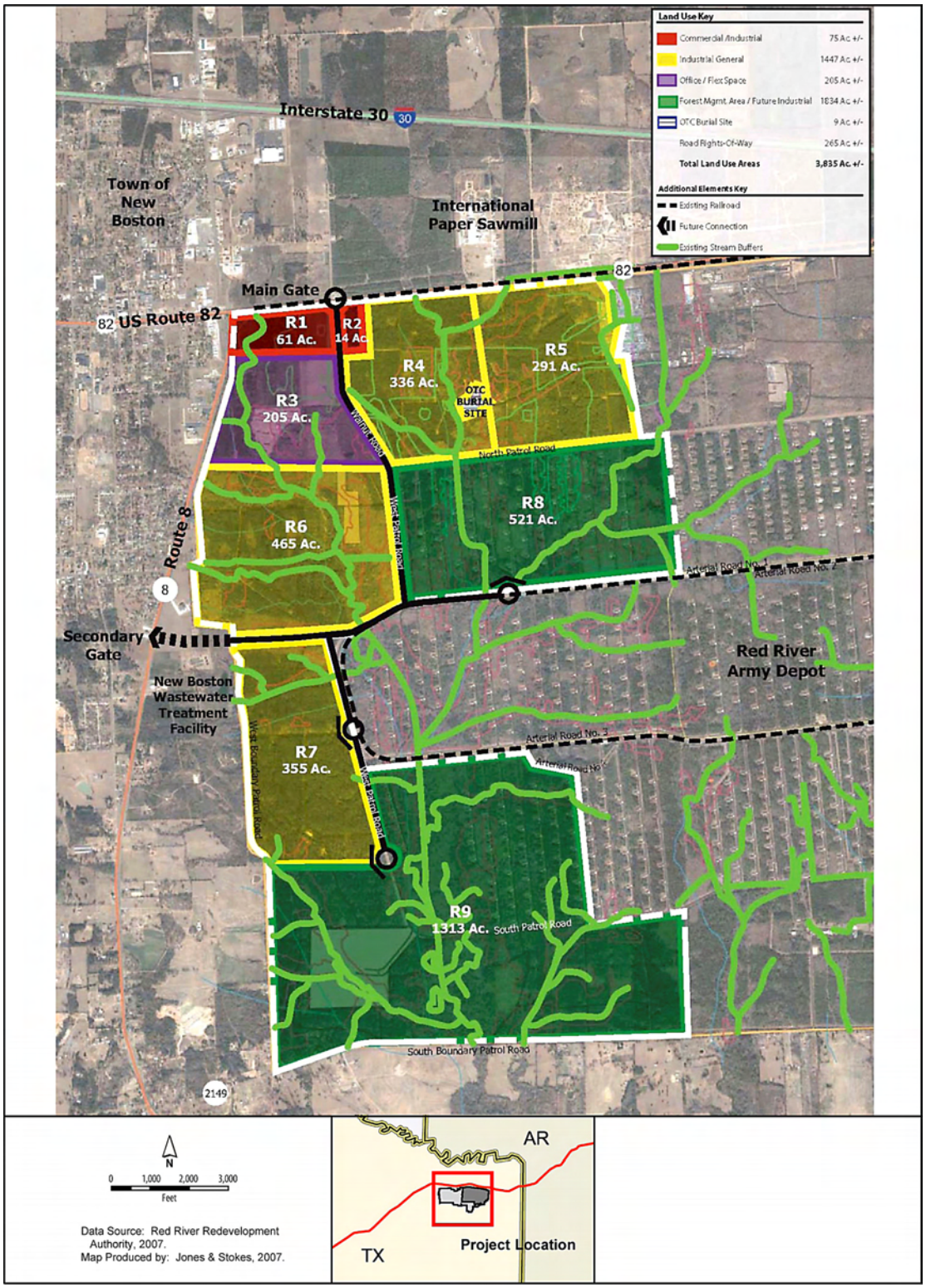

Figure 3.3-2 Land Parcelization Map for RRAD

The primary land uses at RRAD-WEP would be related to conservation/timber and natural resources management ("Forest Management") activities. LIR and MLIR scenarios would also include some light industrial, warehouse, and office/flex space uses. Existing road and rail infrastructure will, for the most part, remain to serve the site. Igloos formerly used for storage at the site may be welded shut if they are determined not to have an anticipated reuse. Igloos may also be determined to be viable for future adaptive reuse, and/or some igloo doors may be removed. No residential use would occur at the site, in keeping with the theme of "like use" for reuse, and because of ongoing constraints such as the presence of wetlands and availability of infrastructure, as well as ongoing activities (such as ammunition storage) at RRAD.

Conservation and natural resources management uses at the site could include the future creation of a wetlands bank.

Utilities at LSAAP and RRAD-WEP have been repaired and maintained but have never been fully modernized, and significant infrastructure improvements will be required in order to support the development envisioned in the RRRA's reuse plan. To achieve its preferred development phasing plan for both LSAAP and RRAD-WEP, the RRRA would undertake the construction of a new 1.5 million-gpd wastewater treatment plant (that could be located at Parcel L6 on LSAAP), new sanitary sewer and potable water infrastructure, new natural gas lines, and renovated telecommunications infrastructure. The ability of the RRRA to extend some utilities, such as sanitary sewer, to RRAD-WEP will be constrained by cost factors, because the far eastern edge of the excess property is several miles west of the existing RRCP.

3.3.5 Reuse Alternatives Not to be Evaluated in Detail

Medium Intensity Reuse

With a MIR FAR range of 0.1 to 0.3 (Table 3.3-1), reuse of the LSAAP and RRAD excess properties at this level would involve the creation of more than double the square feet of additional building space estimated under the MLIR scenario, increasing total space to as much as 15 million square feet. The MLIR scenario described above is considered a conservative projection of potential development at the site; the magnitude of redevelopment that would result from an MIR reuse scenario therefore represents an unrealistic outcome of reuse. Such an outcome would be unlikely, and therefore is not further evaluated.

Medium-High Intensity Reuse

With a MHIR FAR range of 0.3 to 0.7 (Table 3.3-1), reuse of the LSAAP and RRAD excess properties to a MHIR level would involve the creation of over 40 million square feet of additional building space, increasing total space to over 44 million square feet, or 12 times greater than present conditions. In light of the elements included in the reuse plan, as well as surrounding land use, this magnitude of redevelopment would represent an unrealistic outcome of reuse. Such an outcome would be unlikely, and therefore is not further evaluated.

High Intensity Reuse

High intensity reuse of the LSAAP and RRAD properties at a FAR of at least 0.7 would involve the use of approximately 61 million square feet of space, and would support an employee population of more than 61,000 persons. For reasons similar to those regarding MHIR, this scenario represents an unrealistic outcome of reuse and is not further evaluated.

3.4 NO ACTION ALTERNATIVE

Under the no action alternative, the Army would continue operations at LSAAP and RRAD at levels similar to those that occurred prior to the BRAC Commission's recommendations for closure and realignment. Implementation of this alternative is not possible, however, in light of the BRAC closure recommendations having the force of law. However, inclusion of the no action alternative is prescribed by CEQ regulations implementing NEPA, and serves as a benchmark against which federal actions can be evaluated. Therefore, the no action alternative is evaluated in this EA.

For LSAAP and RRAD-WEP, the no action alternative does not include the additional elements associated with disposal as described above under the early transfer alternative.

4 AFFECTED ENVIRONMENT AND CONSEQUENCES

4.1 INTRODUCTION

This section describes the current environmental conditions of the areas that would be affected by implementation of the proposed action or an alternative. This section also analyzes the potential effects that would arise from implementation of the proposed action or alternatives. Descriptions of the affected environment represent baseline conditions, or the "as is" or "before the action" conditions, at the installation properties. The baseline for this document has been established as status quo environmental conditions assuming continuation of Army missions at the levels occurring in November 2005, the time that the BRAC Commission's decisions became final. This baseline is used to identify by comparison any changes in conditions that would result from realignment, disposal, and reuse actions. The environmental consequences portion forms the scientific and analytic basis for the comparison of alternatives, and presents an analysis of potential effects, as measured against the baseline, that could arise from implementation of the proposed action. Direct, indirect, and cumulative effects of the proposed action are addressed, as well as the anticipated effects of mitigation.

For clarity, the environmental consequences associated with each alternative follow the discussion of the affected environment for each resource. The discussion of environmental consequences is divided into five sections for each of the alternatives evaluated in the EA: early transfer disposal, traditional disposal, caretaker status, no-action, and reuse. Reuse is further divided into the effects associated with medium-low and low intensity reuse. As discussed in Sections 2 and 3, these reuse scenarios sufficiently bound the degree and intensity of redevelopment as represented in the RRRA reuse plan (RRRA 2007). Furthermore, this discussion includes estimated effects associated with the construction of a new industrial operation on the site – specifically, up to two ethanol corn-based modules (up to 50 million gallons per year for each module) and a smaller cellulose-based module.

Environmental effects are characterized with respect to direct and indirect effects, as well as minor, moderate, or significant beneficial and adverse effects. Direct effects are those effects that are the direct, or immediate, result of implementation of disposal or reuse actions and occur in the same time and place as the action, such as the effect of increased air emissions associated with the development of industrial uses on a given property. Indirect effects are those effects that are related to a primary action or effect but that are secondary, or otherwise occur later in time or farther in distance from the action or effect. For example, an indirect effect could result from the generation of additional emissions from traffic, related to the economic growth of a region that is stimulated by property redevelopment. Cumulative effects and mitigation requirements are discussed at the end of this section.

In reviewing the discussion of environmental consequences, it is important to consider that effects for each alternative are characterized relative to the continuation of "status quo" Army operational and management regimes in November 2005, as defined by the no action alternative. The baseline conditions are described in the Affected Environment

section for each resource. Beneficial or adverse effects are then estimated relative to the estimated condition expected of the resource under continuation of Army ownership (e.g., remediation programs were assumed to continue as is under no action). In addition, the effects associated with disposal (either early transfer or traditional disposal) are inherently linked to the effects that may occur under reuse. The effects of disposal are not simply the execution of a legal document, but the implications of the change in policies, regulations, management regimes, and goals that will guide future land development as it moves from federal to non-federal ownership. This change in ownership will also have reasonably foreseeable effects as a result of planned redevelopment after disposal. Although reuse is guided by decision-making authority beyond the control of the Army, the reuse scenarios (i.e., MLIR and LIR) evaluated in this EA capture the potential short- and long-term implications of disposal as formulated in the RRRA reuse plan. Given that the reuse plan can change, the reuse scenarios bound the higher end of potential development (e.g., MLIR represents twice the development intensity, while the LIR scenario is similar to the development intensity outlined in the plan).

4.2 LAND USE

4.2.1 Affected Environment

This section discusses the regional geographic setting and location of LSAAP and RRAD-WEP, existing land uses on and adjacent to the installations, and current and future proposed development within the Region of Influence (ROI) that is relevant to the cumulative impacts assessment.

4.2.1.1 Regional Geographic Setting and Location

LSAAP and RRAD are located in the northeast corner of Texas, in Bowie County, near the "Four Corners" convergence of the Texas, Oklahoma, Arkansas, and Louisiana state lines (see Figure 4.2-1, Installation and Land Use Map). As of 2005, the two installations together comprised approximately 33,800 acres, with 18,300 acres at RRAD and 15,546 acres at LSAAP. RRAD-WEP comprises approximately 3,835 acres. LSAAP and RRAD share a common border, with LSAAP located directly east of RRAD. An arm of the RRAD property also extends south of LSAAP. The two installations are surrounded by several small Texas communities: New Boston, Hooks, and Leary are located immediately north of the facilities; Redlick, Nash, and Wake Village are located to the east; and Maud and Redwater are to the south. The urban center of Texarkana, Texas-Arkansas, located on the state line of Texas and Arkansas, is approximately 12 miles east of the installations. The larger metropolitan cities of Little Rock, Arkansas; Shreveport, Louisiana; Dallas and Fort Worth, Texas; and Oklahoma City, Oklahoma are all within 200 miles and three hours driving time of the installations.

Most of the topography in Bowie County is nearly level, with elevations ranging from 200 feet above mean sea level (amsl) in the southeastern part of the county to 460 feet amsl in the west-central part of the county (U.S. Army 2006d). A central ridge extends across Bowie County from east to west. The landscape of LSAAP and RRAD reflects this regional geography, and is largely characterized by flat to gently rolling terrain, with the regional east-west ridge extending across the northern area of the two installations. Topography across the installations is flat in the northern areas and includes some rolling hills in southern areas. Slopes across approximately 75 percent of the installations range between one percent and six percent; slopes across approximately 25 percent of the installation properties are less than one percent, and no slopes on the installations are estimated to be greater than 12 percent. Areas where slopes approach 12 percent tend to be located adjacent to stream channels.

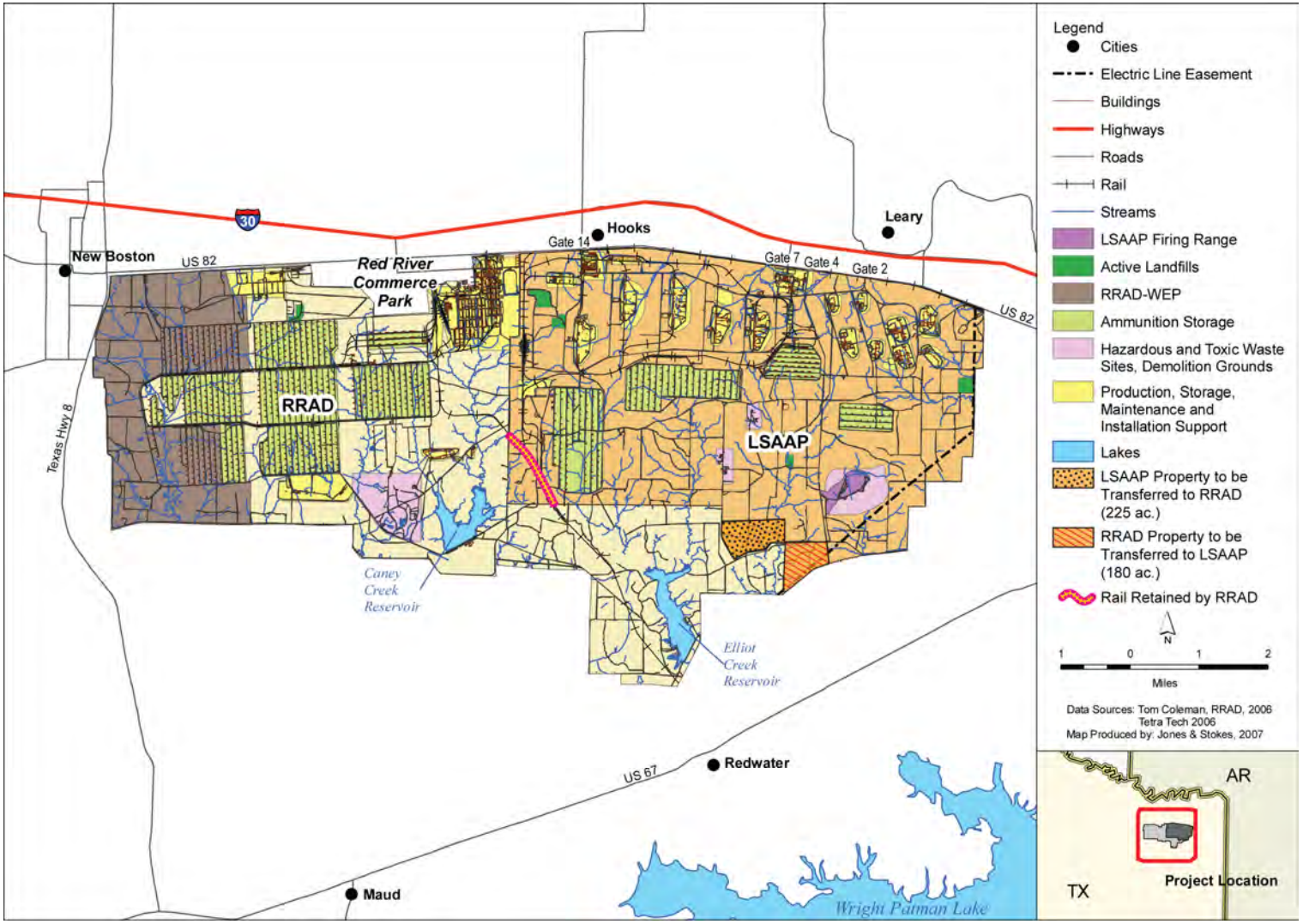

Figure 4.2-1 Installation and Land Use Map LSAAP and RRAD

Three principal highways serve the installations. I-30 and U.S. 82 travel east-west along the northern border of the bases, with I-30 connecting Dallas, Texas to Little Rock, Arkansas through Texarkana. U.S. 67 generally parallels I-30 but runs south of the installations before passing through Texarkana. State Highway 8 intersects with U.S. 82 at the northwestern boundary of RRAD, and runs west of the installation in a north-south orientation. U.S. 59, located east of the installations, is a main north-south artery through Texarkana.

4.2.1.2 Installation Land/Airspace Use

Land Use

LSAAP. LSAAP is a GOCO military industrial installation within the administrative authority of the Joint Munitions Command, and is operated by DZI. The first facilities at LSAAP were constructed during World War II, and were operated by B.F. Goodrich Company starting in 1942. In 1951, DZI was awarded a contract for operation of the installation. Peak ammunition production activities took place during the period of intensification of the conflicts in South Asia; during the peak operating year of 1968, approximately 12,000 employees were employed at LSAAP (LSAAP 2001).

Overall, the property is a lightly developed, mixed-use area and includes several active production areas that support the assembling, loading, and packaging of various items of ammunition and components, such as detonators and artillery shells, and the testing and storage of such items. LSAAP is in active status except for three ammunition production areas which are inactive and have been placed in modified caretaker status.

Land use on the facility includes 13 production areas, an area for administration and support activities, seven storage areas (including four main areas of igloo storage), maintenance shops, a railroad classification yard, seven (five active and two inactive) wastewater treatment plants, testing and demolition areas, a high explosives burning ground, and landfills (both active and closed). About 80 percent of the total acreage at LSAAP is composed of undeveloped mixed-woodland, which surrounds test ranges, ammunition storage magazines and igloos, and demolition areas. These mixed-woodland areas serve safety-zone and noise abatement purposes, and provide a source of commercial timber. The developed and active portion of LSAAP is generally concentrated across the northern half of the installation where ammunition production, storage, and maintenance activities are performed. The southern half of the installation includes ammunition storage areas as well as three sites dedicated to hazardous and toxic waste and demolition grounds (described further in Section 4.12, Utilities and Section 4.13, Hazardous and Toxic Substances).

LSAAP includes 946 buildings and 265 structures (UIC-WOLHAA 2005), including site administration offices, chemical, metrological, electronic, and tooling laboratories; a munitions demilitarization facility; a materials testing facility; munitions storage, loading, assembly, and packing facilities; and munitions production. Unimproved grounds consist of approximately 12,500 acres of woodland areas (LSAAP 2002). Tables 4.2-1 and 4.2-2 present the facilities, buildings, roads, and other characteristics of the LSAAP site.

Table 4.2-1 LSAAP Facility Information

LSAAP Facility Characteristics	Quantity
Number of buildings	946
Permanent	878
Semi-permanent	68
Structures	265
Magazines	38
Igloos	200
Miles of Road	153
Paved	141
Unpaved	12
Miles of Railroad	38
Active	8.7
Inactive	29.3
Built Footprint (square feet)	4.5 million
Buildings (square feet)	3.3 million
Structures (square feet)	490,000
Magazines (square feet)	435,000
Igloos (square feet)	284,000
Road footprint (square yards)	2,281,569.8
Paved (square yards)	2,260,495.8
Unpaved (square yards)	21,074
Source: UIC-WOLHAA 2005	

Table 4.2-2 LSAAP Building/Land Use Types and Status by Area

Area	Land Use/Major Activities	Active/Inactive
A	Commercial fertilizer production, permitted hazardous waste storage, dunnage operations	Partially active
AA	Gravel, fill dirt, and sand borrow area and closed landfill.	Active
B	Grenade and munitions production	Active
BB	Chemical (pesticide/herbicide) storage and rail activities, Tenant Defense Distribution Depot Red River, Texas, Tenant ARMS	Active/Tenants
C	Equipment storage (former mortar production and explosive disassembly), DEER II facility, TNT wastewater treatment plant	Inactive
CC	Railroad classification yard (Tenant: Lone Star Rail Car Storage Company)	Active/Tenant
D	Inert storage and warehousing, explosives disassembly, Tenant Defense Distribution Depot Red River, Texas	Active/Tenant
E	Tenant Armament Retooling and Manufacturing Support (former TNT loading and explosive disassembly), TNT wastewater treatment plant	Inactive
F	Mine and munitions production, salvage yard, permitted waste storage, TNT wastewater treatment plant	Partially active
G	Cable cutter and tracer production (pyrotechnic mixes), TNT wastewater treatment plant and chromium wastewater treatment plant	Partially active
G-North	Tenant Defense Reutilization and Marketing Service	Tenant
H	Inert storage and warehousing, Tenant Defense Reutilization Marketing Office	Active/Tenant
I	Administration, maintenance and storage	Partially active
J	Fuse and booster production	Inactive
K	Fuse and booster production/testing/wastewater treatment	Partially active
M	Fuse and booster production	Inactive
O	Mine and grenade production, TNT wastewater treatment plant	Partially active
P	Detonator and fuse production, lead wastewater treatment	Partially active
Q	Former detonator production (partially burned)	Partially Active
R	Fuse, primer and booster production	Partially active
S	X-ray area and equipment storage, permitted hazardous waste units	Partially active
T	Explosives and raw materials storage (24 earth-covered magazines)	Active
U	Finished munitions storage (38 above-ground magazines)	Active
V	Explosives and raw materials storage, chemical storage (85 igloos)	Active
W	Finished munitions storage (88 storage igloos)	Active
X	Sanitary sewage treatment plant (owned and operated by the RRRA)	Active
XX Demolition Grounds	Thermal treatment of explosive materials.	Active
XX Testing	Acceptance testing.	Active
XX High Explosives Burning Ground	Thermal treatment of explosive materials.	Active
Z	Fire system backup water (pump no longer in use). Facility currently leased as a fishing pond.	Active

Source: RRRA 2007, U.S. Army 2006b, Self 2007
Note: TNT = trinitrotoluene
ARMS = Armament Retooling and Manufacturing Support

Several leases are held on the LSAAP property. DZI leases unused warehouse space in some of the storage igloos on the facility. DZI also maintains leases with American Dehydrated Foods; Lone Star Railcar Storage Company (LRS); TEC Linens, Inc.; Area Z Recreation (Z-Pond); and Demanufacturing of Electronic Equipment for Reuse and Recycling. LSAAP sells timber (mostly pine) to foresters in a planned forestry scheme (U.S. Army 2006f).

RRAD-WEP. RRAD is classified as a federal industrial facility, and is under the command of the Tank Automotive and Armaments Command. The original mission of the depot was ammunition storage, which required a large amount of open space for safety zones (U.S. Army 2006a).

Major operational activities on RRAD include: maintenance and rebuilding of military vehicles; demilitarization of out-of-specification ordnance; ammunition storage; maintenance, modification, and recertification of the Hawk, Chaparral, and Patriot missiles; tank track and road wheel rebuild; and rubber products maintenance (U.S. Army 2006a). Primary activities on RRAD-WEP are ammunition storage and timber management. The majority of RRAD-WEP is forested woodland. Active areas on RRAD-WEP include 159 storage igloos. Some existing and former uses at RRAD-WEP are described in the Table 4.2-3.

Table 4.2-3 Existing and Former Uses at RRAD-WEP

Use	Quantity
Storage Igloos (Active)	
Area A	97 Igloos
Area B	6 Igloos
Area C	56 Igloos
OTC Landfill (Inactive)	20 acres
Closed Test Ranges	
Northwest Surveillance Function	22 acres
Southwest Surveillance Function	40-106 acres
Source: U.S. Army 2006a	

Airspace Use

An aeronautical flight path vector exists over part of LSAAP and RRAD. This Class B airspace occurs below 18,000 feet amsl and is located over the LSAAP property (USACE 1998).

There is no airspace use on either installation (USACE 1998).

4.2.1.3 Surrounding Land and Airspace Use

Areas immediately surrounding LSAAP and RRAD are largely rural and undeveloped, with mixed forestland, improved pasture and ranchland, and low-density residential areas (mainly single-family homes and mobile homes) predominating. Some commercial and industrial enterprises are found along the northern and western border of RRAD-WEP.

The town of New Boston is located immediately to the west and northwest of RRAD-WEP. New Boston, the Bowie County seat, covers approximately 3.5 square miles, and has a population of approximately 4,800 (U.S. Census 2000). U.S. 82 and State Highway 8 intersect at the northwestern corner of RRAD-WEP. A commercial corridor runs along State Highway 8, which forms the western boundary of the site for approximately one mile south of U.S. 82. The New Boston Wastewater Treatment Facility also lies adjacent to the western boundary of RRAD-WEP. Land use along the remainder of RRAD's western boundary to the south consists of residential development, undeveloped land, timber lands, pasture lands, and ranchland.

Land to the south of LSAAP and RRAD-WEP mainly consists of residential (generally low-density residential) development, pastureland, and forested areas. The town of Maud, which had a population of 1,028 in 2000 (U.S. Census 2000), is located about eight miles south and east of RRAD along State Highway 8. In the center of the installations' combined northern boundary, one mile north of LSAAP, is the small rural town of Hooks, covering 2.1 square miles, with a population of 2,973 in 2000 (U.S. Census 2000). Two schools are located to the north of the installations, near the towns of Hooks and Leary, respectively. Land to the east of LSAAP consists primarily of low-density residential development and wooded areas. Several upscale residential communities, such as the Beaver Lake Estates, lie to the south and east of LSAAP. East of the installations is Texarkana, Texas-Arkansas, the closest urban center within 20 miles; Texarkana covers 25.6 square miles, and has a population of 61,230 in 2000 (U.S. Census 2000).

Transportation

LSAAP and RRAD have access to an extensive transportation network, as detailed in Section 4.11, Transportation, including three main east-west highways or interstates, and one main north-south artery located east of LSAAP.

4.2.1.4 Current and Future Development in the Region of Influence

The LSAAP and RRAD-WEP properties are located in a non-incorporated area of Bowie County; no zoning regulations are in effect for this area. The Cities of Texarkana, Texas and Texarkana, Arkansas maintain land use regulations, however, LSAAP and RRAD-WEP are not located within the area of these jurisdictions. Because no land use planning guidelines or regulations exist for the area of Bowie County surrounding LSAAP and RRAD-WEP, other indirect factors influence growth in the area surrounding the installations. These include highways, rail, commercial airport access, utility networks, and speculative land holdings that are presently undeveloped or less intensively used (e.g., agriculture).

Several industries and commerce centers, including the New Boston Industrial Park, Cooper Tire and Rubber, the International Paper Sawmill facility, and the RRCP, provide ongoing employment and business opportunities for the area. In 1997, the RRRA helped create the RRCP as a result of the BRAC 1995 decision to designate 765 acres of RRAD land as a special district. Since then, 14 companies have located in the park, and about 400 new jobs have been created, with an estimated park payroll of $8 million per year (Texarkana Gazette 2006). Also within the commerce park is a privately-owned, 18-hole golf course on 235 acres, a childcare center, and 26 units of public housing. Along with other activities designed to attract and build business in the area, the RRRA has a workforce development program with Texarkana College and Texas A&M University-Texarkana that helps students gear their education specifically toward job prospects in the region.

Over the past several years, residential and recreational developments have been developed in the area in partial anticipation of 2005 BRAC actions on LSAAP and RRAD. These developments include renovation and expansion of the golf course on the commerce park from nine to 18 holes, and the continued development of residential homes lots along the 18-hole course. There are currently 30 residential lots along the course, with homes ranging from 1,800 to 3,000 square feet (Texarkana Gazette 2006).

In addition to the RRCP, there are four other industrial parks in the ROI, including Maxwell Industrial Park, I-30 Industrial Park, Falvey Industrial Park, and Nash Business Park. All except Nash Business Park are owned by the Texarkana Chamber of Commerce (Texarkana CoC 2006). The Texarkana Chamber of Commerce is actively marketing development sites within these parks.

The transportation network in the area immediately surrounding the bases is also under expansion and upgrade. The Texas Transportation Commission expects work to begin in September 2006 on a $153.5 million project for Texarkana's I-30 corridor, including $13 million for construction of a frontage road in Hooks, and an interchange at the RRAD entrance (Texarkana Gazette 2006).

Construction of the new I-69 road may also take place either across the LSAAP site or to the east of the site, as shown earlier in Figure 3.3-1. A proposed interchange for this new interstate may also be constructed on parcels within the LSAAP site. No decision has yet been made regarding the future location of this transportation corridor. Development of the new I-69 across or near the LSAAP site could result in increased truck and rail traffic in the area and the region.

4.2.2 Consequences

4.2.2.1 Early Transfer Disposal Alternative

Direct. Minor short-term and long-term beneficial effects, and minor to moderate short-term and long-term adverse effects, would be expected to occur. The early transfer disposal alternative would result in property transfer before all remedial action has been completed for contaminated sites at the properties. Existing land use patterns would change over time on the LSAAP and RRAD-WEP properties; ongoing operations at the

remaining portion of RRAD would likely be only slightly affected. Not all areas on the two installation properties would be immediately available for productive reuse after early transfer, and full reuse of the excess properties at LSAAP and RRAD-WEP would not be practicable before remediation sites at the properties have been adequately cleaned up. In addition, depending on how the disposition of the property takes place, redevelopment of the excess properties may occur in an uneven or disconnected fashion. The early transfer disposal alternative could therefore result in fragmentation of redevelopment; orderly or rational redevelopment of the installation properties could be impeded under this alternative. No effects on the surrounding land uses or on airspace use would be expected.

The land swap between LSAAP and RRAD will aid in maintaining the existing small arms range fan at RRAD, and is expected to protect against any potential land use incompatibility that might arise from this aspect of operations at RRAD. No direct adverse effects, and a minor long-term beneficial effect, would therefore result from the land swap.

Indirect. Minor short-term and long-term adverse and beneficial effects would be expected. Associated with disposal are several additional elements, including widespread timber harvesting activities. Disposal of LSAAP and RRAD-WEP would ultimately result in non-federal ownership and reduced and fragmented implementation of regulatory controls for the protection of natural resources as required under the Sikes Act for federal property. As a result of this and other factors, forestry and timbering activities could increase significantly at both LSAAP and RRAD-WEP. Should this take place, the forested buffers for LSAAP and RRAD operations (which potentially reduce operational noise and safety impacts on the surrounding communities, for example) could become less effective in separating potentially incompatible land uses. This, combined with the potential for eventual disposition of the excess properties to result in disconnected or fragmented redevelopment, could affect the orderly or rational development of the properties, and could result in a minor to moderate adverse effect. This would not result in a significant effect, however, because DZI and RRAD would be required to maintain safe distances and noise buffers between operations and surrounding communities. Widespread timbering activities could also reduce the beneficial effects of recreational and wilderness values on other future land use values.

Although existing remediation programs will continue under either federal or non-federal ownership, non-federal ownership could result in the availability of additional resources for the renovation or removal of facilities that are in disrepair and removal of underground cracked pipes. Thus, in the long term, disposal could indirectly generate minor beneficial effects.

4.2.2.2 Traditional Disposal Alternative

Direct. Minor long-term beneficial and adverse effects would be expected to occur. The traditional disposal alternative would result in property transfer after all remedial action has been completed for contaminated sites at the properties. Existing land use patterns would change over time on the LSAAP and RRAD-WEP properties; ongoing operations at the remaining portion of RRAD would likely only be slightly affected. All areas on the two installation properties would be available for productive reuse after transfer, and orderly or

rational redevelopment of the installation properties could be assisted under this alternative, resulting in beneficial land use effects. However, depending on how the disposition of the property takes place, redevelopment of the excess properties may still occur in an uneven or disconnected fashion, which could result in fragmentation of redevelopment. No effects on surrounding land uses or on airspace use would be expected.

Indirect. Minor short-term adverse and beneficial effects would be expected, similar to the effects outlined for early transfer. As compared to early transfer, remedial programs and redevelopment would occur later, but the effects would be similar.

4.2.2.3 Caretaker Status Alternative

Direct. Minor beneficial effects are expected. Under the caretaker status alternative, Army and DZI operations would cease. The elimination of military operations will reduce any minor land use incompatibilities with surrounding residents, such as noise propagation off LSAAP and traffic.

Indirect. Long-term minor adverse and beneficial effects would be expected. If the excess properties at LSAAP and RRAD-WEP were to be maintained in caretaker status for an extended period, the condition of buildings, facilities, roadways, and utility system components could be expected to decline. This deterioration could ultimately lead to a reduction in the suitability of these facilities to support uses similar to those associated with fully operational installation conditions. Additionally, if the caretaker period were to be extended, the excess areas would remain beyond the jurisdiction of Bowie County and would represent a lost opportunity for raising tax revenues to fund orderly development within the county.

4.2.2.4 No Action Alternative

No direct or indirect effects would be expected under the no action alternative. For this alternative, the Army would continue operations at LSAAP and RRAD at levels similar to those occurring prior to the BRAC 2005 Commission's recommendations for closure and realignment, which would affect neither land use on LSAAP or RRAD-WEP nor land use patterns external to the installation. No effects would occur relative to continuation of the Army's mission and conditions in November 2005.

4.2.2.5 Intensity-Based Probable Use Scenario

The Army's environmental restoration efforts for LSAAP and RRAD-WEP will attempt to facilitate the land use and redevelopment needs of the community as put forth in the RRRA's reuse plan. As a component of remedy implementation, the Army may restrict certain types of future land use (e.g., residential use), impose institutional controls, or take other actions affecting land use to protect human health and the environment. Such restrictions would be included in conveyance documents as restrictions on future land use.

Because no land use plans or zoning govern the use of the area of Bowie County in which LSAAP and RRAD-WEP are located, implementation of the reuse plan for the two excess properties would not result in a conflict for any local land use plans or controls; therefore, no adverse effects are identified in relation to potential conflicts with existing local land use plans and policies.

Medium-Low Intensity, Direct. Long-term minor beneficial and adverse effects would be expected. The LSAAP and RRAD-WEP reuse plan envisions a mixed use of property, with reuse focusing primarily on industrial, business/commercial, and conservation uses that would include construction of new facilities. Reuse of the LSAAP and RRAD-WEP properties, including demolition of unusable buildings and construction of new structures, would increase the property values of the land on the installation. Under the MLIR scenario, the intensity of reuse would be above the current use of the property, and would thus change the land use patterns in the area being developed.

The increased worker presence, projected level of development in parts of LSAAP, and potential construction of the new I-69 would alter land use patterns in those areas, but land use on the majority of the installation would remain functionally the same or similar to existing uses. The projected total building square footage associated with the MLIR reuse scenario, including the new wastewater treatment plant, is not anticipated to be significantly greater than the existing square footage of buildings at the site. Although some of the uses (e.g., commercial, biofuel generation) proposed to be developed at the LSAAP surplus property are different from current and historic DZI operations, the character of new development would be essentially similar to past use of installation property.

The proposed redevelopment would also likely have the effect of better integrating the property at LSAAP into surrounding communities, because the proposed industrial/warehousing, business, and commercial uses associated with redevelopment would be more consistent with surrounding land uses than the existing ammunition manufacture and associated operations. Therefore, adverse impacts to land use at or around LSAAP are unlikely, and redevelopment could result in beneficial effects. As part of redevelopment, existing road networks on the installation properties would be improved to accommodate increased traffic associated with reuse. The construction of the I-69 corridor would further result in improved regional and local connectivity, and would complement the improvements in existing road networks on the installation properties.

Projected levels of development in RRAD-WEP would alter land use patterns for this property, resulting in construction of facilities in areas that are currently undeveloped and/or maintained as timber resources. This is not expected to create an adverse land use impact, however, because the implementation of the MLIR scenario at RRAD-WEP will likely be consistent with the type of land use in the adjacent community of New Boston (with the exception of existing residential development in New Boston). Furthermore, the footprint of such operations would represent a small percentage of the total land holdings.

Some adverse impacts could be expected, assuming that all of the employees and new square footage represented in the MLIR scenario are established at LSAAP and RRAD-WEP, because the intensity of this development level could be higher overall than in

surrounding communities. The level of employment represented by the MLIR scenario would not be consistent with the levels of employment in nearby communities such as New Boston or Hooks, for example. While the existing regional labor market would be able to supply some or most of the employees represented by this projection, it is likely that other employees would commute or relocate to the area; these employees could potentially increase demand for new housing and associated services, and could place stress on existing infrastructure in the area. In addition, new building construction in RRAD-WEP would not necessarily be consistent with development densities in the adjacent town of New Boston. These effects, however, would not rise to a level of significance, because this reuse scenario would be phased such that it is likely that improvements or additions to the local housing market and infrastructure would likely keep pace with redevelopment.

The ethanol plant modules outlined in the reuse plan are expected to have a minimal adverse effect on land use. Plants of this size typically occupy 50- to 70-acre sites (IATP 1996): the plant footprint is normally approximately 15 acres. In the case of the ethanol modules outlined in the reuse plan, each module would occupy 40 acres, and it is presumed that the main portion of the industrial facility would be approximately 15 acres, with the balance of acreage consisting of support operations and buffer areas. The 40-acre area would also be part of a larger, 200-acre area which would consist of green space, buffer areas, transportation networks, and limited storage facilities. Furthermore, the plants are expected to be located within the interior of the installation, thereby minimizing any type of land use incompatibility. Even when combined with rail lines, access roads, and parking lots, the plants would have a negligible quantitative impact on overall land use characteristics in the region.

Medium-Low Intensity, Indirect. Long-term minor beneficial and minor to moderate adverse effects would be expected. Development of the MLIR scenario would likely involve an increase of development and investment capital in the ROI. Implementation of the reuse plan may stimulate further development and alteration of land use in the area that could support economic growth and enhanced quality of life in the community.

Should significant timber harvesting activities take place at LSAAP and RRAD-WEP under the MLIR scenario, the forested buffers between uses on the excess properties and the surrounding community could become less effective in separating potentially incompatible land uses. This, combined with the potential for eventual disposition of the excess properties to result in disconnected or fragmented redevelopment, could affect the orderly or rational development of the properties, and could result in a minor to moderate adverse effect. These effects are not anticipated to be significant, however, because local and regional market pressures for industrial and large-scale commercial uses are anticipated to remain relatively weak, especially given the ample land supply for such uses in the area, and it is unlikely that widespread intense and incompatible land uses will be a feature of redevelopment, in any case.

Low Intensity Direct. Long-term minor adverse and beneficial effects would be expected with the LIR scenario. This intensity of reuse would be above the current use of the property; however, the effects would be less than those described for the MLIR scenario.

Direct effects similar to, but lesser in magnitude than, those expected for the MLIR scenario would also occur in the LIR scenario.

Low Intensity Indirect. Long-term minor beneficial and minor to moderate adverse effects would be expected. Indirect effects similar to but less than those expected for the MLIR scenario would also occur for the LIR scenario.

4.3 AESTHETICS AND VISUAL RESOURCES

4.3.1 Affected Environment

Both LSAAP and RRAD-WEP are rural in character and aesthetically pleasing in appearance. The landscape at both installations is dominated by primarily forested or open, undeveloped land that is flat or gently rolling. The area within a 2-mile radius of the installations includes forestland, improved pastureland, small residential areas, and some commercial and industrial establishments. The visual character of LSAAP and RRAD is predominantly rural, with the exception of the maintenance area on RRAD and the production and storage areas on LSAAP, which are industrial in nature and appear orderly, with military-style architecture surrounded by landscaping. Major visible habitat types include oak-pine, broadleaf, deciduous, and needle green-evergreen forest. Large areas of open space provide long, pleasant vistas through the LSAAP installation property. There are no designated scenic areas on the installations or in the near vicinity (Wright 2007).

Buildings on LSAAP tend to be one-story structures, are utilitarian in design and construction, and are of no uniform type or style (although they are similar in massing and appearance). Four buildings on LSAAP have been determined eligible for the NRHP. No buildings on RRAD-WEP have been determined eligible for the NRHP.

The largest building on LSAAP is the one-story administration building in Area I. The visual character of LSAAP and RRAD-WEP from areas off site, such as the City of New Boston, is fairly innocuous, and is rural or forested in nature, like much of the surrounding area. Forested areas tend to screen most of the installations from the view of the surrounding communities.

4.3.2 Consequences

4.3.2.1 Early Transfer Disposal Alternative

Direct. Minor short-term and long-term adverse and beneficial effects would be expected. In the short term and long term, an aggressive timbering program (such as would be performed under the five-year forest harvest plan) will likely have a minor impact on the aesthetic quality of the landscape, because timber resources occupy the vast majority of both properties (over 14,000 acres). Establishment of adequate forest buffers around the

boundary of LSAAP and RRAD-WEP could reduce the adverse effects to viewsheds into the installation from nearby residential homes and other vantage points.

In the long term, disposal of LSAAP and RRAD-WEP would result in non-federal ownership and potentially reduced emphasis on natural resource management and conservation governed by Integrated Natural Resources Management Plans (INRMP) and Army policies and regulations. Such a paradigm shift in land management would likely result in increased potential for tree removal and construction activities that would take place after disposal. Such actions could have a minor adverse effect on the existing visual quality of woodlands and open space areas on the landscape at both LSAAP and RRAD-WEP, and may adversely affect viewsheds into LSAAP and RRAD-WEP. On the other hand, disposal and the change in ownership will ultimately result in the demolition and removal or renovation of unsightly deteriorating structures to comply with up-to-date architectural standards; this could lead to the enhancement of the built landscape with newer buildings that are more attractive than current structures, and could therefore lead to a minor beneficial effect.

Indirect. No effects would be expected.

4.3.2.2 Traditional Disposal Alternative

Direct. Minor short-term and long-term adverse and beneficial effects would be expected. Effects would be similar to those described under the early transfer disposal alternative; but the changes in effects would take place further in the future.

Indirect. No effects would be expected.

4.3.2.3 Caretaker Status Alternative

Direct. Minor adverse effects would be expected. Under caretaker status, the appearance of buildings and grounds could decline and deteriorate over time, decreasing the aesthetic value of the installation properties.

Indirect. No direct effects would be expected.

4.3.2.4 No Action Alternative

No direct or indirect effects would be expected. Under the no action alternative, the Army would continue operations at LSAAP and RRAD-WEP at levels similar to those occurring prior to the BRAC 2005 Commission's recommendations for closure and realignment. Thus, no effects would occur relative to continuation of the Army's mission and conditions in November 2005.

4.3.2.5 Intensity-Based Probable Use Scenario

Medium-Low Intensity, Direct. Minor short- and long-term beneficial and adverse effects would be expected. Increased construction, demolition, timber harvesting and site clearing activities would result in a short-term adverse visual effect that would likely be

contained within the LSAAP and RRAD-WEP properties. As redevelopment of the properties proceeds, older facilities could be replaced by newer, more attractive buildings, and existing natural open space and wooded areas could be enhanced through landscaping improvements. Tree removal and construction activities necessary to build up to 5.5 million square feet of facilities over the next 15 years could reduce the existing beneficial visual effects of woodland and open space areas on the landscape at both LSAAP and RRAD-WEP, and will adversely affect views into LSAAP and RRAD-WEP. Overall, an aggressive timbering program will likely have a much greater impact on aesthetics than facility construction, as the latter would only disturb a very small percentage of LSAAP and RRAD-WEP (approximately three percent), while timber resources occupy the vast majority of both parcels (over 14,000 acres). Establishment of adequate forest buffers around the boundary of LSAAP and RRAD-WEP could reduce the adverse effects to viewsheds into the installation from nearby residential homes and other vantage points.

Construction and operation of ethanol plant facility modules on LSAAP or RRAD-WEP would also have adverse effects on visual resources, should this aspect of redevelopment be implemented at the site. Industrial uses such as ethanol plants have the potential for visual impacts associated with dust generation, stack emissions, cooling tower emissions, visible plumes, and the massing and height of facility buildings and structures. A key issue of concern is the proximity of the facility to observation points such as residences, local parks or schools, and other areas where people congregate outdoors for recreation and enjoyment. Location of the facility within an interior parcel and viewshed analysis could reduce visual effects associated with plant operations. In any event, only a minor adverse effect is anticipated given the setting of the plant with other industrial operations, such as RRAD.

Medium-Low Intensity, Indirect*.* Minor long-term adverse effects would be expected. New buildings associated with new industrial and other areas at LSAAP and RRAD-WEP could obstruct views through the sites of surrounding landscapes. New sources of light and glare could, if not screened properly, affect nighttime views in communities adjacent to the installation properties.

Low Intensity Direct. Minor short- and long-term beneficial and adverse effects would be expected. Effects would be similar to those expected under the MLIR scenario, but to a lesser degree.

Low Intensity Indirect. Minor long-term adverse effects would be expected. Effects would be similar to those expected under the MLIR scenario, but to a lesser degree.

4.4 AIR QUALITY

4.4.1 Affected Environment

4.4.1.1 Local Meteorology

LSAAP and RRAD-WEP lie in the Shreveport-Texarkana air basin located in the northeastern section of Texas. Mild winters and arid summers typify this air basin. Local weather data were taken from the Texarkana National Weather Service station (LSAAP 2002). High humidity in the area is due to warm moist air flowing from the Gulf of Mexico. Winters are mild, with average daily temperatures ranging from 43°F to 53°F. Average daily temperatures in the summer range from 75°F to 82°F. The highest temperatures typically occur in July.

Precipitation occurs mainly during the fall and winter months. Rainfall in the spring and summer is less frequent, but often results in intense thunderstorms that can cause flash floods. High amounts of rainfall occur in November, March, and May, while January and August are typically the driest months of the year. The Texarkana weather station lists an average wind velocity of 8.4 mph, blowing predominantly from the northeast during the fall and winter, and from the southwest during the spring (LSAAP 2002).

4.4.1.2 Regulatory Authorities and Air Quality Attainment Status

Two agencies regulate air quality at LSAAP and RRAD in Bowie County: the USEPA, and the Texas Commission on Environmental Quality (TCEQ). Bowie County is in TCEQ's Region 5 air quality jurisdiction. LSAAP and RRAD facilities are located in the USEPA's federal Shreveport-Texarkana-Tyler Interstate Air Quality Control Region (AQCR) 022 and air basin, as defined by the USEPA. AQCR 022 consists of Bowie County and 22 other counties in Texas, seven Arkansas counties, one Oklahoma county, and 12 parishes in Louisiana.

Title V of the federal CAA, as amended in 1990, created an operating permits program that is implemented by the states. The USEPA promulgated its final implementing regulation for the operating permits program in 40 CFR Part 70 (57 Federal Register 32250) on July 21, 1992. The TCEQ met these federal requirements through the establishment of a federal operating permit program for the state. A site is required to obtain an operating permit if it is considered to be a "major source" (per 30 Texas Administrative Code Section 122.10) (TCEQ 2006). A site is a major source if the site's potential to emit is greater than 10 tons per year (tpy) of any single hazardous air pollutant (HAP) or 25 tpy of any combination of HAPs or 100 tpy or more of any regulated air pollutant (NO_x, CO, SO_2, PM). A Prevention of Significant Deterioration (PSD) permit may be required for a major source if emissions of any regulated air pollutant exceed 100 tpy (or, in some cases, 250 tpy). A PSD review requires additional modeling to determine if the new emissions will have a negative impact on the National Ambient Air Quality Standards (NAAQS, described below) of the surrounding air quality (TCEQ 2006).

The USEPA, working under authority of the CAA, developed the NAAQS. Those standards, shown in Table 4.4-1, set allowable ambient concentrations for "criteria air

Table 4.4-1 National Ambient Air Quality Standards

Pollutant	Primary Standards	Averaging Times	Secondary Standards
Carbon Monoxide	9 ppm (10 mg/m^3)	8-hour[(1)]	None
	35 ppm (40 mg/m^3)	1-hour[(1)]	None
Lead	1.5 µg/m^3	Quarterly Average	Same as Primary
Nitrogen Dioxide	0.053 ppm (100 µg/m^3)	Annual (Arithmetic Mean)	Same as Primary
Particulate Matter (PM_{10})	Revoked[(2)]	Annual[(2)] (Arith. Mean)	
	150 µg/m^3	24-hour[(3)]	
Particulate Matter ($PM_{2.5}$)	15.0 µg/m^3	Annual[(4)] (Arith. Mean)	Same as Primary
	35 µg/m^3	24-hour[(5)]	
Ozone	0.08 ppm	8-hour[(6)]	Same as Primary
	0.12 ppm	1-hour[(7)] (Applies only in limited areas)	Same as Primary
Sulfur Oxides	0.03 ppm	Annual (Arith. Mean)	-------
	0.14 ppm	24-hour[(1)]	-------
	-------	3-hour[(1)]	0.5 ppm (1300 µg/m^3)

Source: USEPA 2007
(1) Not to be exceeded more than once per year.
(2) Due to a lack of evidence linking health problems to long-term exposure to coarse particle pollution, the agency revoked the annual PM_{10} standard in 2006 (effective 17 December 2006).
(3) Not to be exceeded more than once per year on average over three years.
(4) To attain this standard, the three-year average of the weighted annual mean $PM_{2.5}$ concentrations from single or multiple community-oriented monitors must not exceed 15.0 µg/m^3.
(5) To attain this standard, the three-year average of the 98th percentile of 24-hour concentrations at each population-oriented monitor within an area must not exceed 35 µg/m^3 (effective 17 December 2006).
(6) To attain this standard, the three-year average of the fourth highest daily maximum eight-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.08 ppm.
(7) (a) The standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above 0.12 ppm is $\leq$ 1.
(b) As of 15 June 2005, the USEPA revoked the 1-hour ozone standard in all areas, except in the 14 8-hour ozone nonattainment Early Action Compact areas.
Note: ppm = parts per million

pollutants" including nitrogen oxides (NO_X), carbon monoxide (CO), sulfur dioxide (SO_2), ozone (O_3), particulate matter smaller than 10 microns (PM_{10}) and, particulate matter smaller than 2.5 microns ($PM_{2.5}$). Based on monitoring data collected by the USEPA and TCEQ, the USEPA designates each air quality region as in "attainment" if the air quality satisfies the NAAQS or "nonattainment" if air quality fails to satisfy the NAAQS. Regions that were originally designated non-attainment but have demonstrated improvements in air quality can petition the USEPA to revise their status to "maintenance."

USEPA and TCEQ have designated all of Bowie County as in attainment for all air pollutants (USEPA, 2006b) based on the general rural nature of the county. TCEQ has conducted air quality monitoring only for $PM_{2.5}$ in Bowie County (USEPA, 2006a). That monitoring has shown air quality to be good. Since 2000, the measured fourth-highest 24-hour $PM_{2.5}$ concentrations (which defines the 10^{th} percentile for comparison to the NAAQS) and the annual average concentrations have been less than the NAAQS. The fourth-highest 24-hour concentrations between 2000 and 2004 have been between 25 and 35 micrograms per cubic meter ($\mu g/m^3$) compared to the NAAQS limit of 35 $\mu g/m^3$, and the annual-average concentrations have been between 12 and 15 $\mu g/m^3$ compared to the NAAQS limit of 15 $\mu g/m^3$.

As of the date of this document, the USEPA has not set ambient air quality standards to address emissions of greenhouse gases such as carbon dioxide, methane, and nitrous oxide, and there are no acceptable federal thresholds for significance related to global warming. Although widespread scientific evidence supports the likelihood that anthropogenic warming has had a discernible influence on many physical and biological systems (IPCC 2007), a consistent means of assessing individual "project" contributions to cumulative greenhouse gas levels that could stimulate such an influence has not yet been established. Until standards and guidelines for assessing impacts are established, general compliance with emission reduction strategies can achieve reductions of greenhouse gases.

4.4.1.3 Existing Air Quality Permits at LSAAP and RRAD

Three different types of air emissions permits are issued by the TCEQ: construction permits, Title V operating permits, so-called permits by rule (also known as standard permits or permit exemptions), and one-stop permits (Jabon 2007). LSAAP operations include numerous natural-gas-fired and oil-fired industrial boilers that, if operated continuously, would emit more than 100 tons/year[4] of NO_X and CO. In addition, LSAAP operations include numerous other small industrial equipment (e.g., fuel storage tanks, spray paint booths, solvent cleaners, and ordinance manufacturing equipment) that emit lower volumes of NO_X and volatile organic compounds (VOCs). Based on the potential for LSAAP operations to emit large amounts of air pollutants (assuming continuous operation of the largest equipment), LSAAP is classified by the USEPA and TCEQ as a "major source," and TCEQ has issued a federal Air Operating Permit (i.e., major PSD Title V permit) to DZI. The Air Operating Permit does not set emission limits on individual sources or on the base as a whole. Table 4.4-2 displays the main air permits, including the Title V permit, held by DZI and in use at LSAAP.

[4] Federal (USEPA) significance threshold for major sources of air emissions, under Title V permitting rules.

Table 4.4-2 Main Air Permits held by DZI for the operation of LSAAP

Permit Number	Permit Type	Project Type	TCEQ Received Date	Renewal Date	Project Status	Unit Name	Unit Type	Issuing Authority
989	Federal (Title V) Site Permit	Renewal	16 NOV 05	16 NOV 10	Active	LSAAP	Various	USEPA
73837 (Incorporated into permit 989)	Standard Permit/Permit by Rule (Not Concrete Batch)	Initial Review	24 SEPT 04	21 OCT 04	Issued	Replacement of Halogenated Solvent Degreasing Fluid	Degreaser	
38095 (Incorporated into permit 989)	Construction Permit	Amendment or Modification	29 MAR 04	27 JAN 09	Amended	Degreasers	Misc. Manufacturing Degreaser	
71558 (Incorporated into permit 989)	Standard Permit/Permit by Rule (Not Concrete Batch)	Initial Review	22 MAR 04	16 APR 14	Issued	Pollution Control Project	Unknown	
56227 (Incorporated into permit 989)	Grand-Fathered Facility	Existing Facility Permit	26 APR 04	26 APR 14	Issued	Grand-Fathered Existing Facility Permit	Government Facility Boiler N	
HW-50292	One-Stop Permit	Existing Facility Permit	NA	NA	Active	Open Burning/ Open Detonation Grounds	Thermal	

SOURCE: U.S. Army 2006b, Jabon 2007
NA = Not available

Other operations at LSAAP that result in emissions are also covered under multiple permits-by-rule.

RRAD operations are performed under a PSD permit for stationary sources; however, there are no known stationary sources of air emissions or an air permit associated with RRAD-WEP (U.S. Army 2006a) that will be transferred to the RRRA.

Both LSAAP and RRAD-WEP are in attainment for criteria pollutants, and there have been no formal enforcement actions by the USEPA in the three years prior to this EA.

4.4.1.4 Existing Emissions

The region near LSAAP and RRAD-WEP is mainly rural, with few major industrial sources. USEPA records (USEPA 2007) indicate only two major sources in the County other than LSAAP and RRAD: the Alumax Mill Products aluminum rolling plant in Nash, TX, and the West Fraser Timber Company sawmill in New Boston, Texas. USEPA records indicate that most of the emissions in Bowie County originate from highway vehicles and non-road agricultural vehicles, rather than from industrial facilities and cities (USEPA 2007). Table 4.4-3 lists the countywide air pollutant emissions.

Table 4.4-3 Air Pollutant Emissions

Pollutant	Annual Emissions (tons per year)						
	LSAAP			RRAD [1]			Bowie County Total [5]
	On-Site Stationary Sources [2]	Vehicles on Public Roads [4]	Total	On-Site Stationary Sources [2]	Vehicles on Public Roads [3]	Total	
NO_X	5	9	14	154	93	247	5,600
CO	6	83	89	74	831	905	40,400
VOC	27	9	36	140	91	231	6,700
PM_{10}	< 1	12	12	27	119	146	17,000

Notes:
[1] Emissions are not generated on the RRAD-WEP.
[2] 2004 data from TCEQ 2006
[3] 1995 data from USACE 1998
[4] Vehicle emissions at LSAAP assumed to be 10 percent of RRAD values
[5] 1999 data from USEPA Air Data (USEPA 2007)

Stationary emission sources at LSAAP and RRAD[5] include boilers and heaters, fuel storage tanks, paint booths, and manufacturing operations. Tailpipe emissions from commute vehicles and facility-related delivery trucks are also an important emission source at the two facilities. Table 4.4-3 lists the reported air pollutant emissions as of 2004 from the facilities (TCEQ 2006) and compares their emissions to the countywide totals. The reported emissions from RRAD as of 2004 were higher than those from LSAAP, but the emissions from both facilities are only a small fraction of the countywide totals.

4.4.2 Consequences

4.4.2.1 Early Transfer Disposal Alternative

Direct. Short- and long-term moderate adverse effects would be expected on LSAAP and RRAD-WEP. The boilers, heaters, and manufacturing operations at LSAAP listed under the current permits would continue to operate, but would not in themselves pose any adverse impacts. Short-term and long-term moderate adverse effects would be expected as a result of increased activity at LSAAP and new activity at RRAD-WEP, including operational emissions and increased traffic flow associated with timber harvesting and other activities (see Section 4.11, Transportation, for further description of effects under reuse). In addition, short-term minor adverse effects from remediation equipment, dust, and exhaust emissions associated with demolition and construction vehicles would be expected. The USEPA's General Conformity Rule requires a formal conformity determination document for federal actions occurring in non-attainment or maintenance areas (former non-attainment areas), though transfers of ownership and leases for similar activities are exempt from the General Conformity Rule. However, Bowie County is in attainment for all NAAQS; therefore, the General Conformity Rule does not apply. Thus,

[5] Emissions are not generated on RRAD-WEP.

numerical emission calculations for activities (such as demolition, construction, non-road sources, and vehicles traveling on public roads) associated with disposal and reuse are not required.

Prescribed burning associated with forest management at LSAAP and RRAD-WEP could increase as part of actions associated with disposal and long-term forest management following disposal. Prescribed burning would continue to require compliance with TCEQ outdoor burning requirements (TCEQ 2006). Conformance with TCEQ requirements for outdoor burning would prevent adverse ambient air quality impacts caused by increases in prescribed burning.

Indirect. Long-term minor to moderate adverse effects would be expected on LSAAP and RRAD-WEP. In the long term, disposal of LSAAP and RRAD-WEP may spawn additional economic growth in the region, which could generate additional emissions from traffic and industry operations within the area.

4.4.2.2 Traditional Disposal Alternative

Direct. Short- and long-term minor to moderate adverse impacts would be expected on LSAAP and RRAD-WEP. Effects would be similar to those described under the early transfer disposal alternative, but the effects would take place further in the future.

Indirect. Long-term minor to moderate adverse effects would be expected on LSAAP and RRAD-WEP. Effects would be similar to those described under the early transfer disposal alternative, but the changes in effects would take place further in the future.

4.4.2.3 Caretaker Status Alternative

Direct. Short- and long-term minor beneficial effects would be expected. Stationary sources at LSAAP, such as boilers and heaters, would cease to operate, thereby reducing emissions. Furthermore, vehicle traffic and industrial operations would decrease on LSAAP, thereby reducing emissions. Forest management activities at LSAAP and RRAD-WEP would cease or be greatly reduced under this alternative, resulting in less prescribed burning and thus fewer associated air quality impacts. No effects associated with stationary source emissions would be expected at RRAD-WEP, given the lack of current operations on this parcel.

Indirect. No effects would be expected at LSAAP or RRAD-WEP.

4.4.2.4 No Action Alternative

No direct or indirect effects would be expected. Under the no action alternative, the Army would continue operations at LSAAP and RRAD-WEP at levels similar to those occurring prior to the BRAC 2005 Commission's recommendations for closure and realignment. Thus, no effects would occur relative to continuation of the Army's mission and conditions in November 2005.

4.4.2.5 Intensity-Based Probable Use Scenario

Medium-Low Intensity Direct. Long-term moderate adverse effects would be expected as a result of increased employment and commercial/industrial activity, especially in regards to the establishment of the warehouse/distribution centerpiece of the reuse plan, relative to existing conditions on LSAAP and RRAD-WEP. DZI operations at LSAAP would continue in some capacity, and reuse at LSAAP would encourage new commercial and industrial activity by new tenants. In the long term, employment and commercial and/or industrial operations may be initiated at RRAD-WEP, which would increase emissions. Reuse of the LSAAP property for commercial, manufacturing, and industrial uses would result in a greater quantity of emissions as compared to current levels. This would be due to the overall greater level of activity occurring at the site. Boilers, heaters, and industrial equipment would potentially be used at higher rates, resulting in increased emissions. Additional air quality permits may be required for new and expanded operations depending on the type of equipment installed at the site.

Any new stationary sources of air pollution that result from reuse would be required to comply with all federal and state air quality rules and regulations. Each tenant would be required, as appropriate, to obtain air quality permits from TCEQ for each new and modified facility. Although the RRRA would own the land on which the facilities reside, the tenants (operators) would oversee day-to-day operations at each facility, and thus would be considered individual sources, each requiring separate permits. The necessary pre-construction permits and approvals are summarized in Table 4.4-4. The permit process is designed to regulate sources that might cause significant ambient air quality effects. Permits would specify emission limits and the types of air pollution control equipment that would be necessary for each emission source. Adherence to these procedures would ensure that only minor adverse direct effects on air quality would result from the MLIR scenario.

Table 4.4-4 Air Quality Permit Requirements for New Facilities and Operations

Activity	Applicability	Permit	Agency
Air pollution emitting facilities	Limited types of small industrial equipment emitting less than 25 tpy of PM_{10}, sulfur dioxide, or VOC and less than 250 tpy of NO_X or CO.	Permit by Rule application forms under 30 TAC Chapter 106.	TCEQ
Air pollution emitting facilities	Industrial operations other than the limited types approved under Permit-by-Rule, for which emissions are not high enough to trigger PSD	Standard permit under 30 TAC Chapter 116	TCEQ
Air pollution emitting facilities	New equipment or facility modifications triggering definition of "major source" under PSD	New Source Preview (PSD) permit under 30 TAC Chapter 116.	TCEQ
Prescribed burning	Prescribed burning for logging and forest management	No permit needed, but required notification before burning is done, and requires restricting burning activity to periods of favorable weather.	Texas Natural Resource Conservation Commission

Source: TCEQ 2007
Notes: tpy = tons per year

The most stringent air quality permits would be required for new or modified "major sources" that require New Source Review under the state and federal PSD permit process. The PSD pre-construction permit process requires that the following issues be addressed:

Regional impacts at nearby Class I areas. Sources subject to PSD review are required to include an evaluation of impact on regional air quality related values (AQRVs) at Class I areas located within 186 miles of the site. One Class I area is located near LSAAP: Caney Creek Wilderness in Arkansas, 80 miles north of LSAAP. The AQRVs with the greatest potential for affecting the permitability of the project are regional haze and acid deposition caused by NO_X and SO_2 emissions. Depending on the outcome of the Class I modeling analysis, it might be necessary to decrease emissions associated with reuse, offset the impacts of reuse by securing emission reductions from other facilities, or perform a cumulative impact analysis for any AQRV above the significance level.

Fugitive dust and stack emission impacts at nearby Class II areas. The areas surrounding LSAAP and RRAD are Class II areas under the PSD program. A dispersion modeling analysis must account for all sources of emissions, excluding vehicles traveling on public roads. The dispersion modeling must demonstrate compliance with the NAAQS for all air pollutants. Fugitive emissions from piles, material handling, and truck traffic on unpaved and paved roads can result in unacceptably high ambient inhaleable PM_{10} concentrations because of these ground-level sources. This issue is exacerbated if a small buffer area exists between the sources of emissions and the facility's fence line.

Demolition activities associated with the MLIR scenario would create temporary sources of fugitive dust and vehicle emissions. Demolition-related emissions are not expected to create any significant ambient air quality effects due to the temporary nature of the demolition and the fact that the demolition would be spread over a multi-year period. The exhaust emissions from a limited number of heavy equipment vehicles would not cause any violations of ambient air quality standards.

Construction activities associated with the MLIR scenario would also create temporary sources of fugitive dust and vehicle emissions that would primarily be confined to immediate project areas. These emissions are not expected to create any significant ambient air quality effects for reasons similar to those discussed for the demolition activities.

Prescribed burning associated with forest management at LSAAP and RRAD-WEP could increase under this scenario, as part of long-term forest management following disposal (during and after the implementation of the five-year forest harvest plan). Prescribed burning would continue to require compliance with TCEQ outdoor burning requirements (TCEQ 2006). Conformance with TCEQ requirements for outdoor burning would prevent adverse ambient air quality impacts caused by increases in prescribed burning.

Detonation disposal of ammunition would continue but would ultimately be reduced at LSAAP. The overall reduction in detonation disposal would reduce air pollutant emissions generated by that activity, providing a net benefit to air quality.

In the event that the ethanol plant modules outlined in the RRRA's reuse plan are constructed at the site, a moderate adverse effect on air quality is expected. Because very little information describing the size or characteristics of the proposed ethanol plant modules is included in the RRRA's reuse plan, air emissions from plants of commensurate size and type were researched to determine the likely levels and ranges of criteria pollutant emissions from such operations. For the purpose of assessing the potential effects on air quality caused by the proposed action, Table 4.4-5 presents the average and range of total emissions in tons per year estimated for two 50 million-gallons-per-year (MGY) corn-based ethanol modules. The values presented in Table 4.4-5 were obtained from the maximum permitted levels of regulated air pollutants at three ethanol plants each producing approximately 50 MGY of fuel (to arrive at an estimate of total emissions for two modules each producing 50 MGY of fuel, these numbers were doubled). Because the size of a possible third, cellulose-processing module has not been determined at this time, the estimates in the table only address potential emissions from the two corn-processing modules. (In any case, it is likely that the third cellulose-processing module will be a much lower-volume-generating facility, and emissions would therefore likely be less than the estimates shown here.) The range, or variation, in values in the table results from a combination of equipment and process variation and differences in state regulations.

Ethanol plants do not fall into one of the 28 source categories that trigger a PSD requirement when the emissions are greater than 100 tpy (i.e., the triggering level of emissions is 250 tpy for any regulated air pollutant). As shown in Table 4.4-5, even the highest estimate of emissions (for CO) is less than the 250 tons/year threshold for PSD applicability for all criteria pollutants for a combined 100-million-gallon ethanol facility. Because the area is in attainment for all pollutants, these emissions are likely to only result in moderate adverse effects on air quality. If the area were in a maintenance or non-attainment status, the emissions could be considered significant. Although this is not the case in this rural area, the facility would still undergo thorough analysis and scrutiny relative to the use of pollution control equipment, emissions and dispersion modeling estimates, and permitting review by TCEQ. At this point, and based on estimates of emissions from similarly-sized ethanol plants, it appears that emissions from these modules would not likely trigger a PSD requirement. As design criteria and process specifications are developed for the facility in the coming years, the operators of the proposed facility will be required to provide more detailed air quality analysis during the permitting process with TCEQ.

Table 4.4-5 Total Estimated Emissions from Two 50 MGY Corn-Based Ethanol Plants

Emissions (tons/year)	Criteria Pollutants				
	PM_{10}	SO_X	NO_X	VOC	CO
Average	125	59	138	129	194
Range	82 – 151	56 – 62	97 – 195	117- 148	174 – 213

Note: This information is derived from an examination of permitted emissions of similar plants across the Midwest.
Source: AEC Ethanol LLC 2007, Badger State Ethanol 2007, Coulee Area Renewable Energy 2007

Because the construction of a third cellulose ethanol module is also being contemplated, it is possible that if all three facilities produced emissions at the higher end of the ranges identified in the table above, it could push emission levels beyond the annual limit of 250 tons that triggers New Source Review and PSD determination. This would be unlikely, however, if the plants' emissions levels conform to the average levels of emissions identified through reviewing emissions from similar plants.

In addition to criteria pollutants, ethanol plants emit trace amounts of hazardous air pollutants (HAPs) such as formaldehyde and methanol, which, like criteria pollutants, are regulated under Federally Enforceable State Operating Permits. TCEQ requires a Modeling and Effects Review Analysis (MERA) for facilities that emit HAPs. The analysis is reviewed by the Toxicology and Risk Assessment (TARA) group under TCEQ.

Adverse impacts related to the emission of CO_2 as a result of ethanol plant operation could be offset by the construction and operation of CO_2 processing facilities that would reduce such emissions. Adverse impacts related to the emission of other pollutants as a result of plant operation could also be offset by the construction of other treatment facilities or devices, such as a regenerative thermal oxidizer, which could reduce emissions of VOC and CO.

Medium-Low Intensity, Indirect. Long-term minor adverse effects would be expected. Indirect impacts would be caused by emissions from increased economic expansion in the region (including, should it take place, the construction of the I-69 corridor), resulting in additional facility-related vehicles traveling on public roads, as well as increased industrial and commercial activity that may be generated from regional growth. In addition, once existing and new commercial- and industrial-related spaces are occupied, associated vehicle traffic would generate emissions on public roads throughout the region. In general, the existing road network would be adequate for ensuring that hotspot emissions do not occur for most commercial and retail activities. For larger industrial activities, some minor improvements to the regional road network might be needed. In any case, only minor adverse effects are expected to occur.

Low Intensity, Direct. Long-term moderate adverse effects are expected at LSAAP and RRAD-WEP. Effects from the LIR scenario are similar to, but less than, the effects from the MLIR scenario. Overall emissions are expected to increase from current levels. This would be due to the greater level of activity occurring at the site. New or modified stationary sources would require pre-construction air quality permits from TCEQ. Prescribed burning associated with forest management at LSAAP and RRAD-WEP could increase, but compliance with TCEQ requirements for outdoor burning would prevent adverse ambient air quality impacts. Emissions from detonation disposal of ammunition at LSAAP would continue, but would ultimately be reduced, with the overall reduction in activity providing a net benefit to air quality.

Low Intensity, Indirect. Long-term minor adverse effects are expected at LSAAP and RRAD-WEP. Effects from the LIR scenario are similar to, but less than, the effects from the MLIR scenario. Long-term minor adverse effects would be expected due to the increase in emissions from off-site activities, combined with potential regional population growth and regional employment growth.

4.5 NOISE

4.5.1 Affected Environment

Noise Descriptors

The common unit of measure for noise is the decibel (dB). Three frequency weighting scales measure sound level: A-weighting captures the loudness of the least intense sounds; B-weighting captures the loudness of moderately intense sounds, and C-weighting captures the loudness of the most intense sounds that the human ear can withstand. Two weighting scales have been used to address noise generated at the LSAAP and RRAD installations: C-weighted sound (expressed as dBC) is used for the lower frequency sounds typically associated with demolition activities, while A-weighted sound (expressed as dBA) is used for assessing the noise effects of higher frequency sound-producing activities such as firing ranges, traffic noise, industrial noise, and aircraft noise.

Noise that varies with time is quantified using several descriptors, and the choice of descriptors is dictated by the purpose for which the analysis is intended. Analyses conducted for NEPA documents and for land use planning employ averages based on measured or predicted sound exposure levels (SEL) over "busy days" or annual number of operating days. Analyses conducted for the management of noise complaints employ measures of single events, such as the linear peak level used for the prediction of complaints about demolition noise or the maximum A-weighted level used for the prediction of complaints about aircraft noise. The peak noise level (L_{peak}) is generally defined as the maximum absolute value of the instantaneous sound pressure in a specific time interval during the specified monitoring period. The maximum level is generally defined as the highest noise level from some passing source integrated over some short interval, such as 1/10 second. The "equivalent noise level" (L_{eq}) is the average noise level during a specified monitoring period. The day-night noise level (DNL) is the average noise over a 24-hour period; the noise levels between 10:00 p.m. and 7:00 a.m. are adjusted upward by 10 dB to account for peoples' sensitivity to nighttime noise. The DNL is the method of choice for the production of noise contour maps.

Noise Impact Criteria

The Federal Noise Control Act of 1972 stated, "Congress declares that it is the policy of the United States to promote an environment for all Americans free from noise that jeopardizes their health or welfare." In response to that federal act, many federal and local noise ordinances and guidelines were enacted to address noise impacts. The NCA declares that military installations will be subject to state and local noise laws to the same degree as any person. At the same time, the NCA considers any equipment used in combat or to support combat operations as exempt from regulation. As interpreted by Army experts in environmental law, state and local noise laws should be complied with if the noise source cannot be used in combat, such as the cooling tower fan at an Army research facility. On the other hand, the Army considers noise from a firing range to be exempt from any regulation.

The Army's adoption of the Installation Compatible Use Zone (ICUZ) program to assess the noise levels for military installations is a method of compensating for the assumption that the noise of combat materiel cannot be regulated. The intent of the ICUZ program is to provide local government with the opportunity to protect the citizenry from unhealthy and/or annoying levels of noise by restricting "noise-sensitive" development in areas of high noise exposure. The ICUZ program classifies noise compatibility near military bases according to 24-hour C-weighted DNL (CDNL) noise levels for weapons with a caliber of 20 millimeter (mm) or greater, the 24 hour A-weighted DNL (ADNL) noise levels for aircraft, vehicles, and continuous noise sources (e.g. generators), and the 24-hour ADNL with impulse-penalty for small arms ranges. The Army classifies land use compatibility for long-term average noise into "noise zones" depending on the forecast DNL. Because the only sources at LSAAP and RRAD that would merit land use planning are from explosions, guidelines for CDNL are listed in Tables 4.5-1 and 4.5-2.

Table 4.5-1 Noise Compatibility Guidelines for Long-Term Average Noise (CDNL)

Noise Zone	Noise Compatibility	Percent of Population Highly Annoyed	Impulse Noise CDNL
Zone I	Normally compatible	< 15 percent	<62 dBC
Zone II	Normally incompatible	15-39 percent	62-70 dBC
Zone III	Incompatible	> 39 percent	> 70 dBC
Source: U.S. Army Center for Health Promotion and Preventative Medicine (U.S. ACHPPM) 2003			

Table 4.5-2 Impulse Noise (L_{peak}) Compatibility Guidelines

Predicted L_{peak} Noise Level, dBp	Risk of Complaints	Action
< 115	Low risk of noise complaints	Fire all programs
115-130	Moderate risk of noise complaints	Fire important tests. Postpone non-critical testing, if feasible
> 130	High risk of noise complaints; possibility of building damage	Only extremely important tests should be fired.
Note: dBp = Decibels above one picowatt Source: U.S. ACHPPM 2003		

Local and state noise ordinance codes apply to any non-military material generating noise in the areas around LSAAP and RRAD. The city of Texarkana enacted a non-quantitative noise ordinance (6-23-53) prohibiting disturbing sound that caused "discomfort or injury to persons"; however, the code does not specify quantitative noise limits corresponding to that prohibited condition. In addition, Texas House Bill 2017 passed in 2003 (but not adopted in Bowie County) allows counties the option of enacting a 65-dB noise level 500 feet from the property boundary of noise generators.

Vehicles associated with LSAAP and RRAD (especially heavy trucks) traveling on public roads can cause noise impacts at homes close to the roadway. Traffic noise is generally quantified as the peak-hour L_{eq} during the hour of the day when traffic volumes are highest. There are currently no state or local regulations governing traffic noise from vehicles traveling on public roads. The Federal Highway Administration (FHWA) regulates traffic noise impacts caused by vehicles on new federally funded roadway improvement

projects near residential areas, but the proposed action would not require construction of new roadways near houses, so the FHWA regulations would not apply.

Existing Noise Studies

Noise studies prepared for RRAD include a 1993 ICUZ Analysis, a 1998 BRAC EA with a noise analysis (USACE 1998), a 2003 Environmental Noise Consultation study (USACHPPM 2003), and a 2006 noise study for the 25 mm Cannon Test Range and Combat Vehicle Test Track (USACHPPM 2006). All noise studies found that, based on long-term CDNL contours, ICUZ Zones II and III fell inside the installation boundary. The center of the ICUZ zones (as described in the 1993 report) lies in the southeastern section of the RRAD facility. The Environmental Noise Consultation report found that the peak noise levels extended beyond the southern boundary of RRAD, even during favorable weather conditions, when blasting takes place. The reports indicate the potential for occasional noise complaints caused by peak impulse noise events, regardless of the forecast 24-hour CDNL noise contours.

Noise studies prepared for LSAAP include a 1992 ICUZ Analysis (USACHPPM 1992), a 1997 Environmental Noise Consultation study (USACHPPM 1997), and a 2002 EA with a noise analysis (LSAAP 2002). These analyses indicated that the forecast Level I, II, and III CDNL noise zones did not extend beyond the installation boundary. However, the reports indicate the potential for occasional noise complaints caused by peak impulse noise events, regardless of the forecast 24-hour CDNL noise contours.

An Army technical memorandum dated 28 July 2006 describes the Army's concerns that proposed timber harvesting could reduce the amount of noise attenuation currently provided by the forested buffer between the demolition site located at the southeast corner of LSAAP and nearby dwellings. Studies conducted for the Army indicate that this forest buffer may reduce noise levels at homes along the boundary of LSAAP on some days, and on other days may increase the noise level experienced at those same homes. Further research may determine whether and when the forest buffer reduces noise levels through a reduction in sound pressure.

Existing Noise Producing Activities

Existing noise-producing activities on LSAAP and RRAD (as shown in Table 4.5-3) include ammunition manufacturing and packing, ordnance demolition, firing ranges, and on-road vehicles. Only minor sources of noise producing activities occur on RRAD-WEP (e.g., occasional on-road vehicles). Ordnance demolition that currently takes place at RRAD will cease after realignment has been completed.

Table 4.5-3 Existing Noise-Producing Activities on LSAAP and RRAD

Noise Source	Location	Hours of Operation	Noise Conditions
Ammunition Manufacturing and Packaging	Indoor manufacturing areas	Working hours	Not likely to impact off-site receptors. Employees are already required to wear hearing protection in loud manufacturing areas.
Ordnance Demolition	Southeast corner of LSAAP. Southern portion of RRAD (not in RRAD-WEP).	Four to six sets of detonations each workday at LSAAP. 150 days per year of demolition at RRAD.	LSAAP has enacted standard operating procedures to restrict detonations to acoustically favorable weather conditions. Open Burning/Open Detonation (OB/OD) at RRAD will cease after BRAC action.
Facility vehicles on public roadways	Public roads serving the facility	Working hours	Noise impacts likely to be most significant during commute periods, or when truck convoys pass through public neighborhoods.

Existing Land Use Compatibility

According to the 2005 U.S. Census projections, Bowie County has a population of 90,643. Nearby communities are listed in Table 4.5.4. Most previous noise complaints have come from communities to the south and east of the installations. The ROI for analyzing noise complaints from the LSAAP and RRAD-WEP, for the purposes of this document, is defined as extending one mile from the boundaries of the facilities. A number of sensitive receptors reside in this ROI, including the Living Hope New Boston Medical Center, the New Boston Independent School District, the Northeast Texas Mental Health Facility, the Redwater Independent School District, the Hooks Independent School District, the Leary Independent School District, the Arkadelphia School, approximately 30 churches, and a number of communities. The population residing in the one-mile radius of the LSAAP and RRAD-WEP (which is the farthest distance at which direct noise impacts are likely to occur) is estimated at approximately 5,000 people, and is primarily associated with agricultural activities. The majority of the sensitive receptors within a one-mile radius lie to the northwest of RRAD-WEP, and to the northeast of the LSAAP facility. Those more densely populated areas are far from the ordnance demolition sites at LSAAP and RRAD, so they are less likely to be impacted by noise than the rural areas adjacent to the ordnance demolition sites.

Table 4.5-4 Population Data

Community/Town Name	2005 U.S. Census Population Projection	Approximate Location of the Community/Town to LSAAP/RRAD
Hooks, Texas	2,924	North
Leary, Texas	565	North
Maud, Texas	1,015	South
Nash, Texas	2,352	East
New Boston, Texas	4,624	West
Red Lick	858	East
Redwater, Texas	883	South
Texarkana, Arkansas	30,006	East
Texarkana, Texas	35,746	East
Wake Village	5,226	East
Source: U.S. Census 2000		

Predicted noise contours for ordnance demolition extend beyond the installation boundaries into the lightly populated rural areas south of RRAD. Figure 4.5-1 shows the CDNL demolition noise contours at LSAAP, and Figure 4.5-2 (CHPPM 2003) shows the demolition CDNL contours at RRAD. Figure 4.5-3 shows the L_{peak} demolition noise contours at RRAD, Figure 4-5.4 shows the CDNL contours for the 25 mm Cannon Weapons Test Range at RRAD, and Figure 4-5.5 shows noise zones for RRAD Combat Vehicle Test Track Operations. None of the noise contours extend within RRAD-WEP. These forecasts are based on continued use of the installations in their current capacities. The forecast Zone II noise contour is within the LSAAP boundary, while the forecast Zone II CDNL contour at RRAD extends just beyond the boundary. As shown in the RRAD ICUZ report, the forecast 115-dBp L_{peak} impulse noise contour at RRAD extends well beyond the installation boundary. The ICUZ reports for both installations indicate that there is a potential for occasional noise complaints about blast noise.

There are two ways in which acoustical engineers may describe ambient background noise: DNL and L_{10}. Existing ambient background noise (DNL) for land reuse types can be estimated by using the following equation:

DNL or Ldn = 10 $\log_{10}$(p) + 22 (dB) where p is the number of people per square mile.

According to the 2005 Census projection, the Texarkana, TX – Texarkana, AR Metropolitan Statistical Area (MSA) has 23.1 people per square mile, within an area of 1,547 square miles (U.S. Census 2000). The cities of Texarkana, Texas and Texarkana, Arkansas, which are approximately 12 miles east of the installations, occupy approximately 69 square miles, and account for slightly less than half of the county population. The remaining Texarkana, TX – Texarkana, AR MSA holds an average density of 46 people per square mile, and yields an estimated baseline DNL of 39 dB using the previous equation.

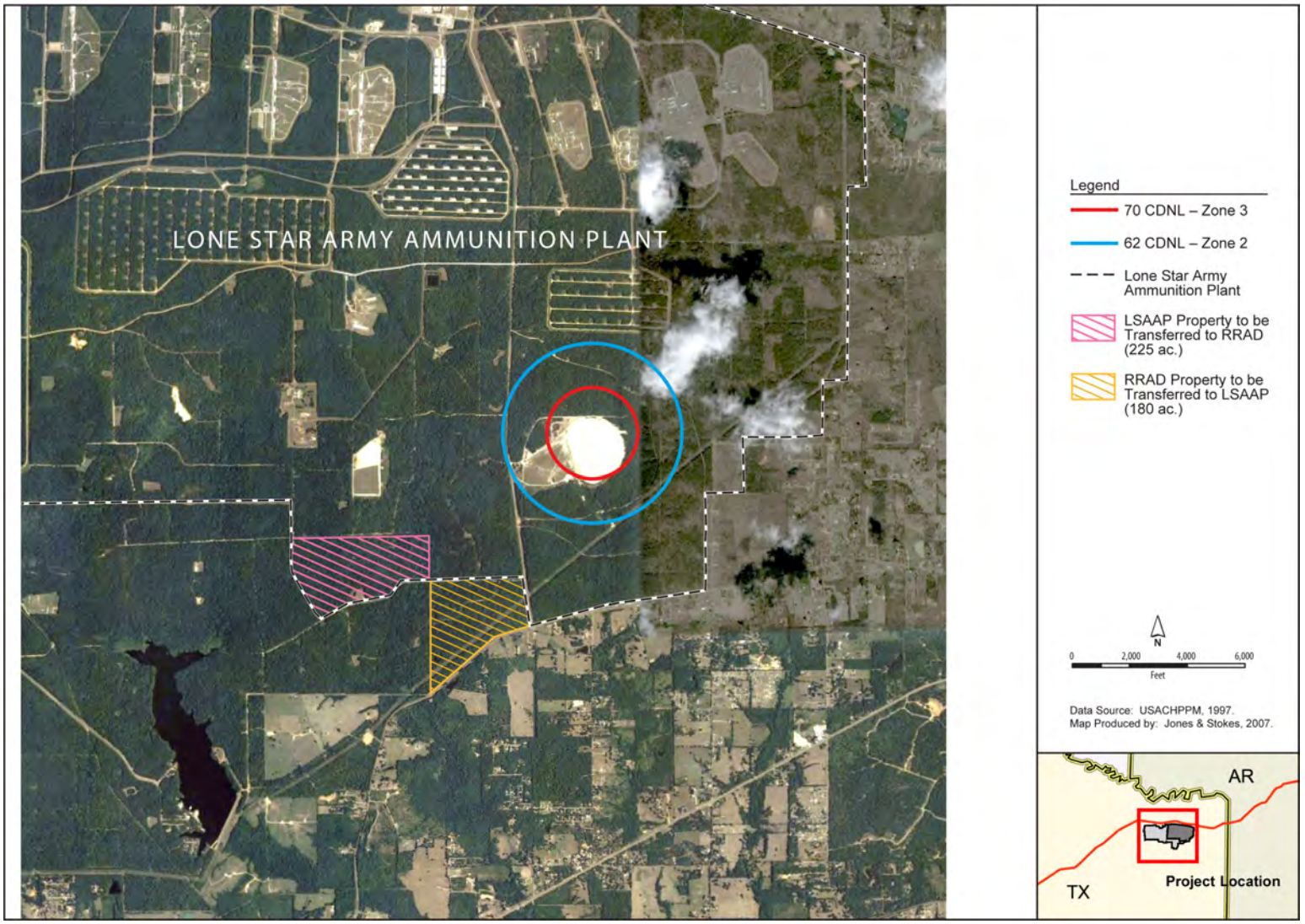

Figure 4.5-1 Long-Term CDNL Noise Contours at LSAAP

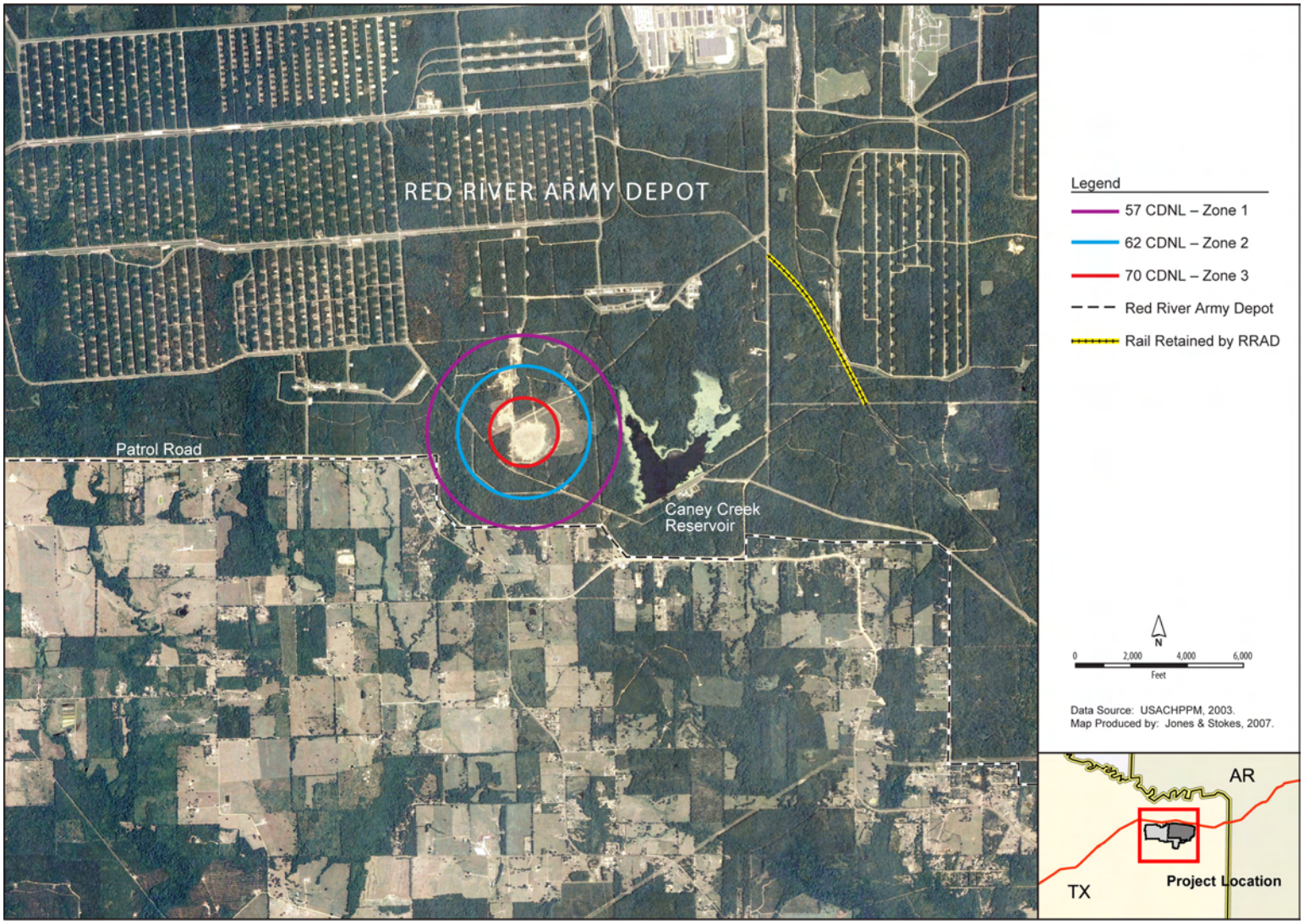

Figure 4.5-2 RRAD Peak Noise Contours with Optimal Weather Conditions

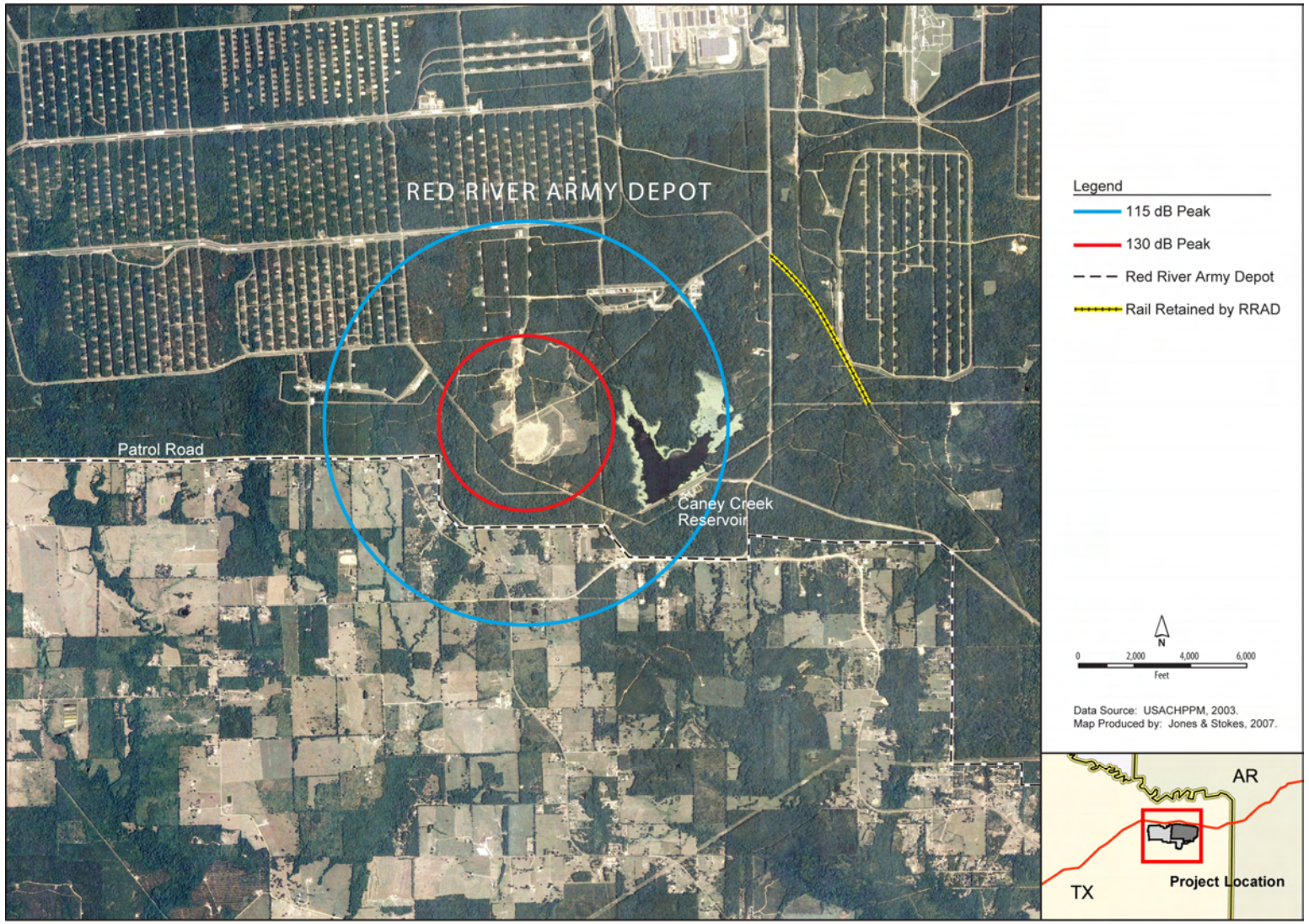

Figure 4.5-3 RRAD Current Operations Demolition Noise Contours

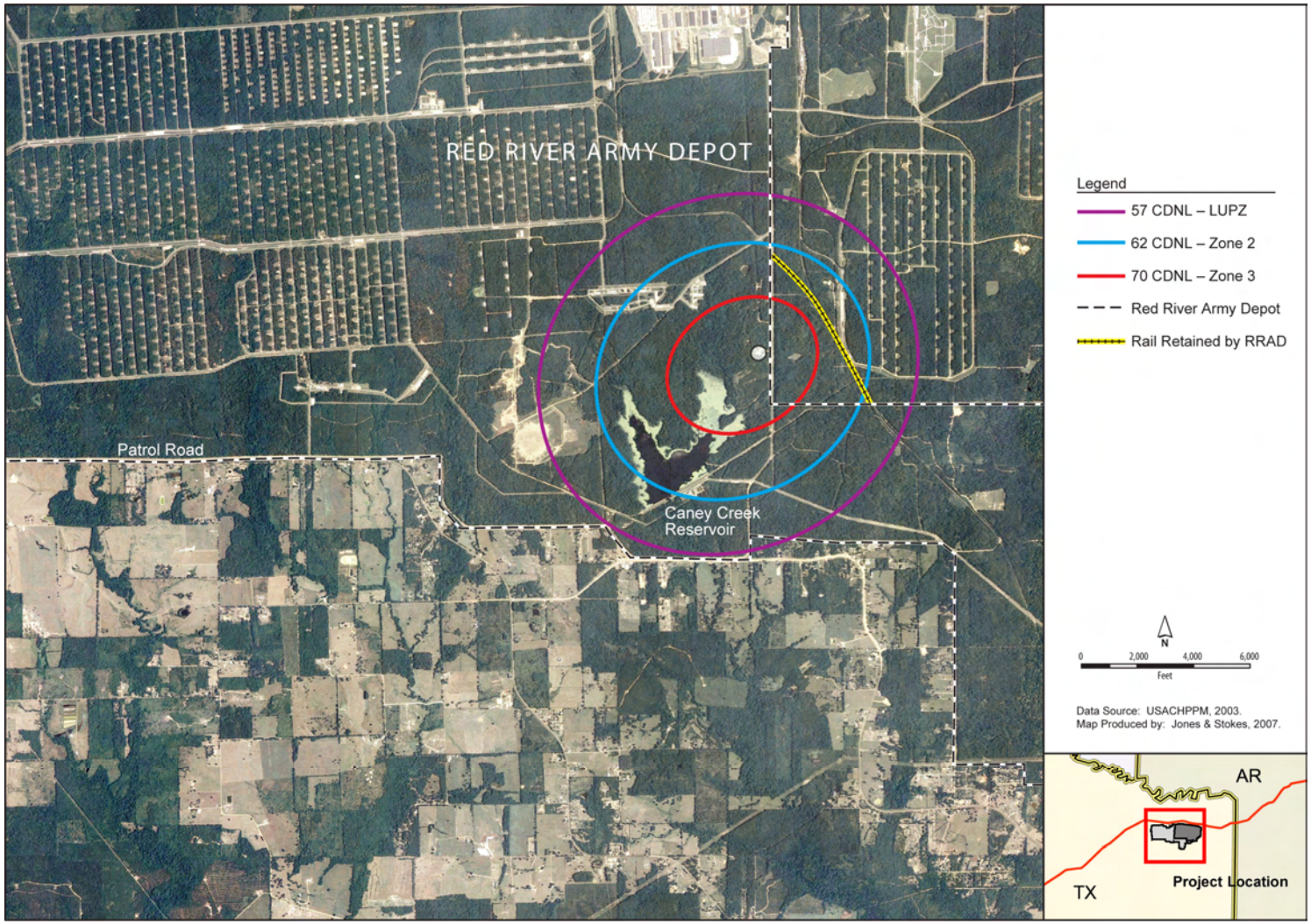

Figure 4.5-4 RRAD 25 mm Cannon Weapons Test Range Noise Contours

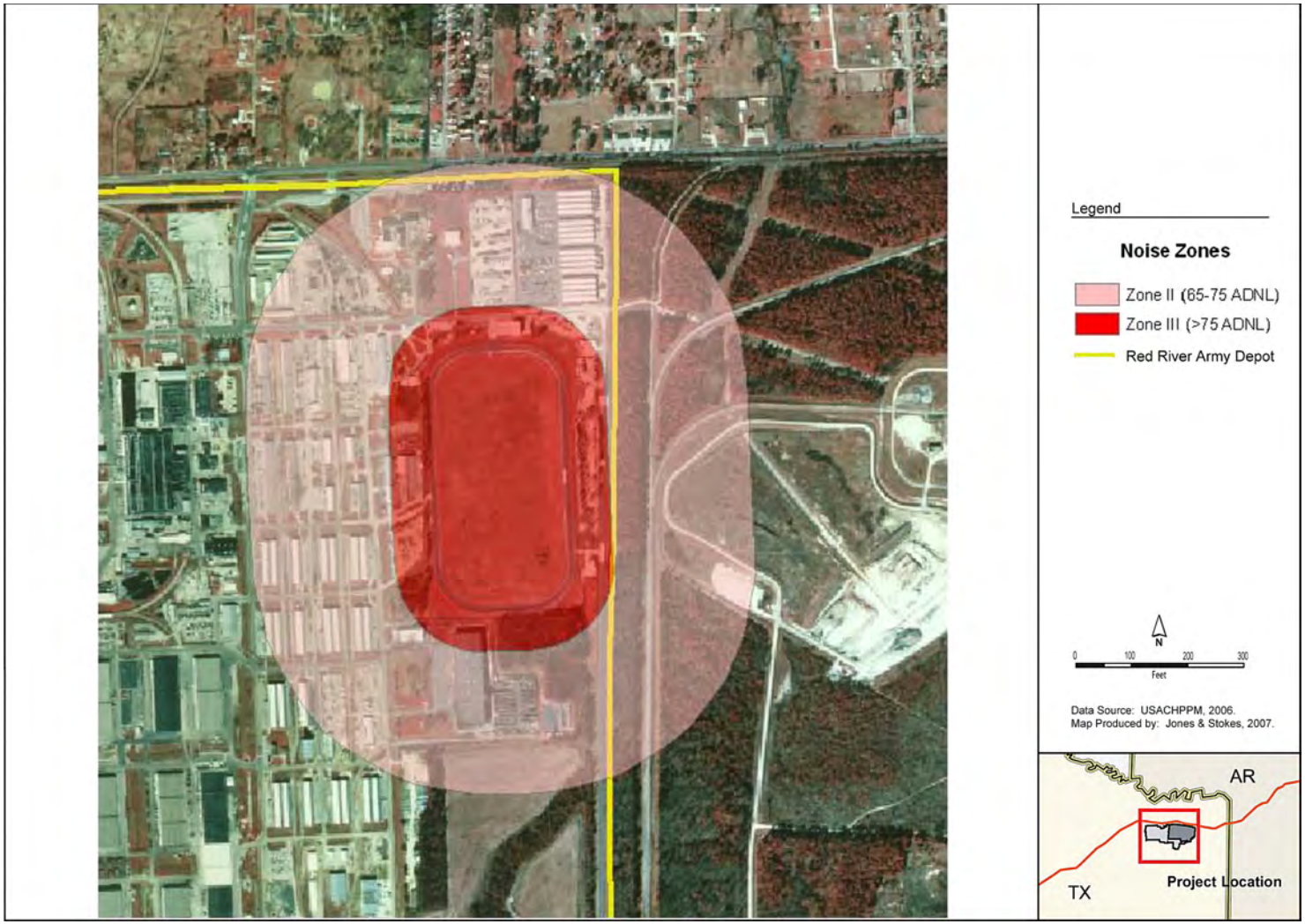

Figure 4.5-5 RRAD Noise Zones for Combat Vehicle Test Track Operations

Comparison of this estimated DNL with the range of DNL values found across the U.S. demonstrates that the areas around LSAAP and RRAD currently rank with the quietest residential areas in the country (comparison case studies provided by the USEPA are shown in Figure 4.5-6 (USEPA 1978)). The USEPA found that the prediction of community response to a newly-introduced intrusive noise (as quantified in terms of DNL) can be significantly improved by "normalizing" the intrusive noise on the basis of the pre-existing ambient background noise. The intent is to "normalize" to the acoustic environment of a typical suburb, which is represented by 55 dB on the USEPA's figure. A set of rules for "normalizing" sounds can be found in Appendix D of the USEPA's 1974 "Levels Document." These rules would come into play in any reuse scenario involving significant increases in truck traffic or certain industrial activities.

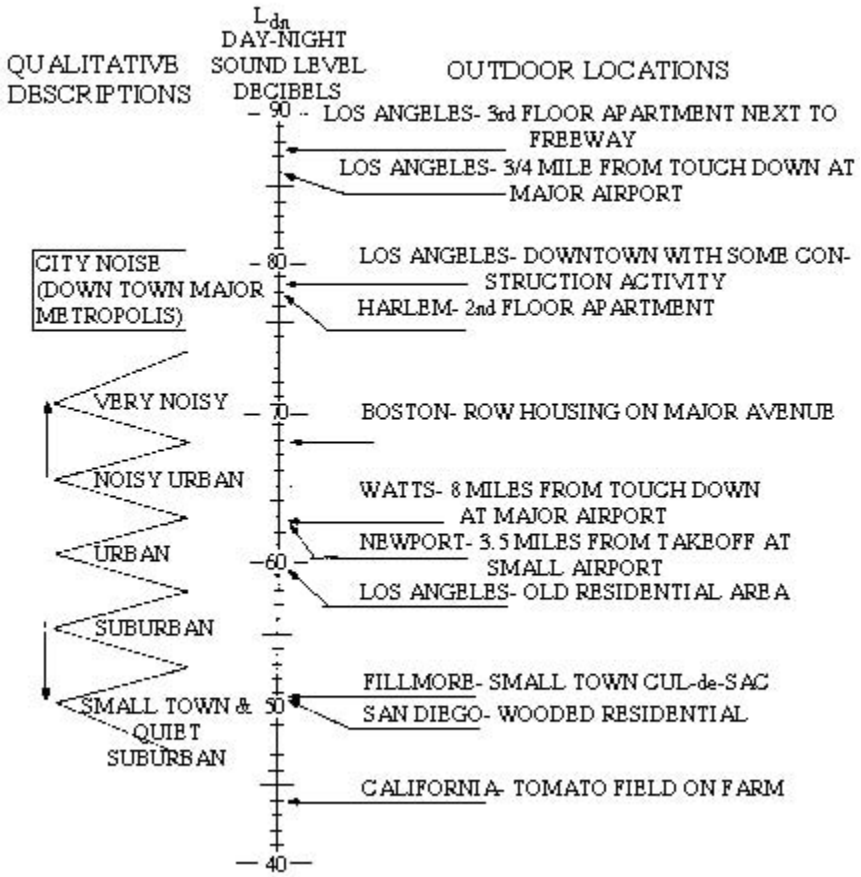

Figure 4.5-6 Outdoor Day-Night Sound Level in dB at Various Locations

Currently, the only noise source at either LSAAP or RRAD-WEP with a potential for community disturbance is demolition noise from LSAAP, and efforts have been taken to minimize the potential for complaints. Ordnance demolition at both facilities is restricted to favorable weather conditions when impulse noise from demolition is least likely to propagate away from the demolition site. LSAAP and RRAD have implemented standard operating procedures to inspect weather conditions before ordnance demolition, and to

prohibit demolition if the weather monitoring indicates unfavorable sound propagation conditions.

An average of 18 noise complaints per year have been received at the LSAAP and RRAD installations over the course of seven years that were analyzed for noise complaints. The majority of complaints were from residents south and east of the RRAD and LSAAP installations. These complaints were all associated with the demolition of munitions, resulting in the shaking of complainants' houses. Demolition at the installations was subject to weather restriction bans, resulting in demolitions being restricted to only 66 percent of the year. Noise levels caused by the demolitions were compatible with the ICUZ plan, and were below the levels predicted to cause damage to houses. However, numerous complainants living in homes near the installations cited damage to the walls, foundation, and doors of their houses. Complainant calls were logged and accompanied by a verification call to the demolition yard.

4.5.2 Consequences

4.5.2.1 Early Transfer Disposal Alternative

Direct. Minor short-term adverse effects, and minor long-term beneficial and adverse effects, would be expected. In the short term, noise levels associated with remediation (including sweeping for, excavation of, and possible onsite detonation of MEC as required at LSAAP), demolition, site clearing, timber harvesting and construction activities would increase; these impacts are expected to be short-term in duration and therefore minor. Detonation disposal of MEC at LSAAP would continue, but would ultimately be reduced, leading to fewer single-event noise incidents and resulting in a reduction in noise impacts to residential areas south and east of LSAAP. In the long term, disposal of LSAAP and RRAD-WEP would lead to new industrial and commercial tenants that may use noise-generating equipment (e.g., fans, conveyors, loading docks). Noise-generating activities on LSAAP and RRAD-WEP, however, would generally be sufficiently distant from adjacent residential areas and sensitive receptors, and it is unlikely that such activities would cause noise impacts to these areas. Noise-generating activities at RRAD, such as those at the combat vehicle test track, that could extend to LSAAP are not anticipated to create an impact, because the areas of LSAAP where these activities may take place are planned for industrial and forest uses, and are not anticipated to be noise-sensitive areas.

Indirect. Minor short-term and long-term adverse effects would be expected from noise impacts to residential areas located along public roads serving LSAAP and RRAD-WEP, due to increases in employment and corresponding commute traffic and delivery trucks associated with redevelopment. Furthermore, regional population growth could increase traffic noise along existing roadways. In addition, activities associated with the disposal of LSAAP and RRAD-WEP may lead to more intensive timbering practices that would reduce buffers along the perimeter of the installation, which may increase noise propagation to area residents. Maintenance of proper forest buffers (with proper widths established through noise modeling) along the installation boundary could reduce such effects.

4.5.2.2 Traditional Disposal Alternative

Direct. Minor short-term adverse effects, and long-term beneficial and adverse effects would occur, similar to those described for the early transfer disposal alternative. Beneficial effects from the reduced occurrence of detonation disposal at LSAAP would be the same as for the early transfer disposal alternative, but would occur further in the future.

Indirect. Minor adverse effects, similar to those under the early transfer disposal alternative, would be expected, but would occur further in the future.

4.5.2.3 Caretaker Status Alternative

Direct. Minor beneficial effects would be expected. Under this alternative, military missions would cease at LSAAP and RRAD-WEP, and new construction and forest management activities would be significantly reduced, thereby reducing noise-generation at LSAAP and RRAD-WEP. Accordingly, noise levels for this alternative would be lower than those for existing conditions or for other disposal alternatives.

Indirect. Minor beneficial effects would be expected. Employee levels at RRAD and at LSAAP would be reduced under the caretaker alternative, which would result in fewer commute vehicle trips than current operations. Accordingly, traffic noise levels on public roads serving LSAAP and RRAD would also be reduced.

4.5.2.4 No Action Alternative

No direct or indirect effects would be expected. Under the no action alternative, the Army would continue operations at LSAAP and RRAD-WEP at levels similar to those occurring prior to the BRAC 2005 Commission's recommendations for closure and realignment. Thus, no effects would occur relative to continuation of the Army's mission and conditions in November 2005.

4.5.2.5 Intensity-Based Probable Use Scenario

Medium-Low Intensity, Direct. Minor short-term adverse effects, and minor long-term beneficial and adverse effects, would be expected at LSAAP and RRAD-WEP. In the short and long term, construction of 5.5 million square feet of facilities on LSAAP and RRAD-WEP over the next decade or more would result in an increase in noise levels. However, the noise is expected to cause only a minor adverse effect on surrounding communities due to the distance between the source and nearby residents and the short-term duration of the noise generated from construction. Forest management and timbering operations in the short term and long term may also result in minor noise effects; however, establishment of buffer areas will reduce noise propagation. In the long term, new industrial and commercial tenants might use noise-generating equipment and noise-generating activities as part of facility operations. However, these activities would generally be located in areas on LSAAP and RRAD-WEP that are sufficiently distant from adjacent residential areas and sensitive receptors. It is unlikely that these activities would cause noise impacts to these areas. In the long term, detonation disposal of MEC at

LSAAP would be reduced, leading to fewer single-event noise incidents and resulting in a reduction in noise impacts to residential areas south and east of LSAAP. Detonation at RRAD would cease as a result of realignment. Other noise-generating activities at RRAD, such as those at the combat vehicle test track, that could extend to LSAAP are not anticipated to create an impact, because the areas of LSAAP where these activities may take place are planned for industrial and forest uses, and are not anticipated to be noise-sensitive areas.

The ethanol plant modules outlined in the reuse plan are expected to have a minor adverse effect on the noise environment. During construction, noise would be loud in the immediate vicinity. During operations, it would probably not be noticeable beyond the plant site boundary, assuming that a buffer area of 25 to 30 acres is created. Inside, milling room and boiler room noise would likely exceed Occupational Safety and Health Administration (OSHA) standards and require hearing protection for workers (IATP 1996) to minimize adverse effects to workers.

Medium-Low Intensity, Indirect. Minor long-term adverse effects would be expected from noise impacts to residential areas located along public roads serving LSAAP and RRAD, due to increases in employment and corresponding commute traffic and delivery trucks associated with redevelopment. Furthermore, regional population growth could increase traffic noise along existing roadways.

Low Intensity, Direct. Minor short-term adverse effects, and minor long-term beneficial and adverse effects would be expected, similar to those associated with the MLIR scenario; however, effects would be fewer and less intense.

Low Intensity, Indirect. Minor long-term adverse effects would be expected, similar to those associated with the MLIR scenario, although effects would be fewer and less intense.

4.6 GEOLOGY AND SOILS

This section describes the geologic setting and soils at LSAAP and RRAD-WEP. The ROI for soils and geology includes the installation properties, geologic formations underlying these areas, and adjacent land.

4.6.1 Affected Environment

4.6.1.1 Physiography and Topography

LSAAP and RRAD-WEP are located in the West Gulf Coastal Plain physiographic province (USDA 1980). Formations within the Gulf Coastal Plain thin landward and form belts parallel to the coast. Resistant formations leave ridges within the province and easily eroded formations leave valleys. Drainage systems within the region are generally well developed. Uplands associated with major streams tend to be low with relatively shallow stream valleys. Most higher order streams have low gradients and occupy broad alluvial and terraced valleys, while the lower order streams have developed narrow V-shaped valleys.

Bowie County topography is nearly level with elevations ranging from 200 feet amsl in the southeastern part of the county to 460 feet amsl in the west central part. Some secondary relief occurs in the form of low hills, and in some places steep slopes occur along drainage ways. Topography on LSAAP and RRAD-WEP is relatively flat: There are no slopes over 12 percent and more than 75 percent of the property has slopes between one to six percent. The remainder is less than one percent slope.

4.6.1.2 Structure and Subsurface Strata

The geologic strata of LSAAP and RRAD-WEP consist of clay, sandy clay, siltstone, and sand deposited during the Upper Cretaceous, Eocene, and Pleistocene periods. The Midway and Wilcox Groups dominate Bowie County, and occur beneath LSAAP and RRAD. Areas of alluvium of recent age and terrace deposits of Pleistocene age are found along the Red River and the Sulfur River and their tributaries (U.S. Army 2006d).

The Midway and Wilcox Groups formations outcrop in roughly east-west parallel bands beneath LSAAP and RRAD-WEP, with the Midway Group occurring in the central and northern sections of the installations and the Wilcox Group occurring in the southern sections of the installations.

The Midway Group consists of clay shale that is poorly bedded with thin discontinuous laminations of silt and fine silty sand. The group is weathered to a depth of about 42 feet. The formation is approximately 600 feet thick below LSAAP and RRAD-WEP, and is not considered to be an aquifer. The Wilcox Group consists of mostly sands, silts, and clays that occur under sloping topography. The maximum thickness of the Wilcox Group is probably not more than 100 feet. Gently rolling lowlands have developed on areas underlain by the Midway Group, and more hilly terrain has developed on areas underlain by the Wilcox Group on the installations.

4.6.1.3 Soils

The surface soils on LSAAP as identified by the U.S. Department of Agriculture (USDA) (USDA 1980) are as follows:

Susquehana-mound phase – a grey, very fine sandy loam, acidic with heavy plastic, blocky dry subsoil. The subsoil is mottled red, grey, and brownish yellow. This soil type covers approximately 30 percent of LSAAP.

Boswell – a brownish grey, fine sandy loam, acidic with a red plastic, heavy clay subsoil. This soil covers approximately 30 percent of LSAAP.

Crowley – a grey silt loam, slightly acidic with numerous yellowish brown fine mottles and a subsoil of tough, heavy blocky clay that is very slow draining. This soil covers approximately six percent of LSAAP.

The remaining 34 percent of LSAAP is occupied mainly by four types of soil: Ochlockonee, a fine sandy loam found in creek bottoms; Lakeland, a deep fine sandy loam that occurs in two or three areas; Sawyer, a fine sandy loam; and Lufkin, a very fine sandy loam found in small post-oak flats (USDoA 1978).

Soils of the Midway Group in the northern portion of LSAAP contain larger amounts of clay size particles than those found in the Wilcox Group in the southern part.

RRAD-WEP has three major soil associations within its boundaries:

Sawyer-Eylau-Woodtell Association – loamy, moderately well drained soils with low permeability on gently sloping uplands. These soils are found along the southern side of RRAD.

Annona-Alusa Association – loamy, poorly drained soils with very low permeability on nearly level uplands. These soils are the most extensive on RRAD-WEP and are found on level upland areas. The developed areas to the east of RRAD-WEP are underlain by this soil association.

Sardis-Thenas Association – deep, poorly to moderately well-drained loamy soils formed in alluvial sediments in floodplains. These soils are found along the principal stream bottoms on RRAD along Rock, Big, Caney and Panther Creeks.

Both LSAAP and RRAD-WEP are underlain almost entirely by soils with moderate to severe limitations for building development. Limitations in the form of wetness and shrink and swell characteristics occur as a result of the clay content in many of the soils. The soils that underlie the majority of developed areas have severe limitations for site development due to low permeability, corrosiveness, low strength, and high shrink and swell characteristics. These limitations could affect shallow excavations, building development, and other buildings and roads. Additional geotechnical studies are recommended prior to construction in areas underlain by soils with potential limitations.

4.6.1.4 Farmland Soil

Because of the various soils types that occur on LSAAP and RRAD-WEP, it is important to consider the potential impact of development on the ability of the soils to support continued agriculture and forestry uses. Prime farmland soils are protected under the Farmland Protection Policy Act (FPPA) of 1981.[6] The implementing procedures of the FPPA and NRCS require federal agencies to evaluate the adverse effect (direct and indirect) of their activities on prime or unique farmland (by preparing the Farmland Conversion Impact Rating Form AD 1006), as well as farmland of statewide and local importance, and to consider alternative actions that could avoid adverse effects. The Army is not required to evaluate the LSAAP and RRAD-WEP properties for Prime Farmland status because land withdrawn from farmland inventory for military or national defense purposes is not subject to considerations related to farmland conversion. The potential conversion of LSAAP and RRAD-WEP from agricultural uses, however, is considered in this EA and, as part of the disposal process, the Army and the NRCS have evaluated the potential for the presence of prime farmlands on LSAAP and RRAD-WEP by completing Form AD-1006.

The NRCS has adopted a farmland ranking system to assess the quality of farmlands, considering many other factors in addition to soil quality. The NRCS employs two kinds of criteria. The first is the "Land Evaluation Criteria – Relative Value" relating to the intrinsic value of the soil itself based on the soil's relative value for agricultural production. The second is the "Site Assessment Criteria" related to twelve factors not related to soil quality, such as the amount of urbanization within one mile and availability of farm services.

The site assessment and composite Farmland Conversion Impact Rating of the soils for LSAAP and RRAD-WEP indicated a total point score of 133. It is noted that this rating did not exceed the threshold of 160 points at which the FPPA would require consideration by a federal agency of reasonable measures to minimize the impact of farmland conversion resulting from federal or federally-assisted programs. Correspondence from this process is included in Appendix B, Agency Consultation Letters.

4.6.1.5 Seismic Activity

Texas does not have a history of frequent and destructive seismic activity, but has undergone some infrequent strong earthquakes. The strongest previous earthquakes have occurred in the western Texas panhandle. Little activity has been recorded on the eastern border, where LSAAP and RRAD-WEP are located.

No mineral resources have been found on either installation property.

[6] 7 CFR Part 658; The Natural Resource Conservation Service (NRCS) Final Rule, Farmland Policy, July 5, 1984; proposed revisions published on January 8, 1987.

4.6.2 Consequences

4.6.2.1 Early Transfer Disposal Alternative

Direct. Minor short- and long-term adverse effects would be expected. Associated with disposal of LSAAP and RRAD-WEP are several additional elements, including widespread timber harvesting activities, and would result in non-federal ownership and reduced regulatory controls for the protection of natural resources as required under the Sikes Act for federal property. Thus, geologic and soil resources would not benefit from the many programs and policies set forth to protect these resources, such as implementation of the INRMP. In addition, timber harvesting operations undertaken by the Army will result in increased soil erosion in both the short- and long-term. Adverse effects will be minimized through the use of sustainable timbering practices, described in Section 3.2.

Indirect. Minor short- and long-term adverse and beneficial effects would be expected. Although existing remedial programs will continue under either federal or non-federal ownership, under non-federal ownership additional resources may be available to renovate or remove facilities that are in disrepair and/or debris that may cause localized deterioration of soil resources as well as removal of subsurface cracked pipes. Furthermore, additional resources may be available to accelerate ongoing remediation efforts, which could result in accelerated cleanup of soils contaminated with hazardous materials consistent with federal and state standards.

A minor beneficial effect associated with non-federal control may result from increased renovation and upgrading of facilities to comply with current building codes and up-to-date designs that minimize stormwater runoff and other adverse effects to soils. On the other hand, long-term minor adverse effects would also be expected, as disposal will invariably lead to enhanced construction, demolition, future timber harvesting by other entities, and site clearing activities that result in increases in erosion potential. If adequate erosion and sediment control practices are employed during construction, demolition, timber harvesting and renovation activities, adverse effects could be minimized.

4.6.2.2 Traditional Disposal Alternative

Direct. Minor short- and long-term adverse effects would be expected, similar to the effects outlined for early transfer.

Indirect. Minor short- and long-term adverse and beneficial effects would be expected. As compared to early transfer disposal, remedial programs and redevelopment would occur over a long-term period, but the effects would similar. However, the change in effects would occur over a longer period as compared to the early transfer disposal alternative.

4.6.2.3 Caretaker Status Alternative

Direct. Minor adverse effects would be expected. Under the caretaker status, some natural resource management programs and objectives, outlined in the INRMP for LSAAP

and RRAD, will not be pursued. This will result in lower levels of erosion and vegetative controls that benefit geologic and soil resources.

Indirect. Long-term minor beneficial effects would be expected. Military missions will cease, and new construction, forest management and other ground disturbing activities will be significantly reduced. Thus, land use intensity will be below levels assumed under current conditions, thereby resulting in long-term minor benefits to geologic resources as compared to operational conditions in November 2005.

4.6.2.4 No Action Alternative

No direct or indirect effects would be expected. Under the no action alternative, the Army would continue operations at LSAAP and RRAD-WEP at levels similar to those occurring prior to the BRAC Commission's recommendations for closure and realignment, including implementation of INRMP measures and remedial programs required under CERCLA and RCRA. Thus, no effects would occur relative to continuation of the Army's mission and conditions in November 2005.

4.6.2.5 Intensity-Based Probable Use Scenario

Medium-Low Intensity Direct. Short- and long-term minor adverse effects would be expected. Building construction involving soil excavation, grading, removal, and vegetation clearing could result in short- and long-term minor adverse effects to soils, including increased erosion. The LSAAP and RRAD-WEP reuse plan envisions a mixed use of property, with reuse focusing primarily on industrial, business/commercial, and conservation uses that would include construction of new facilities. Structures that would be renovated to comply with current building codes would result in land disturbances associated with new buildings, parking lots, walkways, and related structures. Ultimately, 5.5 million square feet of building space is assumed to be constructed or renovated across LSAAP and RRAD-WEP, including demolition of portions of existing space. Furthermore, forest timbering practices, including removal of vegetation and road access construction, could result in adverse impacts to soils from erosion activities. Phasing of redevelopment over a 15- to 20-year period, as well as application of best management practices to reduce erosion during construction and timber harvesting, will reduce adverse effects to this resource.

Should they be constructed, the ethanol plant modules outlined in the reuse plan are expected to have a minor adverse effect on geology and soils. The two ethanol facilities are likely to be constructed in the northwestern section of the LSAAP installation where existing infrastructure is concentrated. Because the area is already partially developed, the additional ethanol facilities are unlikely to have an adverse impact. Such facilities generally have a footprint in the 15- to 20-acre range (IATP 1996). As noted elsewhere in this document, LSAAP is underlain almost entirely by soils with building development limitations in the form of low permeability, corrosiveness, low strength, and high shrink and swell characteristics. These limitations could affect plant construction. As with any major construction project, geotechnical studies will be required prior to construction in areas underlain by soils with potential limitations (U.S. Army 2006d).

Medium-Low Intensity Indirect. Long-term minor beneficial effects would be expected. In localized areas, enhanced renovation and debris disposal may prevent future degradation of soils from leaching heavy metals and other sources. Accelerated renovation and remediation of sources may improve soil conditions in local areas.

Low Intensity Direct. Short- and long-term minor adverse effects would be expected. Effects similar to those discussed under MLIR would be expected to occur, but to a lesser degree.

Low Intensity Indirect. Long-term minor beneficial effects would be expected. Effects similar to those discussed under MLIR would be expected to occur, but to a lesser degree.

4.7 WATER RESOURCES

4.7.1 Affected Environment

This section includes a discussion of surface water, watersheds and drainage, groundwater hydrology and quality, floodplains, and water usage on LSAAP and RRAD-WEP. The ROI for water resources comprises the area of the two installations and areas immediately adjacent, as shown in Figure 4.3. Point and non-point sources of pollution on the installations are also discussed in this section. Stormwater conveyance systems are addressed in Section 4.12, Utilities.

4.7.1.1 Surface Water and Drainage

LSAAP and RRAD-WEP are located in the far northeastern corner of Texas, in an area of hot and humid summers and mild winters. Rainfall is moderate, with annual precipitation averaging approximately 51 inches, and snowfall is rare, averaging one to two inches per year (U.S. Army 2006a). Severe local storms, including hail storms and tornadoes, bring heavy rainfall in the spring and late winter months (U.S. Army 2006a). Monthly precipitation data for Texarkana (which is located approximately 12 miles from the installations properties) are presented in Table 4.7.1.

Table 4.7-1 Average Precipitation for Texarkana, Texas (inches)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Average Rainfall Equivalent	3.54	4.14	5.33	4.08	4.65	5.11	3.25	3.34	3.03	5.29	5.43	5.04

Note: Precipitation data collected for New Boston, Bowie County, Texas from the National Weather Service in Shreveport, Louisiana. Average annual precipitation is based on years when data for all months was available. Data averaged over a 19-year period.
Source : INRMP, 2006

In a region of otherwise relatively flat or slightly rolling terrain, a topographic ridge runs east-west across the top of the two installations, dividing the northern third of installations from the southern two-thirds (see Figure 4.7-1, Water Resources Map) (U.S. Army 2006d). This ridge divides the Red River watershed to the north and the Sulphur River watershed to the south; RRAD and LSAAP are situated within the basins of these two drainage systems (U.S. Army 2006b). The RRAD excess property lies exclusively within the Sulphur River watershed.

Surface water drainage north of the divide flows into the 1,360 mile-long Red River, which lies approximately six miles north of the northern border of the RRAD excess property. The Red River drains 30,700 square miles of Texas, eventually draining into the Mississippi 340 miles north of the Gulf of Mexico (UTA 2006). Surface water drainage south of the topographical divide flows into the Sulphur River (about 17 miles south of RRAD-WEP) and into Wright Patman Lake (approximately nine miles south of RRAD-WEP). The Sulphur River, with a drainage area of approximately 3,558 square miles, itself drains to Wright Patman Lake, and eventually into the Red River (see Table 4.7-2) (U.S. Army 2006a).

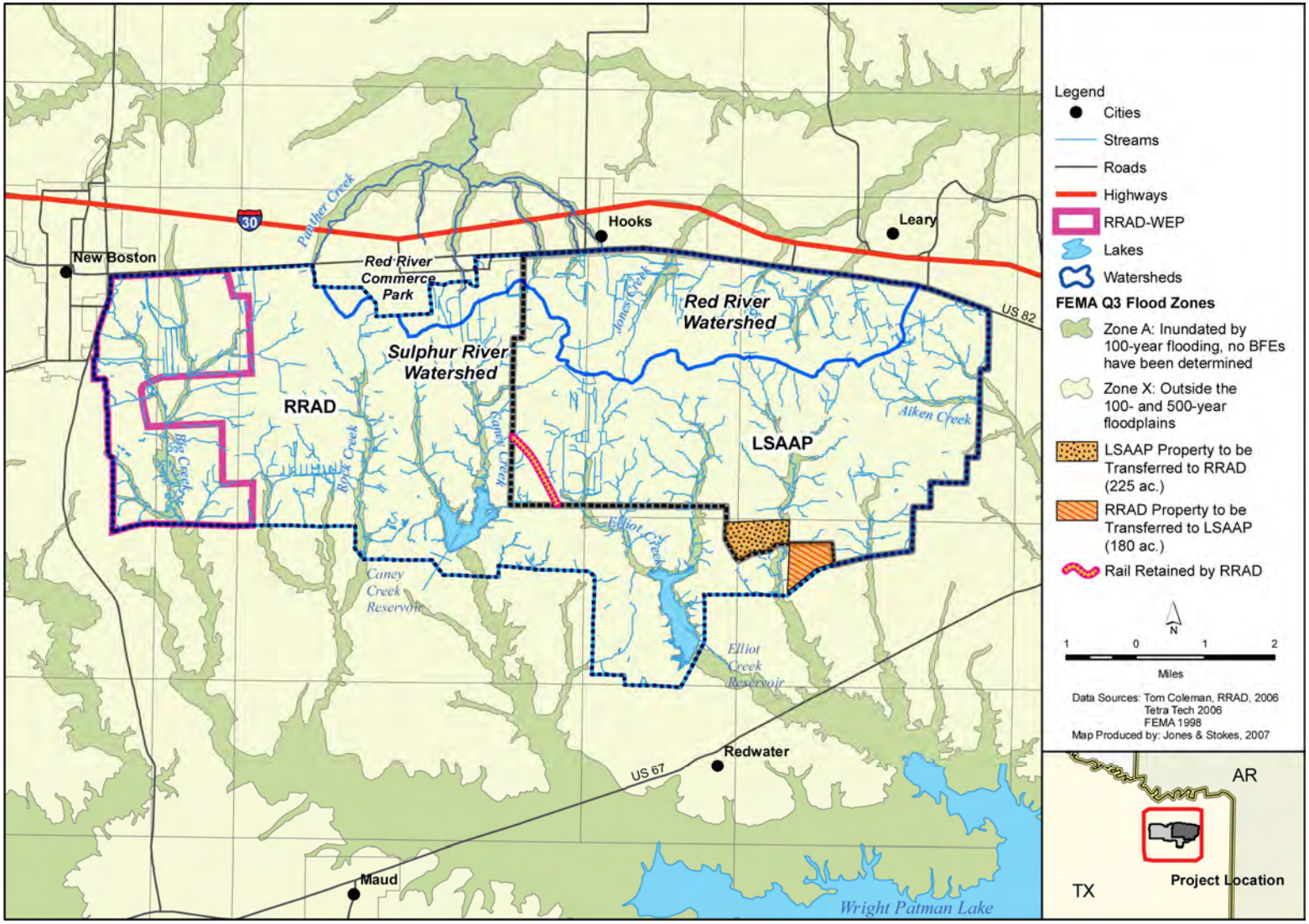

Figure 4.7-1 Water Resources Map

Table 4.7-2 Watershed Areas, LSAAP and RRAD

Lone Star Army Ammunition Plant		
Watershed Area	**Acres**	**Average Percent Slope**
Drainage area flowing north into the Red River watershed	4,754	1.9
Elliott Creek Drainage Area	8,551	2.7
Drainage area east of Elliott Creek	2,241	2.2
Total drainage from LSAAP	15,546	
Red River Ammunition Depot		
Watershed Area	**Acres**	**Average Percent Slope**
Drainage area flowing north into the Red River watershed	1,298	0.9
Big Creek	7,107	1.9
Rock Creek	2,501	2.3
Caney Creek	3,893	2.0
Total Drainage from RRAD	14,799	
Source: INRMP, 2006		

Approximately 500 acres of RRAD and LSAAP land is covered by water. Most of this is contained by two reservoirs – Caney Creek Reservoir and Elliott Creek Reservoir – both located on RRAD, east of RRAD-WEP. Both reservoirs are stocked with a variety of fish species (see Section 4.8, Biological Resources, for further information). Caney Creek Reservoir is a 202-acre impounded water body located near the southern boundary of RRAD-WEP, which receives surface runoff from approximately 10 square miles of RRAD. Built in 1941, the reservoir has a total capacity of approximately 1,340 acre-feet at spillway height, a maximum depth of 22 feet, and an average depth of 7.3 feet (U.S. Army 2006d). Elliot Creek Reservoir is a 183-acre dammed lake on RRAD, located in the southeastern corner of the installation. This reservoir was built in 1942 and has a capacity of approximately 1,930 acre-feet at spillway height, a maximum depth of 38 feet, and an average depth of 8.7 feet (U.S. Army 2006d). Elliott Creek Reservoir is located about 8,000 feet east of Caney Creek Reservoir, and the two are connected by an 18-inch-diameter concrete pipe with lift stations, though drainage from Elliot to Caney Creek Reservoir is minimal (Coleman 2006).

In addition to the two reservoirs, at least 11 ponds and seven perennial streams are located on RRAD and LSAAP; water bodies provide drainage for the surrounding watersheds (U.S. Army 2006d). Nine of these (unnamed) lakes and ponds are on RRAD-WEP, and are not considered to be significant surface water bodies, though ponds found in the northern part of RRAD-WEP may be associated with wetlands (U.S. Army 2006a). Existing conditions of wetlands on LSAAP and RRAD-WEP are discussed in Section 4.8, Biological Resources (see also Table 4.7-3, Surface Water Streams).

Stream and stormwater drainage on the installations to the north leaves the installations via Panther and Jones Creeks and by several small unnamed intermittent tributaries, all of which join perennial Barkman Creek before flowing into the Red River (U.S. Army 2006b). Aiken Creek provides drainage for the eastern boundary of LSAAP, emptying into Elliott

Creek. Drainage to the south, east, and west terminates in Wright Patman Lake or the Sulphur River (U.S. Army 2006b). Big Creek, Rock Creek, and Caney Creek (which run through the western and central area of RRAD) and Elliott Creek, the East Fork of Elliott Creek and Nettles Creek (which run through LSAAP and the southeastern arm of RRAD) all flow south into Elliott Creek Reservoir or Wright Patman Lake before draining into the Sulphur River (U.S. Army 2006b, Tetra Tech 2006).

On RRAD-WEP, several small intermittent streams flow into Big Creek, which becomes perennial less than one mile downstream from the northern border of RRAD-WEP. After leaving RRAD-WEP, Big Creek continues flowing south and then east for approximately nine miles before flowing into Wright Patman Lake (U.S. Army 2006a).

Except during high flows after heavy rainfall, all streams within the installations generally carry limited flow (U.S. Army 2006d). Flow in Panther Creek, north of RRAD, is year-round as a result of releases from the IWTP located in its headwaters (USACE 1998).

Table 4.7-3 Surface Water Streams, LSAAP and RRAD

Lone Star Army Ammunition Plant					
Water Body	**Length (miles)**	**Avg Width (feet)**	**Depth (feet)**	**Side Slope Ratio**	**Percent Fall**
Elliott Creek	**4.25**	**16**	**5**	**2:1**	**0.4**
East Fork Elliott Creek	6	14	6	1:1	1
Nettles Creek	5.25	21	6	2:1	0.6
Jones Creek	1.5	15	4	3:1	0.4
Unnamed Streams	8	12	5	3:1	0.8
Red River Army Depot					
Water Body	**Length (miles)**	**Avg Width (feet)**	**Depth (feet)**	**Side Slope Ratio**	**Percent Fall**
Panther Creek	0.75	16	5	1:1	1
Big Creek	10	30	9	2.25:1	0.4
Rock Creek	4.25	27	9	1.75:1	0.4
Caney Creek	5	17	6	1.25:1	0.5
Source: 2006 INRMP					

Because only limited data exist for the relatively small streams that occur on LSAAP and RRAD-WEP, U.S. Geological Survey streamflow information for these streams has not been included here.

There are no significant natural or man-made lakes or reservoirs located on LSAAP. A former emergency water supply pond occupies an area of approximately four acres in Area Z, and is the largest surface water body on the installation (U.S. Army 2006b).

4.7.1.2 Groundwater Resources and Quality

As described in Section 4.6, Geology and Soils, the geologic strata underlying RRAD-WEP and LSAAP consist of deposits including, most predominantly, the Midway and Wilcox Groups (U.S. Army 2006a,b). Groundwater resources in the immediate vicinity of RRAD-WEP and LSAAP are limited to variable yield water supply wells that extract water from the Wilcox formation (U.S. Army 2006d). Depth to groundwater is usually shallow and ranges from near the surface along creek bottoms to 30 to 40 feet below ground surface (bgs) along ridgelines, although depth to groundwater in some areas can be as deep as 455 feet bgs, as described below (U.S. Army 2006b, U.S. Army 2006d).

Groundwater beneath the surface of the installations is found in both overburden material and underlying weathered clay shale. This weathered shale is described as a reworked Wilcox material unit. The uppermost aquifer underlying RRAD-WEP and LSAAP consists of the overburden unit and the weathered clay shale unit, which together operate as a single aquifer. Groundwater that occurs at this interval is considered to be perched on the unweathered clay shale, which serves as an effective aquiclude (incapable of transmitting significant quantities of water under ordinary hydraulic gradients). Movement of water within the weathered portion of the shale (the reworked Wilcox formation material) is restricted to fractures and the interface along the Midway and Wilcox formations. The permeability of the Midway and Wilcox formations is generally low and varies with both location and depth (U.S. Army 2006d).

Groundwater flow is generally in the same direction as surface water flow at areas underlain by the Midway or Wilcox Groups. Vertical permeability of the soil is low and varies with location and depth. Groundwater flow within the Quaternary fluvial terrace deposits is toward areas of discharge, such as excavations or streams. Hydraulic conductivities within these coarse-grained terrace deposit soils are much higher than those found in the Midway Group, and slightly greater than those found in the Wilcox Group (U.S. Army 2006a).

The Texas Water Development Board has identified nine major and 20 minor aquifers in the state (U.S. Army 2006d). Aquifers in the vicinity of RRAD-WEP and LSAAP include the Carrizo-Wilcox Aquifer, a major aquifer within the Tertiary Wilcox Group, and the Nacatoch Aquifer, a minor aquifer within Cretaceous sands (U.S. Army 2006d). Water from the Carrizo-Wilcox Aquifer is fresh to slightly saline and hard. Water from the Nacatoch Aquifer is generally alkaline and soft. Water levels in the Carrizo-Wilcox aquifer in the area of RRAD-WEP and LSAAP have been declining (U.S. Army 2006a). Water levels in the Nacatoch Aquifer previously declined because of pumping, but have begun to stabilize as a result of increased use of surface water (U.S. Army 2006a).

On RRAD-WEP, depth to the Carrizo-Wilcox aquifer ranges from near surface to 25 feet bgs (U.S. Army 2006a). Groundwater at RRAD-WEP is categorized as Class III (generally not suitable for consumption by humans) (U.S. Army 2006a). On LSAAP, the Nacatoch aquifer sands, which underlie approximately 10 percent of the northern portion of LSAAP, lie below the Carrizo-Wilcox aquifer, at a depth of between 276 to 455 feet bgs (U.S. Army 2006b). Groundwater quality at LSAAP is impaired at many site-specific locations at

LSAAP (as described in Section 4.13, Hazardous and Toxic Substances), and is categorized as either Class II or Class III (U.S. Army 2006b).

4.7.1.3 Floodplains

In the realignment and disposal of DoD real property, the responsibility to protect sensitive resources is mandated by several statutes. EO 11988, Floodplain Management, was established in 1973 to avoid, to the extent possible, the adverse impacts associated with the occupancy and modification of floodplains. This EO includes a provision such that each federal agency that acquires, manages, or disposes of federal lands and facilities is required to "reduce the risk of flood loss," and to "minimize the impact of floods on human safety, health and welfare," among other responsibilities. Each agency has a responsibility to evaluate the potential effects such actions may have in a floodplain, according to this EO.

LSAAP and RRAD are located on a watershed divide (see Figure 4.7-1, Water Resources), and flooding tends not to be a significant concern for either installation. During extended periods of rain, standing water occurs on both installations in swales adjacent to roadways, parking lots, and warehouse areas due to increased runoff associated with paved surfaces (U.S. Army 2006d). Areas of LSAAP and RRAD-WEP are, however, within hundred-year floodplains mapped by the Federal Emergency Management Agency (FEMA). A hundred-year floodplain may be defined as lands that have a one percent chance of becoming inundated by peak flows during any given year.

Areas on LSAAP and RRAD-WEP that fall within hundred-year floodplains are found along the alluvial soils of Creek and Elliott Creek Reservoirs, Big Creek, and several other creeks that traverse the installation properties, as shown on Figure 4.3, Water Resources (U.S. Army 2006d). On LSAAP, areas in and near the Area A landfill and High Explosive Demolition Ground (HEDG) have been mapped as hundred-year floodplains. On RRAD-WEP, areas in and near ammunition storage areas, the OTC Landfill, the Northwest Surveillance Function Test Range, and the Southwest Surveillance Test Range have been mapped as hundred-year floodplains (U.S. Army 2006a). Minor flood damage has occurred in the past along Panther Creek and Big Creek, though no damage has been reported to any material or facilities at either installation (U.S. Army 2006a, 2006b).

4.7.1.4 Water Usage

Caney Creek Reservoir serves as the primary source of potable water for RRAD, supplying raw water to the wastewater treatment plant on the installation (see Section 4.12, Utilities, for more in-depth discussion of water usage, sources, and wastewater treatment plant operations) (U.S. Army 2006b)(USACE 1998). LSAAP purchases most of its water from Texarkana Water Utilities, and also relies on Caney Creek Reservoir as an alternate source of water. Elliot Creek Reservoir is used primarily for recreational purposes (e.g., camping and day activities), and also serves as a backup raw water supply for Caney Creek Reservoir (U.S. Army 2006b, U.S. Army 2006d). There is no direct use of groundwater underlying the installation properties by DZI or the Army. Several ponds and lakes on LSAAP and RRAD serve as important game watering holes, and provide some recreational fishing (U.S. Army 2006d).

4.7.1.5 Water Quality

RRAD owns both Caney Creek Reservoir and Elliott Creek Reservoir, but the RRRA owns the water treatment facilities at Caney Creek Reservoir and is ultimately responsible (along with URS Corporation, its operator) for maintaining water quality. Though turbidity is sometimes high in both lakes, the lakes have sufficient depth and dissolved oxygen to provide for a complex food web that supports primary, secondary, and tertiary levels of consumers (U.S. Army 2006d). The quality of raw water from Caney Creek Reservoir generally meets or exceeds drinking water standards.

4.7.1.5.1 Point Source Pollution

Part of the section of Big Creek that flows across RRAD-WEP has been degraded in the past by effluent from treatment of concentrated chromate and alkali sludges at the former OTC landfill (U.S. Army 2006a). High levels of acidity and high concentrations of phosphates, nitrate/nitrite, and sulfates have been reported for Big Creek, and high levels of iron, zinc, chromium, and lead may also be present in this area. Surface water sampling conducted in 2000 in Big Creek near the former OTC Landfill did not result in any detection of VOCs or RCRA metals in the six samples taken. Because Big Creek appears to be an influent channel feeding the water table, it is unlikely that contamination from the OTC Landfill has been able to enter Big Creek via groundwater transport (U.S. Army 2006a).

There are no permitted surface water discharge points on RRAD-WEP. Discharge from a municipal wastewater outfall for the City of New Boston passes across RRAD-WEP into Big Creek. Discharge from this outfall has not been proven to result in contamination of waters leaving RRAD.

Point-source discharges of treated sanitary and industrial wastewater are released into five primary outfalls at LSAAP, permitted through Texas Pollutant Discharge Elimination System (TPDES) permits (U.S. Army 2006a). See Section 4.12, Utilities, for more information on these outfalls.

4.7.1.5.2 Non-Point Source Pollution

RRAD has a Storm Water Multi-Sector General Permit that prohibits non-stormwater discharges. Surface water runoff at RRAD is collected through a combination of an underground storm sewer system and surface drainage over streets, impervious hardstands, parking lots, ditches, and drainage canals (U.S. Army 2006a).

LSAAP has a TPDES Multi-Sector General Permit that requires a Storm Water Pollution Prevention Plan (SWPPP). The plan identified 31 non-point source discharges requiring annual monitoring and quarterly inspections. Sampling drainage ditches, creeks, and streams that exit LSAAP at numerous locations has not recently indicated any contamination problems in any of the hydrologic units that comprise the installation (U.S. Army 2006b). Water in drainage ditches, creeks, and streams has not been sampled at or near areas of potential concern (i.e., load lines), but will be sampled and analyzed prior to installation closure.

See Section 4.12, Utilities, for more information on stormwater systems and pollution prevention plans at RRAD and LSAAP.

4.7.2 Consequences

4.7.2.1 Early Transfer Disposal Alternative

Direct. Minor short- and long-term adverse effects would be expected at LSAAP and RRAD-WEP. Disposal of LSAAP and RRAD-WEP would result in non-federal ownership and reduced regulatory controls for the protection of natural resources as required under the Sikes Act for federal property. Thus, water resources would not benefit from the many Army programs and policies set forth to protect these resources, such as implementation of the INRMP. Such adverse effects would be relatively minor, however, because remedial activities and water resource protection would continue per state and federal requirements. In the long term, further development, construction activities, and increases in impervious surface may adversely affect water quality.

Execution of the proposed timbering plan outlined in Section 3.2 could result in short- and long-term minor adverse effects to water resources, including potential impacts to surface drainage and water features such as streams and wetlands, and impacts related to increased erosion. As outlined in Section 3.2, timber harvesting activities would take place over five years in a sustainable manner, such that impacts to natural resources would be minimized. Measures to avoid impacts would follow standards such as those defined by the State of Texas (Texas Forest Service and Texas Forestry Association 2004), the U.S. Department of Agriculture's Natural Resources Conservation Service, and the Sustainable Forestry Initiative (SFI Sustainable Forestry Board and American Forest and Paper Association 2004) (see Section 3.2). Measures would include establishment of buffer zones for the protection of water resources and wetlands, and the implementation of sustainable timbering practices that would address potential effects to surface drainage and erosion/nonpoint source pollution. Encumbrances and mitigation measures to address protection of wetlands, including the maintenance of an undisturbed buffer zone next to streams and riparian wetlands and compliance with CWA requirements (as described in Section 3.2), should mitigate adverse impacts to wetland and riparian habitat. Such effects are further discussed in Section 4.8, Biological Resources.

Indirect. Minor short- and long-term adverse and beneficial effects may occur at LSAAP and RRAD-WEP. Under non-federal ownership, additional resources may be available to accelerate efforts to renovate and remove debris, buildings, and subsurface pipe networks, as well as upgrade wastewater treatment facilities (such as construction of a new wastewater treatment plant), which may provide an indirect long-term benefit to water quality. However, in the short and long term, minor adverse effects could occur from demolition, timber harvesting and site clearing activities which would result in increased erosion and non-point source loadings from runoff to surface water bodies. These impacts would be minor because erosion and sediment control and other best management practices would be employed during construction, demolition, timber harvesting and renovation activities

4.7.2.2 Traditional Disposal Alternative

Direct. Minor short- and long-term adverse effects would be expected at LSAAP and RRAD-WEP, similar to the effects outlined for early transfer.

Indirect. Minor short- and long-term adverse and beneficial effects would be expected at LSAAP and RRAD-WEP. As compared to early transfer disposal, remedial programs and redevelopment would occur over a longer period, but the effects would be similar.

4.7.2.3 Caretaker Status Alternative

Direct. Minor short- and long-term beneficial effects and minor short- and long-term adverse effects would be expected at both LSAAP and RRAD-WEP. Under caretaker status, activities such as natural resources management would be reduced greatly or would not take place on RRAD-WEP, and DZI operations are assumed to cease on LSAAP. Caretaker activities would involve fewer vehicles, which are potential sources of contaminants such as lubricants, coolants, and fuels that could be transported by stormwater runoff. Likewise, caretaker activities would involve less use of fertilizers, fuels, pesticides and herbicides, and reduced warehouse and shop activities, which would also contribute to a reduction in stormwater contaminant loads. In addition, under caretaker status, the proposed five-year timber harvest plan would not be implemented, and effects related to this plan would not occur.

Indirect. Long-term minor beneficial effects would be expected at LSAAP, while no effects would be expected at RRAD-WEP. Ammunition manufacture and associated activities will cease on LSAAP, and new construction and ground disturbing activities, including forest management, will be significantly reduced. Reduced intensity of land use would result in fewer inputs to surface water, as compared to operational conditions in November 2005. In addition, reduced withdrawals of freshwater from Caney and Elliott Creeks resulting from reduced operations, and reduced discharges of treated water, could also result in improved surface water quality.

4.7.2.4 No Action Alternative

No direct or indirect effects would be expected. Under the no action alternative, the Army would continue operations at LSAAP and RRAD-WEP at levels similar to those occurring prior to the BRAC Commission's recommendations for realignment and closure, including implementation of INRMP measures and remedial programs required under CERCLA and RCRA. Thus, no effects would occur relative to continuation of the Army's mission and conditions in November 2005.

4.7.2.5 Intensity-Based Probable Use Scenario

Medium-Low Intensity, Direct. Short- and long-term minor adverse effects are expected. Although the increase in impervious surface is anticipated to be small relative to the existing conditions (less than three percent of the land area), construction resulting from implementation of the MLIR scenario would increase the area of impervious surfaces such as those associated with new buildings, parking lots, loading docks, roads, and

walkways. Increased impervious surface area would result in increased stormwater runoff, and therefore greater inputs of potential contaminants and sediments into surface water and ultimately groundwater, thus potentially adversely affecting water quality to a minor extent. Construction of stormwater detention/retention systems would help reduce effects associated with stormwater runoff from impervious surfaces.

The MLIR scenario at full build-out would also result in an increase in both passenger vehicles and vehicles associated with trucking activities, which would increase the amount of contaminants such as lubricants, coolants, and fuels that may be transported to the waterways over the same roadways and parking areas that are constructed for their benefit. Best management practices employed during site construction and operation of new facilities at the LSAAP and RRAD-WEP properties, such as construction of suitable drainage and stormwater treatment structures, or business practices to prevent discharge of oil and other chemicals into storm drains, will be implemented for the MLIR scenario, and will reduce the potential level of effect overall to a minor one.

There would also be adverse impacts to surface waters during construction and timbering activities. However, surface waters would remain protected by federal and state laws, as well as local building ordinances that will ensure that surface water quality standards are not exceeded and that appropriate best management practices are applied.

Adverse effects related to flooding would not be expected; existing building and safety codes prohibit construction in areas that would expose people or structures to flood hazards.

The addition of 4.4 million square feet of facilities on LSAAP and 1.1 million square feet of facilities on RRAD-WEP will result in increased water withdrawals from area water bodies (e.g., Wright Patman Lake), as well as increased discharge of effluents from treatment plants in the Red River Basin. As discussed in Section 4.13, Hazardous and Toxic Substances, increased generation of wastewater from new industrial processes envisioned in the RRRA reuse plan will require the construction of a new wastewater treatment plant as the existing plant is at capacity, principally due to infiltration problems (RRRA 2007). Water consumption and wastewater infrastructure issues are further discussed in the Section 4.12, Utilities. Additional discharge of effluents in the Red River Basin will require National Pollutant Discharge Elimination System (NPDES) permitting and modeling to assess the impacts to water quality. Through the permitting process, treatment technology standards, discharge limits, and monitoring will be required to ensure compliance with the CWA and state regulations, as well as ensure that receiving streams continue to meet their designated use.

The ethanol plant modules outlined in the reuse plan are expected to have a minor adverse effect on water resources, should they or a similar industrial use be constructed at the site. As indicated elsewhere in this document, groundwater contamination has been found below some of the areas comprising LSAAP and RRAD. There is currently no on-base use of groundwater. Accordingly, surface water from Wright Patman Lake would probably be used to supply the facilities with fresh water. The use of this source could have minor adverse impacts on the Lake.

Corn- and cellulose-based ethanol plants that produce 50 million gallons of ethanol annually typically use about 500 gallons of water per minute, or 710,000 gallons per day, which is 810 acre-feet annually. Assuming the plants are constructed, the combined impact of two ethanol plants on water volume at the lake would be 1,420,000 gallons per day, or 1,620 acre-feet annually. If a smaller third cellulose facility is constructed, water use could increase to some degree, but less than 810 acre feet annually, for a total maximum water usage for all three plants of 2,430 acre feet annually, or 2,130,000 gallons per day. (IATP 1996).

Adequate water supply is a key resource needed for the successful operation of these plants. Water demand would be several times the current water use of LSAAP and RRAD, as the current daily potable water use at the installation ranges between 240,000 and 460,000 gallons per day. The installation purchases this water from the Texas Water Utility, which has the capacity to provide up to five Mgd. An additional 100 million gallons of raw water per day is available by permit from Lake Wright Patman (RRRA 2007). Thus, the proposed plants' water needs can be met from this existing permitting capacity. The installation has approximately 50 miles of existing water pipelines, but pipes serving the new facilities will need to be upgraded or replaced.

The operation of ethanol plants of this size typically results in the discharge of non-process wastewater and water treatment additives at a rate of 125 gallons per minute. Assuming the facility is constructed, it would result in the discharge of 250 gallons of wastewater per minute, which totals 360,000 gallons per day. If a third cellulose facility is constructed, water discharges would increase, but by less than 50 percent. Because these discharges typically contain regulated constituents such as sodium hypochlorite and sulfuric acid, state and federal operating and NPDES (TPDES) permits will be required.

Upgrades of the existing wastewater facility and construction of a new wastewater treatment facility are outlined as a requirement in the reuse plan. The existing plant is at its design capacity of 1.5 Mgd, but has experienced flows over 3 Mgd during storm events because of inflow and infiltration problems with the sewer system. The plant's upgrade will cost between an estimated $2.2 and $2.6 million, and the new facility is estimated to cost between $3.3 and $3.6 million. Presumably, the new facility will serve the ethanol plants (RRRA 2007).

Medium Low Intensity, Indirect. Minor adverse effects would be expected. Economic market forces generated by reuse would increase further infrastructure and development off the installation, thereby adding to the level of impervious surface within the watershed. Given the rural nature of the region and the low levels of development, only minor adverse effects to recharge and water quality would be expected.

Low Intensity, Direct. Short- and long-term minor adverse effects would be expected. Effects similar to those discussed under MLIR would be expected to occur, but to a lesser degree.

Low Intensity, Indirect. Long-term minor adverse effects would be expected. Effects similar to those described under MLIR would be expected to occur, but to a lesser degree.

4.8 BIOLOGICAL RESOURCES

4.8.1 Affected Environment

LSAAP and RRAD-WEP are located within the Pineywoods Ecological Region, which is defined as pine-hardwood forests and is well suited for fish and wildlife resources. This environment fosters numerous mammal species, over 400 species of birds, and over 20 species of fish (U.S. Army 2006d). A combined INRMP was prepared for LSAAP and RRAD in March 2006. Data from planning-level surveys of sensitive plant and wildlife species conducted in 2002 (Tetra Tech 2002) on the installations were used as the baseline data for this plan. An overview of the baseline conditions for flora, fauna, species with special status, forestry, and wetlands is provided in the sections below.

4.8.1.1 Flora

Vegetative Community

LSAAP and RRAD-WEP are located within an oak-pine, broadleaf, deciduous, and needle green-evergreen forest (USACE 1993). Three primary forest associations commonly occur in the wooded areas of the installations—loblolly-short-leafed pine, pine-hardwood, and mixed hardwood. The dominant climax species found in the overstory of the installations include red maple (*Acer rubrum*), black hickory (*Cayra texana*), southern hackberry (*Celtis* sp.), persimmon (*Diospyros virginiana*), sweetgum (*Liquidambar styraciflua*), short-leafed pine (*Pinus echinata*), loblolly pine (*Pinus taeda*), southern red oak (*Quercus falcata*), and post oak (*Quercus stellata*) (USACE 1993). The loblolly-short-leaved pine association occurs on gravel ridges, slopes, and areas that were previously cleared, cultivated, or machine-planted. The pine-hardwood association occurs on ridges, slopes, and bottomlands cultivated before acquisition by the installations. The mixed hardwood association occurs in undisturbed bottomlands of creeks and drains and in areas that are not well drained.

There is one unique tree specimen on the installations (USACE 1993). The Texas state champion Black Cherry (*Prunus serotina*) was measured in December 1995 at 78 feet tall, with a stem circumference of 118 inches.

Shrub species commonly found on LSAAP and RRAD-WEP include American beauty berry (*Callicarpa americana*), hawthorne (*Crataegus brainerdii*), sumac (*Rhus* sp.), blackberry (*Rubus* sp.), and tree huckleberry (*Gaylussacia* sp.) (USACE 1993).

Grass species common to LSAAP and RRAD-WEP include longleaf uniola (*Uniola* sp.), purple top (*Tridens flavus*), little bluestem (*Andropogon scoparius*), and broomsedge (*Andropogon virginicus*) (USACE 1993).

Grasses are typically located along roadsides, utility easements, demolition grounds, ammunition production facilities, training areas, and food plots (USACE 1994). Lawn areas are located in the developed portions of the installations and around office buildings located in outlying areas.

Other than wetlands, there are no critical habitats on LSAAP or RRAD-WEP. Ninety-five plant species have been observed in the wetlands at LSAAP and RRAD-WEP: 29 trees, 14 shrubs, 26 herbs, 14 graminoids (grass-like plants), 11 vines, and one moss (USFWS 1998a). Overall, 104 plant species have been identified on the installations. Of these, 38 are herbaceous plants, 34 are trees, 19 are shrubs, and 13 are vines (USFWS 1998a). A listing of plant species identified on LSAAP and RRAD is provided in Appendix F.

4.8.1.1.1 Special Status Flora

No federal- or state-listed plant species are known to occur on LSAAP or RRAD-WEP (see Appendix F) (USFWS 1998b and 1999; TPWD 2005a; TPWD 2005b). However, there is one unique vegetation species that has been observed in the past on RRAD and LSAAP: the Arkansas meadow rue (*Thalictrum arkansanum*) (USACE 1993). This plant is the only state rare plant identified by the Texas Parks and Wildlife Department (TPWD) for Bowie County (TPWD 2005a). However, no evidence of this species was observed at either installation during planning level surveys used for preparation of the INRMP (U.S. Army 2006d).

4.8.1.2 Forestry

LSAAP and RRAD-WEP are located in the West Gulf Coastal Plain within the Oak-Pine Forest Region (Society of American Foresters Type 80), an area regionally known as the "Piney Woods" (Braun 1967; Erye 1980). The natural (pre-settlement) distribution of forest community types of the region was determined by relationships between soil types (sand vs. clay), soil moisture (slope positions) and, most importantly, fire regimes (Conner and Dickson 1997). While pines were clearly dominant on fire-swept upland sites, deciduous hardwood species were confined primarily to wetter bottomland sites and inclusions of wetter soil types on upland areas (for example, wet flatwoods). Mixed communities of pines and hardwoods typically were found within the transitional zone between upland and bottomland sites, with the distribution of species dependent on the frequency and intensity of fires. Hence, natural disturbance patterns maintained a heterogeneous matrix of forest community types across the landscape that was dynamic in both spatial and temporal scales.

The direct and indirect effects of human settlement of the region greatly altered the composition and structure of forest community types through indirect effects such as alteration of natural disturbance regimes (for example, fire suppression) and direct impacts such as logging and grazing of woodlands. Over the past 50 years, significant areas of previously cutover lands have been reforested by both artificial and natural methods. Thus, almost all present-day forests are second growth, and have been impacted to a certain degree by human activities (USDA 1988).

Loblolly pines (*Pinus taeda*) and shortleaf pines (*Pinus echinata)* are the principal coniferous species currently found in Eastern Texas, and often comprise 20 percent or more of total stocking in stands with mixtures of upland hardwood species (U.S. Army 2006d). Relatively pure stands of pines can also be found in plantations and on sites where pines established naturally from local seed sources following major disturbances or after abandonment of agricultural lands. Associations of bottomland hardwoods are

dispersed throughout this region on floodplains of major rivers and tributaries, along minor alluvial bottoms, and on more poorly drained soils and depressions on upland sites.

RRAD manages its forest resources and provides management for all LSAAP forest resources under an intra-service support agreement (U.S. Army 2006d). To date, approximately 10,000 acres of LSAAP/RRAD have been reforested using loblolly, shortleaf, and slash pines since the installations were established in 1941. The slash pine plantations (approximately 1,500 acres) have exhibited inadequate growth rates and form as the stands have matured. These stands have been partially harvested, replanted with genetically superior growing stock, and subsequently managed by natural regeneration of the superior stock.

The forestry program has annually conducted prescribed burns to maintain healthy stands and reduce the risk of wildfires. Wildfires have claimed 432 acres of timber on LSAAP and RRAD since 1964 (U.S. Army 2006d). No records of wildfires are available prior to 1964. Quantities of wood and revenues derived from timber sales from 1953 through 2003 are shown in Appendix F.

Forest resources at the installations consist of three primary community types: pine plantations, mixed pine-hardwoods, and bottomland hardwoods. The forest area is divided into nine management compartments; more than one community type is typically present within each compartment. Hardwoods and softwoods sawtimber volumes from the latest (2001) forest inventory are presented in Table 4.8-1. Inventories are completed on a 10-year cycle unless special circumstances warrant additional surveys; the next forestwide inventory is scheduled for fiscal year (FY) 2010. More information about the LSAAP and RRAD forestry programs may be found in the INRMP (U.S. Army 2006d).

Table 4.8-1 Forest Inventory of LSAAP/RRAD, 2001

Compartment	Board Feet		Cords	
	Hardwood Sawtimber	Pine Sawtimber	Hardwood Pulpwood	Pine Pulpwood
I	1,237,000	13,900,000	2,153	2,655
II	5,703,000	37,620,000	18,543	11,314
III	2,988,000	17,240,000	10,291	4,326
IV	7,127,000	35,793,000	16,784	9,155
V	8,325,000	21,074,000	26,344	8,198
VI	3,423,000	8,846,000	11,419	2,490
VII	3,571,000	14,783,000	9,032	5,643
VII	3,744,000	13,446,000	11,125	3,588
IX	3,751,000	17,499,000	5,893	4,242
TOTALS	39,929,000	180,201,000	111,584	51,611

NOTE: Total timber volumes were established by field verified plots per timber stand type per compartment in April 2001. The inventory is based on a class 78 taper
Source: U.S. Army 2006d

4.8.1.3 Fauna

The forest habitats on LSAAP and RRAD-WEP provide forage and nesting sites for a variety of animals. Appendix F includes a list of the animals that have been observed on the installations.

4.8.1.4 Wildlife

Mammals

During the planning level surveys used in preparation of the INRMP, 24 species of mammals were observed (Tetra Tech 2002). Mammals found to be common to abundant on LSAAP and RRAD-WEP include white-tailed deer (*Odicoileus virginianus*), gray squirrel (*Sciurus carolinensis*), fox squirrel (*Sciurus niger*), raccoon (*Procyon lotor*), bobcat (*Lynx rufus*), skunk (*Spilogale* sp. or *Mephitis* sp.), and armadillo (*Dasypus novemcinctus*) (USACE 1993). Land management practices of large stand timber cutting and prescribed burning programs have encouraged successional vegetation, which provides for good habitat for many of these animals (USACE 1990).

Birds

More than 400 species of birds potentially use natural habitat located on LSAAP and RRAD-WEP (USACE 1990). During the bird survey of the planning level surveys, 72 different species of birds were observed at the installations (Tetra Tech 2002). Many species of migratory waterfowl passing over the Mississippi Valley migration route use LSAAP and RRAD as a temporary residence. Game birds found on the site include mourning dove (*Zenaida macroura*), wild turkey (*Meleagris gallopavo*), and bobwhite quail (*Colinus virginianus*). Other birds that have been recorded on LSAAP and RRAD include American kestrel (*Falco sparverius*), red-tailed hawk (*Buteo jamaicensis*), red-shouldered hawk (*Buteo lineatus*), eastern bluebird (*Sialia sialis*), and green heron (*Butorides virescens)* (U.S. Army 2006d).

Fish

Elliott Creek and Caney Creek Reservoirs are located near RRAD-WEP, within the RRAD installation, and provide habitat for a variety of fish species. During the planning level surveys used for the INRMP, 25 species of fish were captured, including a 50-inch spotted gar (*Lepisosteus oculatus*). The gar was six inches longer than the upper bound of length published by Page and Burr (1991) for this species (Tetra Tech 2002). Additional fish species that have been identified in both reservoirs include largemouth bass (*Micropterus salmoides*), black crappie (*Pomoxis nigromaculatus*), red-eared sunfish (*Lepomis microlophus*), blue gill (*Lepomis macrochirus*), and spotted sucker (*Minytrema melanops*) (USACE 1994).

Amphibians and Reptiles

Thirty-three herpetofauna species have been observed on LSAAP and RRAD (Tetra Tech 2002). Common reptiles found include cottonmouth (*Agkistrodon piscivorus*), copperhead

(*Agkistrodon contortrix*), timber or canebrake rattlesnake (*Crotalus horridus*), kingsnake (*Lampropeltis getula*), northern fence lizard (*Sceloporus undulates*), green anole (*Anolis carolinensis*), box turtles (*Terrapene carolina and T. ornata*), common snapping turtle (*Chelydra* serpentina), and red-eared slider (Trachemys scripta) (USACE 1993, UTA 2007). Common amphibians found on LSAAP and RRAD-WEP include lesser siren (*Siren intermedia*), central newt (*Notophthalmus viridescens*), smallmouth salamander (*Ambystoma texanum*), marbled salamander (*Ambystoma opacum*), spadefoot (*Scaphiopus holbrookii*), narrowmouth toad (*Gastrophryne carolinensis*), green treefrog (*Hyla cinerea*), southern leopard frog (*Rana utricularia*), and bullfrog (*Rana catesbeiana*). Texas salamander (*Eurycea neotenes*) was reported at LSAAP/RRAD during an earlier survey (Tetra Tech 2006), as was diamondback rattlesnake (*Crotalus* sp.) and (dwarf) siren (*Pseudobranchus* sp.) (USACE 1993), but these reports were in error.

4.8.1.4.1 Special Status Fauna

Army regulations require consideration of state-listed species in all Army actions. The alligator snapping turtle (*Macroclemys temminckii*), a state-listed threatened species, has been observed at LSAAP and RRAD (U.S. Army 2006d). The alligator snapping turtle occupies perennial water bodies; deep water of rivers, canals, lakes, and oxbows; and swamps, bayous, and ponds near deep running water. This species occurs usually in water with mud bottom and abundant aquatic vegetation, and may migrate several miles along rivers. On RRAD it is known to occur at Elliot Creek Reservoir, and probably also occurs in the deeper creeks feeding the reservoir that originate on LSAAP.

In addition, the American alligator (*Alligator mississippiensis*) has also been observed on RRAD in the past (U.S. Army 2006d). The American alligator is listed as threatened by similarity of appearance with the endangered American crocodile (*Crocodylus acutus*). Thus, the alligator snapping turtle is the only special status species (only state listed species) observed on LSAAP and RRAD.

There are no other state- or federally listed threatened and endangered species (TES) known to be present on LSAAP and RRAD-WEP, though several bird species may occur as migrant or transient visitors (*Note: Correspondence received from the U.S. Fish and Wildlife Service (USFWS) and included in Appendix B has not identified any other TES species that may be present on LSAAP or RRAD-WEP. Correspondence from TPWD, also included in Appendix B, has been received and confirms these results*). These transient species may include the threatened bald eagle (*Haliaeetus leucocephalus*), endangered interior least tern (*Sterna antillarum*), endangered red-cockaded woodpecker (*Picoides borealis*), and black bear (*Ursus americanus*); the latter is listed as threatened because its appearance is similar to the threatened Louisiana black bear (USFWS 1998b and 1999; TPWD 2005a).

The bald eagle has been observed occasionally at Elliott Creek Reservoir during the winter (U.S. Army 2006d). The bald eagle is known to winter at Wright Patman Lake, located about two miles south of LSAAP and RRAD, and along the Red River, about seven miles north of the installations.

The interior least tern has also been identified at Wright Patman Lake (U.S. Army 2006d). Bowie County is also included in the historic range of the red-cockaded woodpecker (TPWD 2005a; TPWD 2005b), although there are no records of this species in the county. Each of these species is unlikely to inhabit either installation because of the lack of quality habitat.

Other state-listed bird species that may migrate through the area include the endangered American peregrine falcon (*Falco peregrinus anatum*) and the threatened arctic peregrine falcon (*Falco peregrinus tundruis*) (TPWD 2005a; TPWD 2005b).

Although no survey for bats has been conducted on either LSAAP or RRAD, potential bat habitat does occur in the area (Tetra Tech 2002). Rafinesque's big-eared bat, a state-listed threatened species, and the southeastern myotis bat, a rare state species, have been documented in Bowie County, and these species may be present at the installations (TPWD 2005a).

Table 4.8-2 notes federal- and state-listed species that have been observed or could occur in Bowie County (TPWD 2005a; TPWD 2005b).

Table 4.8-2 Threatened and Endangered Species Observed or Potentially Occurring in Bowie County (species observed on LSAAP highlighted in yellow)

Common Name and Scientific Name	Federal Status	State Status
Flora		
Arkansas meadow-rue (*Thalictrum arkansanum*)	-	R
Birds		
American peregrine falcon (*Falco peregrinus anatum*)	-	E
Artic peregrine falcon (*Falco peregrinus tundrius*)		T
Bachman's sparrow (*Aimophila aestivalis*)	-	T
Bald eagle (*Haliaeetus leucocephalus*)	T/PDL	T
Cerulean warbler (*Dendroica cerulea*)	SOC	-
Henslow's sparrow (*Ammodramus henslowii*)	-	R
Interior least tern (*Sterna antillarum athalassos*)	E	E
Peregrine falcon (*Falco peregrinus*)		E T
Wood stork (*Mycteria americana*)	-	T
Mammals		
Black bear (*Ursus americanus*)	T/SA; NL	T
Plains spotted skunk (*Spilagale putorius interrupta*)	-	R
Rafinesque's big-eared bat (*Corynorhinus rafinesquii*)	-	T
Red wolf (*Canis Rufus*) (extirpated)	E	E
Southeastern myotis (*Myotis austroriparius*)	SOC	-
Reptiles		
Alligator snapping turtle (*Macroclemys temminckii*)	-	T
American alligator (*Alligator mississippiensis*)	T/SA	-

Common Name and Scientific Name	Federal Status	State Status
Northern scarlet snake (*Cemophora coccinea copei*)	-	T
Timber rattlesnake (*Crotalus horridus*)	-	T
Fish		
Blackside darter (*Percina maculata*)		T
Creek chubsucker (*Erimyzon oblongus*)	-	T
Goldeneye (*Hiodon alosoides*)	-	R
Paddlefish (*Polyodon spathula*)	SOC	T
Shovelnose sturgeon (*Scaphirhynchus platorynchus*)	-	T
Taillight shiner (*Notropis maculatus*)		R
Western sand darter (*Ammocrypta clara*)	-	R
Mussels		
Common pimpleback (*Quadrula pustulosa*)	-	R
Fawnsfoot (*Truncilla donaciformis*)	-	R
Pistolgrip (*Tritogonia verrucosa*)	-	R
Plain pocketbook (*Lampsilis cardium*)	-	R
Rock-pocketbook (*Arcidens confragosus*)	-	R
Wabash Pigtoe (*Fusconaia flava*)	-	R
White heelsplitter (*Lasmigona complanata*)	-	R
Insects		
American burying beetle (*Nicrophorus americanus*)	E	R

Notes: Species observed on LSAAP are highlighted in yellow. Alligator snapping turtle is the only species, and it was seen only on LSAAP.
[a] Although Bowie County is part of the historic range of the red-cockaded woodpecker, the species is not considered to occur in the county (USFWS 2000).
E Endangered
PDL Proposed for delisting
R Rare. No regulatory listing status is associated with this classification
SA Similarity of appearance
SOC Species of concern. This federal classification no longer exists. No other federal classification exists for these species.
T Threatened
Source: TPWD 2005a; TPWD 2005b

4.8.1.5 Wetlands

The USFWS conducted a wetland inventory on RRAD and LSAAP during 1997 to 1998 (USFWS 1998a). Wetlands on the installations were mapped based on conventional photo interpretation techniques using mid-altitude aerial photography followed by field inspections to verify and correlate photo signatures, and collect data on soils and vegetation. Wetlands mapped as part of preparation of the INRMP are shown on Figure 4.8-1.

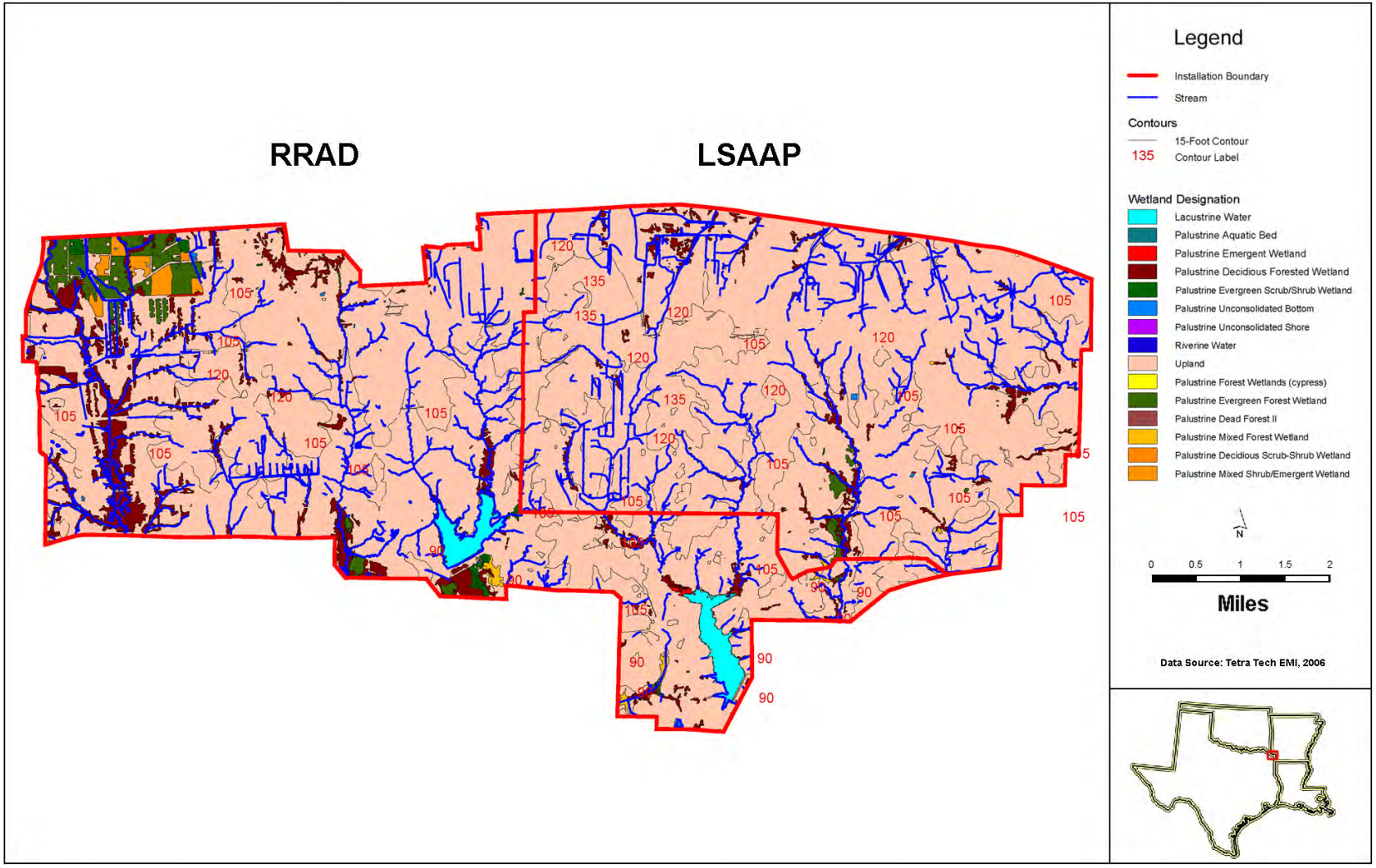

Figure 4.8-1 Wetlands on LSAAP and RRAD

Wetlands of one acre and larger, as well as smaller, conspicuous wetlands were consistently mapped on the installations. Wetland and deepwater habitats were classified according to the Cowardin Classification System (Cowardin et al. 1979). Detailed maps, digital data, acreage summaries, and example wetland plant community characterizations were prepared for the installations and are included in a wetland inventory report prepared by the USFWS (USFWS 1998a, U.S. Army 2006d). Appendix F, which includes a table of major wetland types on LSAAP/RRAD, shows the plant species observed in wetlands. This appendix provides a list of wetland types (based on the Cowardin Classification System) occurring on RRAD and LSAAP along with general plant community characterizations.

Based on results of the inventory, there are approximately 570 acres of wetlands on LSAAP, representing approximately four percent of the land area. It is estimated that there are 2,550 acres of wetlands on RRAD, with the majority of these wetlands occurring on RRAD-WEP parcel. However, no formal jurisdictional wetlands delineation has been performed to date. Forested wetlands represent 88 percent of the wetlands occurring on RRAD and 97 percent of the wetlands occurring on LSAAP. Deciduous forested wetlands are the most common type at both installations. At RRAD, about six percent of the wetlands are shrub/emergent wetlands and four percent are scrub-shrub habitats. Approximately one percent of the wetlands are emergent and less than one percent are ponds. At LSAAP, about one percent of the wetlands are emergent and about one percent are scrub-shrub habitats. There are no mixed shrub/emergent wetlands or ponds at LSAAP.

4.8.2 Consequences

4.8.2.1 Early Transfer Disposal Alternative

Direct. Minor to moderate adverse effects would be expected. LSAAP and RRAD conduct natural resource management for the installations through programs such as the INRMP, and it cannot be assumed that the new owners would continue these programs at the current level. Although the Army would notify new owners of their regulatory responsibilities under the CWA, ESA, and other federal regulations, future protection of sensitive habitats and species and continuation of these natural resource management programs would not be guaranteed following conveyance of the property to non-federal owners. Encumbrances related to protection of wetlands, including the maintenance of an undisturbed buffer zone next to streams and riparian wetlands and compliance with CWA requirements (as described in Section 3.2), would address significant adverse impacts to wetland and riparian habitat. Such effects are further discussed in Section 4.8.2.5, Intensity-based Probable Use Scenario.

It is also important to note that disposal would change the paradigm currently in effect for the management of natural resources, particularly forestry programs. As such, disposal could result in short- and long-term moderate adverse effects to forest resources, including loss of large quantities of high-quality, historically important communities that once were widespread across the region. Implementation of state recommended forest management practices, industry standards, and conservation of high-quality habitat and riparian buffer zones should be implemented to reduce these effects. Avoidance and

conservation of riparian buffer zones for the conservation and protection of wetlands and stream habitats will be required, along with wetlands delineation in consultation with the USACE, Fort Worth District.

Execution of the proposed timbering plan outlined in Section 3.2 could result in short- and long-term moderate adverse effects to forest resources and associated ecological communities, including loss of large quantities of high-quality, historically important communities that once were widespread across the region. Implementation of state recommended forest management practices, industry standards, and conservation of high-quality habitat and riparian buffer zones would serve to reduce these effects. Timbering would occur within compartments totaling 9,148 acres on LSAAP and 1,823 acres on RRAD-WEP, or 10,971 acres altogether (see Figure 3.2.-1). Overall, approximately 50 to 60 percent of the forest trees will be removed within the timbering compartments identified in Section 3.2, generating over 80 million board feet of timber. The majority of the stands to be harvested include pine plantations, pine forests, and mixed pine-hardwoods in transitional areas between upland and riparian habitat. Across the parcels being disposed, approximately one-third of the pine and hardwood trees on LSAAP and RRAD-WEP would be removed by this program over a five-year period, and 60 percent of the available timber resources. Approximately 80 percent of the trees to be removed will consist of pine, while the remainder will be hardwoods.

Loss of these trees will ultimately result in short- and long-term moderate adverse impacts to important ecological communities and connectivity between remaining communities. To reduce adverse effects, the timber plan would ensure that the timber would be harvested in patches across the installation each year (as opposed to harvesting a uniform area) providing for increased edge effect for wildlife purposes and creating uneven-aged growth across the installation for a diversity of age classes, stand heights, and habitat types. Within each unit, nearly half of the forest resources would also be conserved in order to ensure natural reforestation and natural resource conservation (e.g., wetlands and water resource conservation, wildlife corridors). The vast majority of the bottomland hardwoods habitat will be protected because it principally exists within riparian areas that would be protected by buffer zones that will be established.

As outlined in Section 3.2, timber harvesting activities would take place over five years in a sustainable manner, such that impacts to natural resources would be minimized. Measures to avoid impacts would follow standards such as those defined by the State of Texas (Texas Forest Service and Texas Forestry Association 2004), the U.S. Department of Agriculture's Natural Resources Conservation Service, and the Sustainable Forestry Initiative (SFI Sustainable Forestry Board and American Forest and Paper Association 2004) (see Section 3.2). Measures would include establishment of buffer zones for the protection of water resources and wetlands; utilization of existing road networks to the extent possible; and sustainable timbering practices that would leave sufficient density of high quality, mature seed trees to allow for natural regeneration of forests for future generations (i.e., timber would be harvested such that at least 10 seed trees, at 16 inches diameter at breast height (DBH), would be left per acre harvested). As a result of these sustainable timbering methods, approximately 40 to 50 percent of the forest resources within the areas being timbered would be conserved to ensure protection of natural resources and regeneration of forests for future generations. It should also be noted that

these are conservative estimates, as the actual total volume of timber to be harvested may be much lower as a result of stand conditions encountered, the establishment of aesthetic and visual buffers, protection of cultural resources, and wetlands conservation (e.g., timbering could be reduced by as much as 25 percent below the estimates shown in Table 3.2-1 for RRAD-WEP and slightly below the estimates for LSAAP).

Across LSAAP and RRAD-WEP there are likely to be over 2,000 acres of wetlands, principally in lowlands along drainage areas. As discussed above the vast majority of these wetlands will be fully conserved and protected from proposed timbering actions through establishment of buffer zones. A very small percentage of these wetlands, however, may be impacted through new road construction or modification of existing road networks for the purpose of ensuring access to remote areas for timbering. Wetlands may also be impacted by limited disturbance from timbering operations (particularly in upland areas). To mitigate adverse impacts to these resources, project-specific wetlands delineations, permitting, and wetlands avoidance and/or mitigation will be required prior to road construction and other types of potential disturbances to wetlands that could trigger wetlands permitting actions. As outlined above, adherence to timber management measures outlined in Section 3.2 and proper sequencing of mitigation requirements will ensure that impacts will be avoided if possible, then minimized if unavoidable, and as a last resort mitigated through creation, restoration, banking and other means in consultation with the USACE, Fort Worth District. In addition, timbering in upland forested wetlands should be limited to dry periods to protect these important resources.

As discussed above, no federal species and only one state-listed species is known to occur on the parcels. Given the habitat needs of the alligator snapping turtle, only minor adverse effects would be expected to this species as a result of disposal actions. It should be noted, however, that no bat surveys have been conducted for either property. Given this data gap, the existence of viable habitat on these properties, and the occurrence of two state-listed bat species (i.e., Rafinesque's big-eared bat and southeastern myotis bat) within the county, it is possible that these species are also present on LSAAP and RRAD-WEP. For example, the southeastern myotis bat may utilize bottomland hardwoods for roosting, as well as man-made structures. Timbering actions conducted by the Army and redevelopment activities following transfer of the property to non-Federal ownership could have a direct adverse effect on state-listed and native wildlife species. Further discussions of the direct effects associated with reuse are provided in Section 4.8.2.5, Intensity-based Probable Use Scenario.

Indirect. Minor to moderate long-term adverse effects would be expected. As previously discussed, disposal would result in a paradigm shift in natural resource management that could reduce resource protection and enhancement measures. While this could result in the loss of or damage to large parts of the forest habitat on the excess property, the area would still only represent a small portion of the habitat available in the ecological system and community, and these effects would be considered minor to moderate. Disposal will also likely result in increased land use intensity and activity, which could increase soil loss, reduces water quality, and increase the likelihood of spills and other releases. Indirectly, such actions could adversely affect biological resources in the long-term.

4.8.2.2 Traditional Disposal Alternative

Direct. Minor to moderate adverse effects would be expected, similar to the effects outlined for early transfer. These effects, however, would occur further in the future.

Indirect. Minor to moderate long-term adverse effects would be expected, similar to the effects outlined for early transfer. These effects, however, would occur further in the future.

4.8.2.3 Caretaker Status Alternative

Direct. Minor adverse effects would be expected. Under caretaker status, natural resource management programs and objectives, outlined in the INRMP for LSAAP and RRAD will not be pursued. Some areas that are being actively managed would be adversely impacted as a result of halting these efforts relative to status quo operating conditions.

Indirect. Long-term minor beneficial effects would be expected. Military missions will cease and new construction and ground disturbing activities will be significantly reduced under this alternative. Thus, land use intensity will be below levels assumed under current conditions, thereby resulting in long-term minor benefits to biological resources as compared to baseline conditions in November 2005. Furthermore, the decrease in human activity would reduce disturbance of wildlife species at LSAAP and RRAD-WEP under caretaker status.

4.8.2.4 No Action Alternative

No direct or indirect effects would be expected. Under the no action alternative, the Army would continue operations at LSAAP and RRAD-WEP at levels similar to those occurring prior to the BRAC Commission's recommendations for closure and realignment, including implementation of INRMP measures. Thus, no effects would occur relative to continuation of the Army's mission and conditions in November 2005.

4.8.2.5 Intensity-Based Probable Use Scenario

Medium-Low Intensity Direct. Long-term minor to moderate adverse effects would be expected depending on the nature and intensity of redevelopment of the installation. With respect to construction, land clearing and grading activities would remove vegetation and associated habitat. The footprint of such activities is unknown, but overall even the new construction of over 5,500,000 square feet of commercial/industrial space assumed for complete long-term build out of LSAAP and RRAD-WEP under the MLIR scenario would likely only disturb less than three percent of habitat areas directly. Therefore, the direct effect of construction activities is considered relatively minor. Noise from construction, demolition, and renovation activities may disturb wildlife in the short term. Because the duration of these activities is expected to be of limited duration, the effects would be short-term. Wildlife may return to certain areas after construction is completed. Any new construction should be sited as far away from wetland areas as possible, to avoid impacting the habitat and wildlife in these areas (as discussed below).

Across LSAAP and RRAD-WEP there are likely to be over 2,000 acres of wetlands, principally in lowland areas along drainage areas. As previously discussed, no formal jurisdictional wetlands delineation has been performed to date. To mitigate adverse impacts to this resource, project-specific wetlands delineations, permitting, and wetlands avoidance and/or mitigation requirements will be necessary prior to redevelopment and future timbering of specific parcels in consultation with the USACE, Fort Worth District. Given the size of the developable land resources and the relatively small construction footprints, wetlands delineation, avoidance, and maintenance of proper buffer zones is required to reduce adverse effects to wetlands, as previously discussed. Furthermore, to mitigate wetlands impacts and avoid significant adverse effects from timbering activities, sufficient riparian buffer and management zones must be established to ensure proper conservation and protection of wetlands and high-quality habitat along stream corridors. In addition, timbering in forested wetlands should be limited to dry periods to protect these important features. As required under Section 404 of the CWA, the sequencing of mitigation requirements will ensure that impacts will be avoided if possible, then minimized if unavoidable, and as a last resort mitigated through creation, restoration, banking and other means in consultation with the USACE, Fort Worth District.

Redevelopment and future timbering could result in additional short- and long-term moderate adverse effects to forest resources and associated ecological communities. Implementation of state recommended forest management practices, industry standards, and conservation of high-quality habitat and riparian buffer zones would serve to reduce these effects. Effects would be similar to those described under the early transfer alternative, where timber harvesting operations undertaken by the Army will leave approximately 40 percent of the available timber resources intact on LSAAP and RRAD-WEP for potential future timbering actions.

As previously discussed, there are no known federal listed species that occupy LSAAP or RRAD-WEP, other than the potential for migrant or transient species. For example, federal listed birds, such as the bald eagle and interior least tern, may be transient or migrant visitors to these specific parcels (e.g., the bald eagle has been identified in the vicinity); however, these parcels are not known to provide any nesting or important hunting areas for any federally listed species. With respect to state-listed species, only one species, the alligator snapping turtle, is known to occupy LSAAP and RRAD. It should be noted, however, that no bat surveys have been conducted for either properties. Given this data gap, the existence of viable habitat on these properties, and the occurrence of two state-listed bat species (i.e., Rafinesque’s big-eared bat and southeastern myotis bat) within the county, it is possible that these species are also present on LSAAP and RRAD-WEP. As previously discussed, the Rafinesque's big-eared bat may occupy unused buildings. Thus, demolition of these facilities would remove possible roosting sites that are necessary for the bats to thrive. Furthermore, the southeastern myotis bat may utilize bottomland hardwoods for roosting, as well as man-made structures. Demolition and timbering actions could have a direct adverse effect on these species. Consultation and execution of field surveys in coordination with USFWS or TPWD could reduce these effects to these state-listed species. However, given that these species lack federal status under ESA, there would be no specific requirement for conducting such surveys.

The ethanol plant modules outlined in the reuse plan are expected to have a negligible to minor adverse effect on biological resources. The proposed ethanol facilities are too small in relation to the overall acreage to have an appreciable effect on the biological resources of LSAAP and RRAD-WEP. Wetlands comprise a small percentage of the property, and are unlikely to be adversely impacted by the facilities. As noted elsewhere in this document, there are 570 acres of wetlands on LSAAP, representing four percent of the land area. Forested wetlands comprise 97 percent of the total, so avoiding wetlands disturbance altogether should be achievable and, as a result, wetland permits would not likely be required. Location of a cellulose-processing ethanol module on RRAD-WEP may be more problematic relative to avoiding impacts to wetlands. Mitigation will be required in the event that wetlands are adversely affected by facility construction, road access, and/or operations. If a third, cellulose-processing facility is constructed, it could provide an efficient means to reuse forestry byproducts. On the other hand, if the cellulose facility increases the potential for timber harvesting on LSAAP or RRAD-WEP in the long term, this may adversely affect biological resources.

Medium-Low Intensity Indirect. Minor to moderate adverse effects would be expected, as previously discussed. While these effects could result in the loss of or damage to large parts of the forest habitat on the excess property, this area would still only represent a small portion of the habitat available in the ecological system and community, and these effects would be considered minor to moderate. Construction activity and forest timbering could cause increased erosion, adversely effecting aquatic resources (though some protection will be afforded with the establishment of buffer zones). Such activities may have a minor adverse effect on the state-listed alligator snapping turtle.

Low Intensity Direct. Short- and long-term minor to moderate adverse effects would be expected. Effects similar to those discussed under MLIR would be expected to occur, but to a lesser degree.

Low Intensity Indirect. Long-term minor to moderate adverse effects would be expected. Effects similar to those discussed under MLIR would be expected to occur, but to a lesser degree.

4.9 CULTURAL RESOURCES

4.9.1 Affected Environment

This section addresses federal statutes, regulations, EOs, and memoranda applicable to the management of historic properties and operations of LSAAP and RRAD-WEP.

Section 106 and Section 110 of the National Historic Preservation Act (NHPA, P.L 89-655) ensure that federal agencies consider cultural resources, defined as any prehistoric or historic district, site, building, structure, or object eligible for inclusion on the NRHP, in their proposed programs, projects, and actions prior to initiation.

In August 2006, a Programmatic Agreement between DoD and the ACHP was signed regarding compliance with Section 106 as it concerns World War II and Cold War Era Army Ammunition Production Facilities and Plants and Ammunition Storage Facilities.

4.9.1.1 Prehistoric and Historic Background

Prehistoric Context

LSAAP and RRAD-WEP lie within an archaeological and historical region designated by the Texas Historical Commission as the Forest Region. The Forest Region is a large region that is marked by low topography and woodland landscapes. The Caddoan peoples dominated the region in the historic past and into the period of the archaeological record. The prehistory of northeastern Texas is divided into four periods: Paleo-Indian, Archaic, Formative, and Caddoan. A few of these periods are divided into sub-stages to distinguish between certain changes in technology and lifeways. The period of Native American occupation in Northeast Texas has been subdivided into temporal divisions, with the later periods being the best dated, as shown in Table 4.9-1.

Table 4.9-1 Native American Cultural Sequence for Northeast Texas

Temporal Period	Dates	Cultural Divisions and Diagnostic Artifacts
Paleo-Indian		
Early	10,000–8,500 B.C.	Clovis and Folsom points (fluted point tradition)
Late	8,500-6,000 B.C.	Dalton, San Patrice, and Scottsbluff points
Archaic		
Early	6,000-3,000 B.C.	Gower, Uvalde, Wells and Bell dart points
Middle	3,000-2,000 B.C.	Yarbough and Ellis dart points; ground, pecked and polished stone tools
Late	2,000-200 B.C.	Gary and Kent dart points; indications of larger settlement
Formative (Early Ceramic)	200 B.C.-A.D 800	Development of agriculture; introduction of bow arrow points, such as Scallorn and Colbert points; introduction of pottery, such as Williams Plain; Caddoan ceramics appear late in the Formative
Caddoan	A.D. 800-1700	Increased governmental and religious stratification; civic ceremonial sites, burial mounds, farmsteads and villages; Hayes and Homan points; distinctive ceramic styles, including dry-paste ware (McKinney Plain, Nash Neck Banded, and Foster Trailed-Incised) and wet-paste ware (Simms Engraved and Avery Engraved)
Protohistoric/ Historic	A.D. 1700-1835	Native American Confederacy consisting of at least five tribes; Caddoan dominance of the Region; Caddoan Treaty signed in 1835
Source: RRAD 2000		

Historic Context

A thorough historic context for the area up to the acquisition of land for RRAD and LSAAP facilities was expanded upon or modified for subsequent archaeological surveys conducted by Geo-Marine, Inc. The period of European exploration and settlement, and the North American and African-American development of Northeast Texas, is subdivided into five periods (see Table 4.9-2).

Table 4.9-2 European and American History of Northeast Texas

Temporal Period	Dates
European Exploration and Colonization	1542 – 1803
Initial North American Settlement and Growth	1804 – 1860
Civil War and Aftermath	1860 – 1870
Initial Commercialization	1870 – 1920
Depression and Recovery	1920 – Present
Source: LSAAP 2002	

Nearly 200 years after the de Soto expedition of 1542, one of the earliest European outposts in the region was established by Benard de la Harpe in 1719, northeast of RRAD. By the 1820s, homesteaders began moving into the prairie between the Red River and the Sulphur River. By the 1830s, the introduction of commercial cotton agriculture propelled the population boom of Bowie County. Cotton production dominated the cultivated acreage until as late as 1910, at which time some diversification began in the agricultural industry to include other products such as corn, livestock, dairying, commercial poultry production, orchards, and truck farms.

Transportation improvements that followed the Civil War were also a contributing factor in the growth of Bowie County. The railroads contributed to the growth of communities at whistle-stops along their routes, with some whistle stops bordering the acreage currently occupied by RRAD and LSAAP. The African-American community of Piney Grove supported a church and a school in the early 20th century in the LSAAP area and within the present-day footprint of RRAD, Chalybeate School and Shiloh Church and School are known to have existed at the same time. Rock Creek Church and Rock Creek School lay just south of the RRAD boundary, also during this period (RRAD 2004b).

Military History

In June 1941, the War Department designated 40,000 acres west of Texarkana, Texas as the site of a munitions plant and a munitions storage and distribution facility. The storage facility was named Red River Ordnance Depot and was designated as a permanent installation by War Department General Order No. 9 dated 9 August 1941. Initial construction on the Red River Depot was completed in April 1942. At about the same time in 1941, the government acquired by outright purchase an additional 6,569.6 hectares (16,233.85 acres) for the location of a second ordnance facility. Construction on this plant also began in mid-1941, and was completed in summer 1942. Upon completion, the Lone Star Defense Corporation, a subsidiary of B.F. Goodrich, placed the facility into active production. In August 1945, production ceased at LSAAP; in November 1945, the plant was consolidated with the adjacent Red River Ordnance Depot under the name of the Red River Arsenal. In 1948, RRAD was named the distribution depot for the Fourth Army area, which included five states in the South and Southwest. In May 1951, the LSAAP was reactivated, and a contract for facility operation was awarded to DZI, which has operated the LSAAP facility continuously since that time (LSAAP 2002).

4.9.1.2 Status of Cultural Resource Inventories and Section 106 Consultations

This section provides a brief discussion of the prehistoric and historic cultural resources investigations, including management plans, architectural surveys, archaeological surveys, and archaeological excavations conducted at LSAAP and RRAD to date.

Several archaeological investigations have been conducted within LSAAP and at RRAD-WEP. Both the LSAAP Integrated Cultural Resources Management Plan (ICRMP) 2002-2006, and the Draft ICRMP for Red River Army Depot, 2002-2006 summarize earlier cultural resource studies conducted on each respective installation. Additional surveys, not included in the ICRMP, have also been conducted at LSAAP; these surveys are available through the USACE, Fort Worth District.

LSAAP. Several archaeological surveys have been conducted within the LSAAP, including intensive and point surveys. The earliest survey was conducted in 1980, covering a total of 64 acres; results of all surveys through 2007 included the identification and recording of 127 archeological sites. These surveys identified single component historic or prehistoric resources, as well as multi-component resources. The majority of sites identified were determined to be ineligible for the NRHP, although several sites were determined potentially eligible, and 38 sites were not evaluated for eligibility.

Approximately 1,400 acres were surveyed for archeological resources at LSAAP in 2007; these areas are dispersed across the installation including within and around an ammunition storage area, the live firing range and various production areas, as shown in Figure 4.9-1. Based on the results of this survey, the Army determined that five sites in these areas still required further investigation to determine their eligibility for the NRHP. As of the date of this document, the Texas SHPO has not completed review of these surveys.

RRAD-WEP. Since 1980, several contractors have conducted archaeological surveys at RRAD; the USACE Fort Worth District also conducted one survey. A total of 128 archaeological sites were recorded at RRAD through 2007. All 128 archaeological sites identified at RRAD were coordinated with the Texas SHPO. RRAD and the Texas SHPO concurred that: 1) 88 of the archaeological sites were not eligible for the NRHP; and 2) the remaining 40 sites should be protected from further disturbance until further testing to determine NRHP eligibility.

RRAD-WEP includes 29 recorded archeological sites that have been determined not eligible for the NRHP, and nine identified archeological resources sites that may be eligible for the NRHP (U.S. Army 2006a). Approximately 180 acres of RRAD-WEP were surveyed for archeological resources in 2007. This area is located primarily in a swampy area within and adjacent to an ammunition storage area, as identified in the RRAD ICRMP and as shown on Figure 4.9-1. Based on the results of this survey, the Army determined that three sites in this area still required further investigation to determine their eligibility for the NRHP. As of the date of this document, the Texas SHPO has not completed review of these surveys.

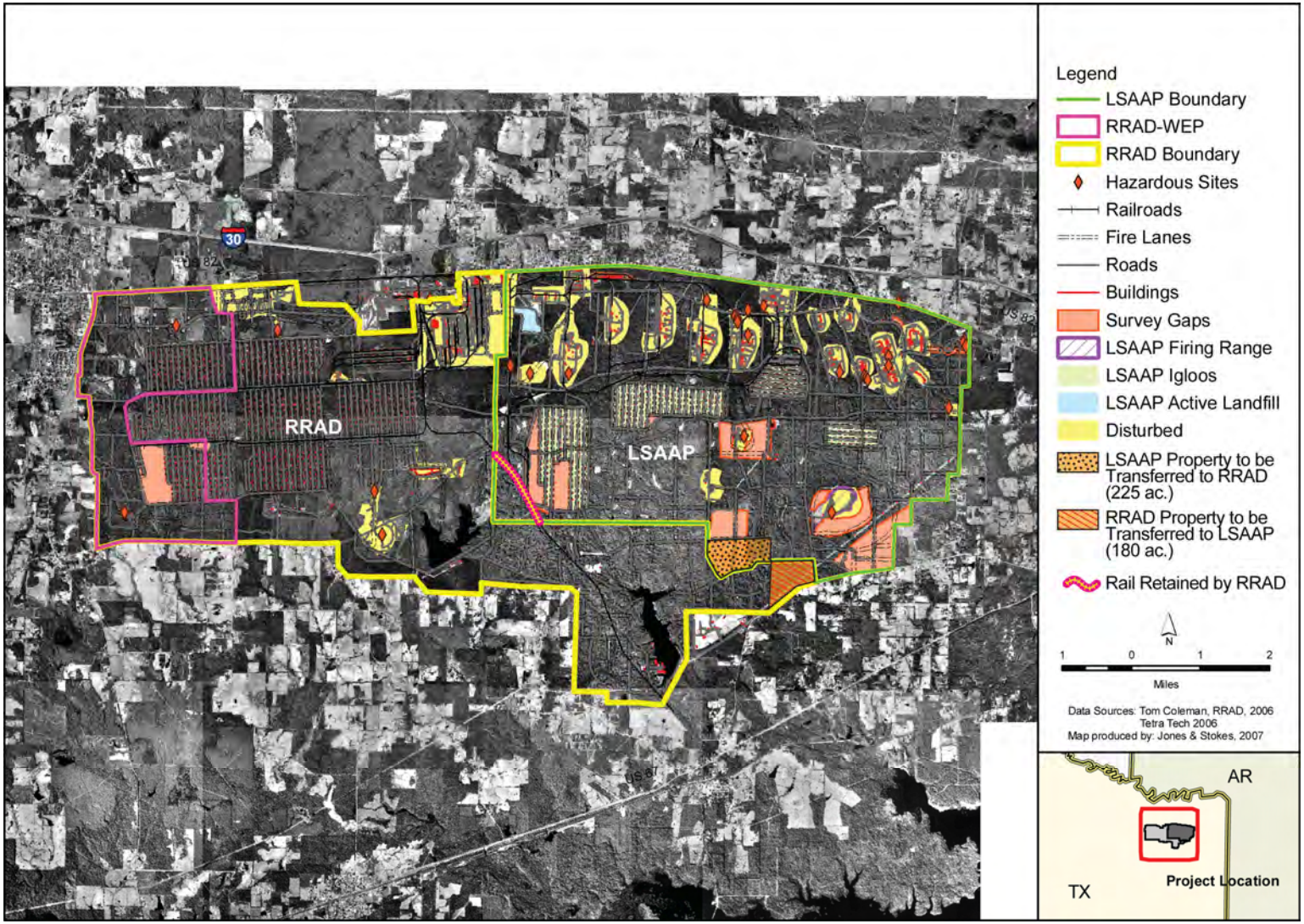

Figure 4.9-1 DRAFT Archaeological Resources Survey Gaps 2006

Historic Buildings and Structures

The built environment at LSAAP and RRAD is typical of many military installations with various utilitarian architectural themes and designs existing within these areas; however, there is no dominant theme, nor is there any industry-recognized architectural style.

LSAAP. The LSAAP facilities comprise approximately 1,160 buildings, structures, and engineering works, some 609 of which date to the World War II period (1942-1944). The remainder were constructed during the Cold War historic context years (1946-1989) or later. Following a 1983 Department of Army Material Development & Readiness Command study, it was determined that four buildings on LSAAP were eligible for listing on the NRHP.

The four buildings on LSAAP determined eligible for listing on the NRHP were E-1, E-16, E-17, and Z-1. Buildings E-1, E-16, and E-17 are located on the northern boundary of the plant. Building Z-1 is located in Area Z, a fire pump station at the center of the installation on Old Boston Road (LSAAP 2002). Section 106 compliance for these buildings has been achieved through the fulfillment of the Program Comment for World War II and Cold War Era (1939-1974) Army Ammunition Production Facilities and Plants issued by the ACHP on 18 August 2006 (see Appendix A for a copy of this Program Comment). Buildings E-1, E-16, E-17, and Z-1 are not currently maintained. Building E-17 has been partially demolished and Building Z-1 is located at a concrete pond that was previously used as an emergency source of fire fighting water. The facility is now leased out as a recreational fishing pond (Self 2007).

RRAD-WEP. RRAD-WEP does not include any architectural properties that are eligible for inclusion on the NRHP (U.S. Army 2006a). With respect to RRAD, about 1,579 buildings, structures, and engineering works exist. Three separate architectural assessments have been conducted at RRAD, identifying a total of three properties as potentially eligible for the NRHP. To date approximately 64 percent of the existing buildings, structures, and engineering works have been inventoried, with the remaining properties not inventoried because they represent ancillary or infrastructure elements not normally considered as NRHP-eligible.

Cemeteries

Cemeteries are protected by state and county laws. Most of the state of Texas laws addressing cemeteries are contained in Chapters 694-715 of the Health and Safety Code (Texas Historical Commission, 2001). These laws protect cemeteries as well as individual graves.

Section 711.041 of the Health and Safety Code, Texas State law, states that, “Any person who wishes to visit a cemetery or private burial grounds for which no public ingress or egress is available shall have the right to reasonable ingress and egress for the purpose of visiting the cemetery or private burial grounds. This right of access extends only to visitation during reasonable hours and only for purposes usually associated with cemetery visits; and that the owner or owners of the lands surrounding the cemetery or private burial grounds may designate the routes of reasonable ingress and egress.”

Although cemeteries are not usually evaluated for eligibility for NRHP listing, a cemetery can qualify for the NRHP if it is an integral part of a historic district or "derives its primary significance from graves of persons of transcendent importance, from age, from distinctive design features, or from association with historic events."

The cemeteries at both installations are currently fenced, maintained, and mowed regularly. The Tiller Family Cemetery on LSAAP is also visited by family members.

LSAAP. There are eight cemeteries and one burial plot within LSAAP. Table 4.9-3. lists the cemeteries and their general locations. None of the cemeteries on LSAAP are eligible for inclusion on the NRHP. Unidentified graves, however, may be located outside of the currently-marked cemetery boundaries of the Tiller Family Cemetery (Self and Hodgson, pers. comm., 2007).

Table 4.9-3 Cemeteries at LSAAP

Cemetery	Location
Antioch Cemetery	West part of installation
Red Springs White Cemetery	Central east part of installation
Bob Lane Colored Cemetery	Southeast part of installation
Tiller Family Cemetery	Southwest part of installation
Piney Grove Cemetery/also known as the Red Springs Colored Cemetery	Central east part of installation
Mullins Cemetery	Southwest corner of plant
Elliot Plot Cemetery	Near western boundary
Reed Cemetery	Central part of plant
Willis W. Langford Cemetery	Northeast part of plant
Source: Red River 2002; Sigler 2006	

RRAD-WEP. There are six cemeteries within RRAD. Only one, the Hays Cemetery, is located within RRAD-WEP. The Hays Cemetery is not eligible for inclusion on the NRHP. Table 4.9-4 lists the cemeteries and their general locations.

Table 4.9-4 Cemeteries at RRAD-WEP

Cemetery	Archeological Site No.	Location
Hays Cemetery	41BW288	Southwest corner of RRAD
Collom Cemetery	41BW291	Central portion of RRAD
McAdams Cemetery	41BW559	Central portion of RRAD
Elliot Cemetery	41BW560	Eastern portion of RRAD
Elliott Burial Plot		
Till Cemetery	41BW620	Central-east portion of RRAD
Runnels Cemetery	n.a.	Note: Governor H.R. Runnels was buried at this cemetery, but after the site was disturbed during operations in the1940s, his remains were removed and reburied at the State Cemetery in Austin, Texas
Source: Red River 2002; Sigler 2006		

As part of the RRRA's planned reuse, new construction at LSAAP is proposed for the areas between Fourth and Fifth Streets and between Washington Avenue and a proposed new highway running through the middle of the installation along Central Avenue. The Elliott Cemetery is located between Fourth and Fifth Avenues on the western boundary of the installation, and Red Springs Cemetery and Bob Lane Cemetery are both located just east of Central Avenue. Development is also proposed for the area south of Old Boston Road and west of Central Avenue. The Reed and Tiller cemeteries are located in that area, and the Mullins Cemetery is in the southwest corner of the installation. In addition, it is possible that currently unidentified graves may be located beyond the existing marked cemetery boundaries. The remaining six cemeteries are in areas that may be developed in the future.

Disposition of Archaeological Artifacts and Associated Documentation

There are no archaeological artifacts or associated documents held at LSAAP or RRAD.

Paleontological Remains

There are no known paleontological localities at RRAD. The only paleontological resources identified within LSAAP are scattered concentrations of petrified wood, potentially fossiliferous chert, and lignite located within the Wilcox Group. Wilcox is a geologic bedrock formation dating to the Eocene Age (56 to 34 million years ago), located in the south and southeast sections of the plant. The area has not been examined carefully by geologists to determine the potential for important paleontological resources (LSAAP 2002).

Section 106 Consultation

The Texas SHPO has been sent a letter describing the proposed action for both LSAAP and RRAD, and has responded by concurring with the determinations of areas within the installations that require surveys. This letter and other relevant Section 106 consultation documentation are included in Appendix B.

4.9.1.3 Native American Resources

LSAAP No Traditional Cultural Properties or Native American sacred places are currently known to exist on LSAAP. The Comanche Nation (Oklahoma), the Kiowa Tribe of Oklahoma, the Wichita Executive Committee (Oklahoma), and the Caddo Tribe of Oklahoma have been sent consultation letters regarding the proposed action for this EA. The Comanche Nation has responded with a letter stating that they have no immediate concerns or issues regarding the project. This letter and other relevant Section 106 consultation document are included in Appendix B.

RRAD-WEP No Traditional Cultural Properties or Native American sacred places are currently known to exist on RRAD-WEP. The RRAD ICRMP has identified the Caddo Tribal Council as a federally recognized tribe (RRAD 2004b). The Comanche Nation (Oklahoma), the Kiowa Tribe of Oklahoma, the Wichita Executive Committee (Oklahoma), and the Caddo Tribe of Oklahoma have been sent consultation letters regarding the proposed action for this EA.

4.9.2 Consequences

4.9.2.1 Early Transfer Disposal Alternative

Direct. Short-term and long-term minor to moderate adverse effects to cultural resources would be expected. The goal and objectives, management programs, and projects outlined in the ICRMP for LSAAP and RRAD will not be fulfilled to the same degree once the parcels are disposed of and moved from federal to non-federal ownership. However, Sections 106 and 110 of the NHPA, and Texas state or local regulations, regarding cemeteries would still apply. In addition, encumbrances that protect cultural resources would apply as further discussed in Section 4.9.2.5, Intensity-based Probable Use Scenario. In any event, there is the potential for yet unidentified resources to be disturbed, as well as known resources to be abused or neglected in the future. Increases in soil disturbance could be caused by timbering activities, new buildings and road construction, or trench excavation for underground pipes, cable lines, and similar infrastructure projects. These disturbances may increase the likelihood of disturbance of yet unknown cultural resources. Cemeteries and NRHP-eligible sites could be disturbed through soil disturbance, vandalism, neglect, or deliberate demolition. Vandalism can occur when the location of an archeological site or cemetery becomes known or otherwise attracts new attention.

To reduce potential effects to cultural resources, site surveys of potential archeological resources at LSAAP and RRAD-WEP will be completed prior to transfer, and Section 106 consultations concerning the disposal of eligible properties are ongoing. Negotiated terms of transfer or conveyance will result in requirements for the new owners to maintain the status quo of historic buildings or archeological sites, and will impose a requirement for consultation with the Texas SHPO prior to any actions affecting these resources. Additional information regarding these encumbrances is discussed in Section 4.9.2.5, Intensity-Based Probable Use Scenario.

Soil disturbance from timber harvesting activities is expected to be widespread across the excess properties at both LSAAP and RRAD-WEP, and have the potential to disturb cultural resources. Measures to avoid and protect sites with potential cultural resources would be implemented as part of timber harvesting activities. Such measures would include the establishment of fences and buffer zones around sites where cultural resources listed or eligible for listing on the NRHP have been identified. Buffer zones would include areas with a radial arc of between 50 and 100 meters (330 feet) in width around identified cultural resources sites, depending on consultation with the Texas SHPO, as described in section 3.2.1.

Indirect. Minor adverse effects would be expected. The new owners of the properties at LSAAP and RRAD-WEP might seek to lessen or remove deed restrictions addressing cultural resources after disposal, resulting in a degradation or loss of properties eligible for the NRHP. If the properties cannot be preserved intact, the preservation deed restriction would require the new owner to consult with the SHPO and to undertake recordation of the properties, in accordance with the Secretary of the Interior's standards for recordation and any applicable standards. Such recordation would mitigate any potentially adverse effects of such an undertaking to an insignificant level.

4.9.2.2 Traditional Disposal Alternative

Direct. Long-term minor to moderate adverse effects to cultural resources would be expected. Effects would be similar to those described under the early transfer disposal alternative; but the changes in effects would occur further in the future. In addition, the conditions and terms of transfer would be similar to those discussed above for the early transfer disposal alternative.

Indirect. Minor adverse effects would be expected, as described above for the early transfer disposal alternative.

4.9.2.3 Caretaker Status Alternative

Direct. Minor adverse effects to cultural resources would be expected. Under this alternative, access to both LSAAP and RRAD-WEP would be very limited, and maintenance levels would be low. The goals and procedures outlined in the ICRMPs would be suspended, and maintenance would be reduced from the standards set forth in the ICRMPs. Archeological sites or standing structures that are eligible for listing on the NRHP would not be disturbed because no new soil disturbance associated with forest management or other activities would occur; however, the sites and NRHP-eligible standing structures as well as cemeteries might be subject to vandalism or deterioration because of limited presence of maintenance personnel. Sections 106 and 110 of the NHPA, and Texas state or local regulations regarding cemeteries would still apply.

Indirect. No indirect adverse effects would be expected.

4.9.2.4 No Action Alternative

No direct or indirect effects would be expected. Under the no action alternative, the Army would continue operations at LSAAP and RRAD-WEP at levels similar to those occurring prior to the BRAC 2005 Commission's recommendations for closure and realignment, including implementation of ICRMP measures. Thus, no effects would occur relative to continuation of the Army's mission and conditions in November 2005.

4.9.2.5 Intensity-Based Probable Use Scenario

Medium-Low Intensity, Direct. Long-term moderate adverse effects to cultural resources would be expected. As previously discussed, site surveys of potential archeological resources at LSAAP and RRAD-WEP will be completed prior to transfer, and Section 106 consultations concerning the disposal of eligible properties are ongoing. Negotiated terms of transfer or conveyance will result in requirements for the new owners to maintain the status quo of historic buildings or archeological sites, and will impose a requirement for consultation with the Texas SHPO prior to any actions affecting these resources. Such actions will reduce potential adverse effects associated with increased development and expanded timbering at LSAAP and RRAD-WEP. In any event, the potential for disturbance of unknown resources during the construction of over five million square feet of facilities and expanded timbering operations is possible, as well as adverse effects to known resources from vandalism and/or neglect. Depending on the nature of redevelopment and timbering practices, cemeteries, NRHP-eligible archeological sites, or NRHP-eligible standing structures could be disturbed through soil disturbance, vandalism, neglect, or deliberate demolition. Soil disturbance could be caused by new building and road construction, timber harvesting activities, or trench excavation for underground pipes, cable lines, etc. Vandalism can occur when the location of an archeological site or cemetery becomes known or otherwise attracts new attention.

New construction at LSAAP is proposed for the areas between Fourth and Fifth Streets and between Washington Avenue and a proposed new highway running through the middle of the installation along Central Avenue. NRHP-eligible Buildings E-1, E-16, and E-17 are located on the north boundary of LSAAP. Development is also proposed for the area south of Old Boston Road and west of Central Avenue. NRHP-eligible Building Z-1 is located just south of Old Boston Road in Area Z.

As previously discussed, site surveys of potential archeological resources at LSAAP and RRAD-WEP will be completed prior to transfer, and Section 106 consultations concerning the disposal of eligible properties are ongoing. Negotiated terms of transfer or conveyance will result in requirements for the new owners to maintain the status quo of historic buildings or archeological sites, and will impose a requirement for consultation with the Texas SHPO prior to any actions affecting these resources. These encumbrances are discussed in Section 3.4, Encumbrances Applicable to Either Disposal Alternative, of this document. The *Standard Preservation Covenant for Conveyance of Property that Contains Historic Buildings* and Structures and the *Standard Preservation Covenant for Conveyance of Property that Contains Archeological Sites* and deed restrictions are included as Appendices C and D of this document, respectively.

In August 2006, a Programmatic Agreement between DoD and the ACHP was signed regarding compliance with Section 106 as it concerns World War II and Cold War Era Army Ammunition Production Facilities and Plants and Ammunition Storage Facilities. These two documents should facilitate agreements with the Texas SHPO and make it easier to redevelop lands and buildings at both LSAAP and RRAD-WEP.

Regarding NRHP-eligible buildings, the Army has entered into a MOU with the SHPO and the ACHP to provide deed restrictions requiring protection of the historic properties that would be passed on to the new owners as a condition of the sale or transfer of installation property. If the new owners desire to lessen or remove the deed restrictions requiring preservation, the deed will delineate a process for the new owners to consult with the Texas SHPO to arrive at mutually agreeable and appropriate measures for mitigating the adverse effects of their proposed undertaking.

Soil disturbance from long-term timber harvesting activities is expected to be widespread across the excess properties at both LSAAP and RRAD-WEP, and have the potential to disturb cultural resources. Measures to avoid and protect sites with potential cultural resources, including the establishment of fences and buffer zones around sites where cultural resources listed or eligible for listing on the NRHP have been identified as described above, would be implemented as part of timber harvesting activities.

To ensure continued public access to any active cemeteries, including the Tiller Family Cemetery on LSAAP, which continues to be visited by family members, the Army would include in conveyance documents, as a condition of acceptance of title, an affirmative obligation on the part of the transferee to provide public access to these cemeteries. The Army would further require that the public access granted by the property recipient would have to meet any regulatory standards established by the state of Texas for public access to cemeteries.

The ethanol plant modules outlined in the reuse plan are expected to have a minimal adverse effect on cultural resources, should they or another similar industrial use be constructed at the site. There are several hundred historic localities and historic and archeological sites scattered throughout both LSAAP and RRAP-WEP. Given the small footprint of such facilities, choosing appropriate sites for the plants, in consultation with the Texas SHPO, and using the results of available cultural resource survey data, should minimize any potential adverse effects to this resource.

Medium-Low Intensity, Indirect. No indirect adverse effects would be expected.

Low Intensity, Direct. Long-term moderate adverse effects to cultural resources would be expected. Depending on the nature of redevelopment, the cemeteries, NRHP-eligible archeological sites, or NRHP-eligible standing structures could be disturbed through soil disturbance, vandalism, neglect, or deliberate demolition. Conditions and potential impacts would be similar to those described under the MLIR, but to a lesser degree.

Low Intensity, Indirect. No indirect adverse effects would be expected.

4.10 SOCIOECONOMICS

This section discusses the existing socioeconomic environment for LSAAP and RRAD with respect to economic activity, population demographics, housing, and quality of life (including education, public health and safety, recreation, environmental justice, and protection of children). The setting provides a frame of reference for determining the potential socioeconomic effects of alternative uses of LSAAP and RRAD-WEP.

4.10.1 Affected Environment

LSAAP and RRAD are both located in central Bowie County, Texas, in the northeast corner of the state at the border with Arkansas. Bowie County occupies almost 900 square miles, and had a population of more than 89,000 in 2000; the adjacent Miller County (Arkansas) covers approximately 1,600 square miles, with a population of just over 40,000. DoD identified Bowie and Miller Counties, which together comprise the Texarkana MSA, as the ROI in which potential impacts related to 2005 BRAC actions at LSAAP and RRAD would most likely occur (DBCRC 2005). Several reasons exist to select Bowie and Miller Counties as the socioeconomic ROI: the great majority of LSAAP and RRAD employees live in either Bowie or Miller County; the two counties receive the majority of the installations' procurement and contractual spending; and the two counties provide necessary goods and services for base personnel (USACE 1998). Texarkana, Texas-Arkansas and the smaller Texas towns immediately adjacent to the two installations (New Boston, Hooks, Leary, and Redwater, among others) provide personnel with housing, schools, public services, medical care, professional services, shopping, restaurants, transportation, and education. In turn, expenditures by RRAD and LSAAP together contributed an estimated $239 million to the regional economy in 2005 (TMPC 2006). In 2005, RRAD, LSAAP, and their respective tenants employed approximately 3,500 people at the installations, the majority of whom live within the ROI.

4.10.1.1 Economic Development

Regional Economic Activity

In 2000, there were approximately 68,000 people employed in the ROI (USDoC 2005). Most employment in the region (97 percent) was in non-agricultural industries, with the three percent balance employed in agriculture, a distribution closely comparable to the distribution at the state level in both Texas and Arkansas. The private sector provides the majority of employment (80 percent) in the ROI (which is commensurate to state level shares of private sector employment), with most jobs being performed in the services (36 percent), retail trade (24 percent), and manufacturing industrial sectors (12 percent). Government and governmental enterprises provide 17 percent of jobs in the region, a slightly larger share than the public sector at the state levels in Texas and Arkansas (14 percent each). In the ROI, 68 percent of public sector jobs were in state and local government, 28 percent in federal or civilian positions, and only four percent in the military. Table 4.10-1 provides data on employment by industry within the ROI, Texas, and Arkansas for the year 2000.

Table 4.10-1 Employment by Industry (full and part time), 2000

Employment by Industry	Region of Influence		Texas		Arkansas	
	Number	Percent	Number	Percent	Number	Percent
Farm employment	2,161	3	283,874	2	63,588	4
Non-farm employment	65,786	97	11,960,825	98	1,440,279	96
Private employment	54,313	80	10,240,398	84	1,233,947	82
Agricultural services, forestry, fishing and other [3]	(D)		150,918		21,303	
Mining	(D)		226,762		6,228	
Construction	4,076	8	806,789	8	88,571	7
Manufacturing	6,261	12	1,133,684	11	259,958	21
Transportation and public utilities	3,574	7	703,423	7	86,140	7
Wholesale trade	3,425	6	592,287	6	57,575	5
Retail trade	13,136	24	2,006,989	20	252,948	20
Finance, insurance, and real estate	3,312	6	983,054	10	83,100	7
Services	19,683	36	3,636,492	36	378,124	31
Government and gov't enterprises	11,473	17	1,720,427	14	206,332	14
Federal, civilian	3,268	28	184,669	11	22,249	11
Military (active duty)	457	4	167,881	10	18,690	9
State and local	7,748	68	1,367,877	80	165,393	80
TOTAL EMPLOYMENT	67,947		12,244,699		1,2652,267	

[3] "Other" consists of the number of jobs held by U.S. residents employed by international organizations and foreign embassies and consulates in the United States.
(D) Not shown to avoid disclosures of confidential information; estimates for this item are included in the totals.
Source: U.S. DoC 2006

The Texarkana MSA economy saw considerable private sector growth in the decade from 1990 to 2000. According to the U.S. Commerce Department's Bureau of Economic Analysis, total employment in the ROI grew by 13 percent between 1990 and 2000. Private sector employment increased by 21 percent, while public sector employment fell by 13 percent over the same period (U.S. DoC 2000) The greatest increases took place in the construction (58 percent), wholesale trade (45 percent), transportation and public utilities (28 percent), and services industries (27 percent). The manufacturing industrial sector was the only private sector category to lose jobs in this period (-16 percent).

From 2000 to 2005, growth in Texarkana MSA total employment slowed to three percent, according to the Texas Workforce Commission (Texas Workforce Commission 2006). Governmental employment saw nearly 12 percent growth during this period, with federal government employment growing by more than 36 percent, largely attributable to employment at RRAD due to the military's ongoing engagement in Iraq (RRRA 2007). Private sector employment grew only one percent over the same period, with increases in truck transportation and warehousing, and declines in trade and services (RRRA 2007).

Job growth for Bowie County was stronger than in the MSA, with 6.4 percent employment gains, more than double the three percent in the Texarkana MSA (RRRA 2007).

In 2005, the Texarkana MSA economy was largely characterized by a mix of industrial enterprises and service providers. According to the Reuse Plan, there were 23 employers in the MSA with more than 250 employees each, together representing about one-third of all non-farm employees in the MSA (RRRA 2007). Of these employers, heavy manufacturing industrial enterprises accounted for nearly half (45 percent) of all jobs; medical-related jobs accounted for another 17.4 percent; and education and government services represented 15.5 percent of jobs in the MSA. Retail trade accounted for about 13 percent of all non-farm employment in the region in 2005; sales increased by 20 percent, to $2.1 million, from 2002 (Texarkana CoC 2006), due in part to the expansion of "big box" retailers in the region (RRRA 2007). In 2005, the installations and their tenant organizations were together the largest employer in the Texarkana MSA, with 3,500 employees combined (approximately 3,100 employees on RRAD and 350 on LSAAP) (Texarkana CoC 2006). Table 4.10-2 identifies other top employers in the region.

Table 4.10-2 ROI Ten Largest Employers, 2005

Employer's Name	Number of Employees
RRAD, LSAAP, and tenant organizations (including DZI)	3,500
Cooper Tire and Rubber	2,000
Christus St. Michael Health System (General Medial Hospital)	1,680
Domtar, Inc. (fine finished papers)	1,201
Wal-Mart/Sam's Club (discount stores)	1,100
Wadley Regional Medical (General Medical Hospital)	1,000
International Paper Company (cup and folding carton)	865
Texarkana, TX Independent School District	787
Texarkana, AK School District	785
Southern Refrigerated Transport (refrigerated trucking)	670
Source: Texarkana CoC 2006; U.S. Army 2006	

LSAAP and RRAD Contributions to the Regional Economy

LSAAP, RRAD, and their tenants are an integral part of the regional economy, as shown in Table 4.10-3. The Texarkana MSA has experienced steady growth over the past 15 years, and, according to the 2007 RRRA reuse plan, much of the growth has been stimulated by changes in federal government employment, primarily at RRAD, which has seen its mission expand with the on-going conflict in Iraq. LSAAP and RRAD had operational expenditures of $19 million and $220 million, respectively, in 2005 (TMPC 2006). Average annual (government) staff salary was nearly $66,000 for LSAAP and $45,000 for RRAD, as much as double the average annual wage in the ROI (Ramsauer 2007, Walker 2006). In 2005, DZI employed 316 staff and recorded $3 million in expenditures and purchases from 97 local businesses in nine cities and towns within a 50-mile radius of LSAAP (Walker 2006).

Table 4.10-3 LSAAP, RRAD, and ROI Jobs, Wages, and Expenditures

Economic Factor	LSAAP(1)	RRAD	Texarkana MSA (2004)	Installations as Percent of ROI
Jobs	350	3,100	68,342	5
Payroll	$12.15 million	$1,655,815	$1.5 billion	9
Local Expenditures	$19 million	$220 million	NA	NA

(1) Data on average salaries at LSAAP do not include information for the base commander. LSAAP Jobs and Payroll includes civilian employment at DZI (316) and military personnel on base (20).
Sources: Jobs, Payroll: U.S. DoC 2006, TMPC 2006.

RRAD-WEP largely comprises storage and forested areas, and as such supports few full-time employees and makes little unique specific economic contribution to the regional economy. The realignment action at RRAD, however, will result in a reduction of 257 employees from the installation personnel (a decrease of approximately eight percent).

4.10.1.2 Regional Demographics

Regional Population

According to the U.S. Census, there were 129,749 people living in the Texarkana MSA in 2000, including 89,306 people (69 percent) in Bowie County, Texas, and 40,443 (31 percent) in Miller County, Arkansas, with 47 percent living in the city of Texarkana, Texas-Arkansas (U.S. Census 2000). Table 4.10-4 shows a slight increasing trend in regional populations from 2000 to 2005, with three percent growth in the ROI population, and 1.5 percent and 5.8 percent growth in Bowie and Miller Counties, respectively. State level population grew by 10 percent in Texas and 3.8 percent in Arkansas over the same period (U.S. Census 2000). The City of Texarkana, Texas Comprehensive Plan predicts a very small (0.05 percent) increase over Texarkana MSA 2005 population levels by the year 2020 (City of Texarkana, Texas 2001). Texas and Arkansas populations are expected to grow by 14 percent and 0.06 percent, respectively, over the same period.

Table 4.10-4 Regional and State Population Trends

Area	1990[1]	2000[1]	2005[1]	Percent Change 2000-2005	2010 (projected from 2000)[2]	2020 (projected from 2000)[2]
ROI	120,132	129,749	133,420	3.0	133,537	140,989
Bowie County, TX	81,665	89,306	90,643[2]	1.5	91,504	97,146
Miller County, AR	38,467	40,443	42,777	5.8	42,033	43,843
Texas	16,986,510	20,851,820	22,928,508	10.0	22,794,520	25,993,150
Arkansas	2,350,725	2,673,400	2,775,708	3.8	2,757,520	2,946,900

Sources: [1]U.S. Census 2000; [2]City of Texarkana 2001

Of people living in Bowie and Miller Counties in 2000, nearly two thirds (73 percent) were White, and nearly one quarter (23 percent) were African American; the balance of the population of the counties (3 percent) were people of Asian, American Indian or Native

Alaskan, Native Hawaiian or other Pacific Islander, or other origin (U.S. Census 2006). Only four percent of the Texarkana MSA's total population was of Hispanic or Latino origin, regardless of race, as compared to 32 percent in Texas and three percent in Arkansas. As Table 4.10-5 illustrates, the ROI racial composition generally mirrors that at the state level. Median age in the MSA in 2000 was 35.8 years. The average household size for the MSA was 2.5 people, with the majority of individuals (64 percent) living in urban areas and the balance (36 percent) in rural communities (U.S. Census 2006).

Table 4.10-5 Selected ROI and State Population Characteristics (2000)

Population Characteristics	Region of Influence	Texas	Arkansas
Population	129,749	20,851,820	2,673,400
Median Age	35.8	32.3	36
Racial Breakdown(1)			
Percent White	73	71	80
Percent African American	23	11.5	15.7
Percent Other	3	15.1	3.1
Percent Hispanic (regardless of race)	4	32	3.2

(1) Data for race represents individuals who identified themselves by only one race in the 2000 U.S. Census (including White, African American, Asian, American Indian or Native Alaskan, Native Hawaiian or other Pacific Islander, or another race), and may not add to 100 percent.
Source: U.S. Census 2000

4.10.1.3 Income, Unemployment and Poverty

In recent years, the Texarkana MSA has seen modest per capita income growth coupled with growing unemployment, and 18 percent of the population living below the poverty level. In 2000, per capita personal income in the MSA was $22,233, only 74 percent of the national average ($29,845) (U.S. Census 2006). Data in Table 4.10-6 show that Bowie County per capita income was $22,795, ranking the county 88th of 254 in Texas in terms of this measurement. Per capita income in Miller County was slightly lower, at $20,992, ranking this county 19th of 75 in Arkansas. Per capita income levels for both counties are commensurate with per capita income levels in the MSA and Arkansas, but are approximately 22 percent less than levels in Texas as a whole. Each year from 1990 to 2000, per capita income in the ROI grew by 4.2 percent, commensurate to but less than the modest growth in Arkansas, Texas, and the nation over the same period.

According to the U.S. Bureau of Labor Statistics, unemployment in the Texarkana MSA civilian labor force in 2000 was 5.5 percent, similar to Arkansas (5.3 percent), but higher than for Texas and the nation (4.9 percent) during the same year (USDoC 2005). Table 4.10-6 shows that, from 2000 to 2005, unemployment increased by 3.6 percent in the MSA and seven percent in Bowie County, but fell by five percent in Miller County. Unemployment rates for Texas and Arkansas as a whole grew dramatically over the same five-year period, with state unemployment rates increasing by 20 percent and 15 percent, respectively. Both are in contrast to the six percent drop in unemployment at the national level over the same period.

Table 4.10-6 Unemployment, Poverty Rates, and Personal Income

Area	Unemployment Rate		Percent of Individuals Living Below Poverty	Per Capita Personal Income		
	2000	2005	2000	2000	2000 Rank	1990-2000 Ave. Annual Growth Rate
Bowie, TX	5.5	5.9	17.7	$22,795	88th/254 counties	3.8
Miller, AR	5.6	5.3	19.3	$20,992	19th/75 counties	5.0
ROI	5.5	5.7	18.2	$22,233	311/nation	4.2
Texas	4.9	5.9	15.4	$28,313	31/nation	5.0
Arkansas	5.3	6.1	15.8	$21,925	49/nation	4.3
USA	4.9	4.6	12.4	$29,845	NA	4.4

Unemployment: Share of unemployed civilian labor force.
Sources: U.S. Department of Labor 2005. Per Capita Personal Income: U.S. DoC 2006. Poverty: U.S. Census 2000

Despite the modest growth in incomes, and perhaps reflecting growing unemployment, 18.2 percent of individuals in the ROI were living below the national poverty level in 2000. Data in Table 4.10-6, above, show that poverty levels for Texas and Arkansas were 15.4 percent and 15.8 percent, respectively, as compared to 12.4 percent of individuals nationwide (U.S. DoL 2006). The relatively large share of the population living below the poverty level may also be due in part to relatively inexpensive labor cost in the MSA. In 2005, the average annual wage across the Texarkana MSA was $30,592 ($588 per week) (RRRA 2007), representing an 18 percent increase over 2000 (U.S. DoC 2000). Among the highest paying professions in the MSA are professional services, legal, and healthcare occupations (ranging from $51,000 to nearly $70,000 per year); among the lowest is retail trade, at slightly more than $23,000 per year (RRRA 2007). Food preparation and service occupations earn less than half the MSA average (RRRA 2007). The average salaries of nearly $66,000 at LSAAP and $45,000 at RRAD made the installations among the higher paying employers in the area.

4.10.1.4 Housing

According to the 2000 U.S. Census, there were 54,190 housing units in the Texarkana MSA, of which 63 percent were owner-occupied, 27 percent were renter-occupied, and 10 percent were vacant. Data in Table 4.10.7 show that the share of owner-occupied homes in the MSA is essentially the same as in Arkansas, though slightly larger than for Texas as a whole. According to the Reuse Plan, the Texarkana MSA housing market is relatively affordable, with median values of owner-occupied housing units in the ROI in 2000 at about $65,600, 10 percent and 20 percent less than the median value for housing units at the state level for Arkansas and Texas, respectively (RRA 2007). Less than two percent of all housing units in the MSA, Texas, and Arkansas lacked complete plumbing facilities. Median household income in 2000 within the MSA was approximately $32,000, similar to the median household income in Arkansas, but only 80 percent of the median household income in Texas. By 2005, median home prices in the Texarkana area had increased by nearly half, to $94,900, still 30 percent less than the statewide median and less than half

the U.S. median (RRRA 2007). Median incomes in Texarkana had also risen, to $45,400, more than twice the amount needed to afford a median-priced home (RRRA 2007).

Table 4.10-7 Selected Housing Characteristics (2000)

Housing Characteristics	Region of Influence	Texas	Arkansas
Housing Units	54,190	8,157,575	1,173,043
Percent Owner Occupied	63	58	62
Percent Renter Occupied	27	33	27
Percent Vacant	10	9	11
Percent Urban	64	81	52
Percent Rural	36	19	48
Percent Lacking Complete Plumbing Facilities	1.4	1.3	1.7
Average Household Size	2.5	2.74	2.49
Median Value of Owner occupied housing	$65,600	$82,500	$72.800
Median Household Income	$32,238	$39,927	$32,182
Source: U.S. Census 2000			

4.10.1.5 Personnel Housing

There is no active housing on LSAAP or on RRAD-WEP.

In 2006, the majority of the 20 LSAAP government employees lived in the nearby communities of Texarkana, Redwater, Queen City, New Boston, and De Kalb, an average of 13.5 miles from the base. Commute times averaged about 25 minutes, ranging from a 3-minute drive from Redwater to a 50-minute drive from De Kalb (Walker 2006). For DZI personnel, 78 percent of the 316 staff lived within 15 miles of the base (89 percent within 25 miles) at the close of 2005, with commute times ranging from a few minutes from Redwater, Texas, to more than 2.5 hours from Carrolton, Texas, 157 miles from the base.

4.10.1.6 Quality of Life

Education

There are no educational facilities on-post at LSAAP or on RRAD-WEP.

Thirteen public school districts serve nine Bowie County cities, with over 17,000 students enrolled in the 2005-2006 school year (Texas Education Agency 2005). In 2005-2006, three districts that serve the children of RRAD and LSAAP personnel—New Boston Independent School District (ISD), Texarkana ISD, and Redwater ISD—received Federal Impact Aid to help offset the cost of educating dependent children with a parent in uniformed service. This aid totaled $3,781 in federal funding for the academic year (U.S. Department of Education 2006).

Shops and Services

There are no shops or retail services on LSAAP or on RRAD-WEP.

Most shops and services for LSAAP and RRAD installation personnel are found off base in the nearby Texas towns of New Boston and Hooks, and the urban center of Texarkana, Texarkana-Arkansas. New Boston (5 miles west of RRAD's northwest corner), and Hooks (a small rural town one mile north of LSAAP) are host to commercial and industrial establishments, including retail shops, educational and health services, police and fire departments, a public library, civic organizations, and churches (City of New Boston 2006, City of Hooks 2002). Texarkana, Texas-Arkansas is the closest urban center within 20 miles of the installations, and has nearly 1,200 commercial and industrial enterprises, including 91 wholesale trade establishments, 309 retail trade establishments, and 222 health care and social assistance providers, as well as restaurants, professional services, churches and synagogues, public transit services, and police and fire departments (City Data 2002).

Law Enforcement

Law enforcement on LSAAP is provided by DZI on weekdays and weekends. RRAD also maintains a 64-person police force (USACE 1998).

Off-site agencies that provide law enforcement services to the community and to the installations, if needed, include the Bowie County Sheriff's Department, New Boston Police Department, Hooks Police Department, Texas Department of Public Safety, Military Criminal Investigation Division, Fort Sill, and the Federal Bureau of Investigation. In 2005, Bowie County had 40 police officers and 40 police vehicles; Miller County had 27 officers and 27 vehicles; and the cities of Texarkana, Texas and Texarkana, Arkansas together had 175 officers and 71 vehicles.

Fire Protection

Fire protection and emergency medical services are provided by DZI for LSAAP during weekdays. Fire protection and emergency medical services are also provided by RRAD personnel for the RRAD installation property, and for LSAAP during weekends. RRAD maintains a mutual aid agreement with surrounding communities; when needed, LSAAP and RRAD receive or provide fire-fighting and emergency support from or for the surrounding communities. In 2005, Bowie County had 265 firefighters and 51 pieces of firefighting equipment. Miller County had a volunteer force of 105 firefighters with nine pieces of firefighting equipment. Each of the 12 incorporated cities in these two counties also has a fire department, all of which are volunteer except for the Texarkana, Texas and Texarkana, Arkansas fire departments, which together had 134 firefighters and 19 pieces of firefighting equipment (Texarkana CoC 2006).

Recreation

Recreational opportunities on LSAAP and RRAD-WEP are limited to current and ex-military, on-site government employees, and contractor employees and their families, and

include fishing in two lakes on LSAAP, and permitted deer and turkey hunting on both bases on designated tracts. Other recreational opportunities provided to the public on land controlled by RRAD include log cabin and cottage rentals, outdoor equipment rentals, a fitness center, gift shop and country store, two restaurants, and a catering service, as well as a community recreation building (RRAD 2006). One of the two active firing ranges on RRAD has no military mission and is used by hunting clubs and local law enforcement organizations.

Considerably extensive recreational facilities are located in close proximity to the two installations. In New Boston and Texarkana, Texas-Arkansas combined, there are 27 public parks, nine golf courses (at least two are private), 32 public tennis courts, and two public swimming pools. Two lakes with recreational functions, Lake Wright Patman and Millwood Lake, are located within nine and 28 miles of the Texarkana city center, respectively. The City of Texarkana is also host to movie theaters, a museum, country clubs, community centers, and hotels or motels with more than 2,300 rooms among them (Texarkana CoC 2006).

Health/Medical

The U.S. Army has a health clinic located on RRAD (but not within the RRAD-WEP) that offers occupational health services to RRAD military personnel. No health or medical facilities are located on RRAD-WEP.

Texarkana, Texas-Arkansas serves as the regional medical center for more than 400,000 people within a 60-mile radius of the city, including RRAD and LSAAP. Two acute care hospitals, totaling 675 beds, are staffed by more than 3,000 health care professionals, and there are several special needs facilities and clinics in the area.

4.10.1.7 Environmental Justice

On 11 February 1994, President Clinton issued EO 12898, Federal Actions to Address Environmental Justice in Minority and Low-Income Populations. The purpose of the order is to avoid the disproportionate placement of adverse environmental, economic, social, or health impacts from federal policies and actions on minority and low-income populations.

It is the Army's policy to fully comply with EO 12898 by incorporating environmental justice concerns in decision-making processes supporting Army policies, programs, projects, and activities. The initial step in the environmental justice analysis process is identification of minority and low income populations that might be subject to actual or potential health, economic, or environmental threats arising from implementation of the proposed actions or alternatives. Low income, or the poverty threshold, is defined by the U.S. Census Current Population Reports, Series P-60 on Income and Poverty, as the weighted average annual income, which for a family of four in 2000 correlated to $17,603; by 2005 the threshold had risen to $19,971 (U.S. Census 2002). Minority individuals are defined as people of American Indian or Alaska Native, Asian or Pacific Islander, African American (but not of Hispanic origin), or Hispanic origin. Minority populations are identified where minorities comprise more than 50 percent of the population in the affected area or where this percentage is "meaningfully greater" than the percentage in

the general population (CEQ 1997). This section identifies minority or low-income communities that could be adversely affected by the implementation of actions or alternatives on LSAAP or RRAD.

Table 4.10-8 compares low income and minority population data from within a 15-mile radius of the installations,[7] the ROI, and for the states of Texas and Arkansas. Based on the 2000 U.S. Census, the percentage of individuals living below poverty within 15 miles of the installations (17.4 percent) is nearly the same as the number of individuals living below poverty in the ROI as a whole (18.2 percent). Thus, there does not appear to be a disproportionately high percentage of individuals living below the poverty line in the immediate vicinity of the installations, as compared to the ROI. It should be noted, however, that the percentage living below poverty within the ROI and within 15 miles of LSAAP and RRAD is greater than the percentage at the state levels: 15.4 percent in Texas and 15.8 percent in Arkansas. In the 13 school districts in Bowie County, more than half of the children enrolled (51 percent) qualified for free or reduced-price meals in the National School Lunch Program in 2005; among the districts closest to the installations, Texarkana ISD had the highest share of economically disadvantaged students, with 62 percent eligible for this assistance (Texas Education Agency 2005).

The minority population living within 15 miles of the installations is one third (30.5 percent) of the total population in that radius; a share nearly comparable to the ROI (28.8 percent), more than eight percent greater than the minority population in Arkansas (22 percent), but less than half the composite minority population across Texas (58.6 percent). The last reflects the large Hispanic population in Texas, as compared to relatively smaller populations in Arkansas, the ROI, and around the installations.

[7] The central point of reference for the 15-mile radius used for this analysis was the North-South midpoint of the road that forms the border between RRAD and LSAAP.

Table 4.10-8 Minority and Low-Income Populations (2000)

Population Characteristics	15-Mile Radius	ROI	Texas	Arkansas
Total Population	81,230	129,749	20,851,820	2,673,400
Minority Population (Percent) [(1)]	30.5	28.8	58.6	22.0
African American	23.9	23.3	11.5	15.7
Asian	0.5	0.4	2.7	0.8
American Indian or Native Alaskan	0.5	0.6	0.6	0.7
Native Hawaiian or other Pacific Islander	0.0	0.0	0.1	0.1
Other	1.1	0.9	11.7	1.5
Hispanic, regardless of race	4.5	3.6	32.0	3.2
Median Household Income	$35,732	$32,328	$39,927	$32,182
Individuals living below poverty (Percent)	17.4	18.2	15.4	15.8

[(1)] Minority population data represent people who identified themselves by only one race in the 2000 U.S. Census, and includes people of Hispanic origin.
Source: U.S. Census 2000

There are no programs with the specific purpose of promoting environmental justice on either LSAAP or RRAD (Ramsauer 2007). The minority populations within 15 miles of the installations do not exceed 50 percent of the total population, but comprise only a slightly larger share of the population than at the MSA and Arkansas state levels.

4.10.1.8 Protection of Children

On 21 April 1997, President Clinton issued EO 13045, Protection of Children from Environmental Health Risks and Safety Risks. A growing body of scientific knowledge demonstrates that children may suffer disproportionately from environmental health risks and safety risks due to their physiology and their behavior. Federal agencies are required to give high priority to identifying and assessing environmental health risks and safety risks that might disproportionately affect children, and to ensure that its policies, programs, activities, and standards address these risks. To fully comply with EO 13045, the Army ensures that it would identify, disclose, and respond to potential adverse health and safety risks to children within the area affected by a proposed Army action.

Historically, children have only been present at LSAAP and RRAD-WEP as visitors (e.g., children of employees). The Army and DZI have taken precautions for the safety of all visitors to either installation by the use of fencing, limiting access to certain areas (demolition and testing grounds), and provision of adult supervision for children. In addition, Army regulations related to transferring property (e.g., LBP regulations) help to ensure that past Army practices will not pose a future threat to children who subsequently use the property.

4.10.1.9 Homeless, Special Concerns

Pursuant to the Base Closure Community Redevelopment and Homeless Assistance Act of 1994, property that is surplus to the federal government's needs is to be screened by means of a LRA's soliciting notices of interest from state and local government,

representatives of the homeless, and other interested parties. The LRA's outreach efforts to potential users or recipients of the property include working with the Department of Housing and Urban Development and other federal agencies that sponsor public benefit transfers under the Federal Property and Administrative Services Act. The RRRA has completed this outreach as a part of the reuse planning process; no homeless assistance providers have expressed interest in reuse of LSAAP and RRAD-WEP.

4.10.2 Consequences

4.10.2.1 Early Transfer Disposal Alternative

Economic Development

Direct: Long-term significant beneficial effects would be expected (see Section 4.10.2.5, Intensity-based Probable Use Scenario, for further discussion of modeling results). The early transfer of the LSAAP and RRAD-WEP properties would enable immediate initiation of redevelopment activities, and therefore new job creation, increased local sales volume, possible industrial diversification in the local and regional economies, and expansion of the tax base. Ongoing remediation and timber harvesting activities would generate additional employment, expenditures, and economic diversification, with similarly positive impacts on the local economy. Deed restrictions requiring continued remediation activities at the installation properties could preclude many uses of some areas, and may limit the potential for economic development.

Indirect. Long-term minor beneficial and adverse effects would be expected. Increased employment and expenditures from closure and redevelopment and remediation activities would generate indirect increases in jobs, local sales volume, income, and tax revenues. Disposal could also saturate the local real estate market with low-cost commercial and industrial vacancies. This effect would be localized and short-term and would not affect the entire ROI equally.

Sociological Environment (Including Environmental Justice and Protection of Children)

Direct. Long-term minor beneficial and adverse effects would be expected. Increased employment resulting from early transfer as well as ongoing environmental remediation activities would result in increased population and corresponding increases in housing demand, earlier than would happen under traditional disposal.

It is uncertain whether increased housing demand has the potential to push housing prices up to the degree that some low-income families may no longer afford to rent or buy in the area. It is likely that these effects would be localized rather than spread throughout the ROI. Low-income populations would benefit from the creation of low-skill and unskilled jobs associated with economic redevelopment of the properties, as well as experience increased household incomes thereby reducing the effect of rising rent or home prices.

Early transfer is not expected to create impacts that disproportionately affect homeless programs or minority communities in the ROI.

Residential development will not be permitted on LSAAP or RRAD-WEP, and access control and security measures will continue in the future; therefore, no disproportionate risks to children are expected.

Indirect. Short- and long-term minor adverse effects would be expected. Population growth under early transfer would lead more quickly to increased demand for public services, schools, and infrastructure.

Ongoing environmental remediation activities and continuing deed restrictions will prevent access where environmental health and safety risks remain. Responsibility for inspecting or maintaining continuing facilities on the properties and protection of vulnerable populations would transfer immediately to state and local regulatory agencies. Short-term minor adverse impacts are expected from the additional burden placed on these public agencies resulting from the transfer of these responsibilities, which would take place earlier than under traditional disposal.

Quality of Life

Direct. Short-term minor adverse effects would be expected. Permitted hunting and fishing opportunities associated with LSAAP and RRAD-WEP would no longer be available to military personnel and their families, and this would occur earlier than under traditional disposal.

Indirect. Short-term minor adverse effects would be expected. Adverse impacts could result from increases in local school enrollment that would follow redevelopment of the properties earlier than would occur under traditional disposal, if school infrastructure is not sufficient to accommodate these increases. Local educational agencies (school districts) would no longer receive Federal Impact Aid support for children with parents in uniformed service who were affected by closure and realignment activities at LSAAP or RRAD. Increased class size may have negative implications for demands on public school resources and facilities.

Installation Agreements

Direct. No direct effects would be expected.

Indirect. Short-term minor adverse effects would be expected. Transfer of the installation properties to the community would create expanded responsibilities, and possibly delayed response times, for local fire departments, law enforcement agencies, and emergency medical care providers.

4.10.2.2 Traditional Disposal Alternative

Economic Development

Direct. Long-term significant beneficial impacts would be expected. Impacts are similar to those described under the early transfer disposal alternative, but would occur over a longer period.

Indirect. Long-term minor beneficial and adverse effects would be expected. Impacts are similar to those described under the early transfer disposal alternative, but would occur over a longer period.

Sociological Environment

Direct. Long-term minor beneficial and adverse impacts would be expected. Impacts are similar to those described under the early transfer disposal alternative, but would occur over a longer period.

Indirect. Short- and long-term minor adverse effects would be expected. Impacts are similar to those described under the early transfer disposal alternative, but would occur over a longer period.

Quality of Life.

Direct. Short-term minor adverse impacts would be expected. Impacts are similar to those described under the early transfer disposal alternative, but would occur over a longer period.

Indirect. Short-term minor beneficial and adverse impacts would be expected. Impacts are similar to those described under the early transfer disposal alternative, but would occur over a longer period.

Installation Agreements

Direct. No direct impacts would be expected.

Indirect. Long-term minor adverse impacts would be expected. Impacts are similar to those described under the early transfer disposal alternative, but would occur over a longer period.

4.10.2.3 Caretaker Status Alternative

Economic Development

Direct. Long-term moderate adverse effects would be expected for LSAAP and realignment of RRAD. According to analysis using the U.S. Army's Economic Impact Forecast System (EIFS) model, the closure of LSAAP and DZI, Inc. and realignment of RRAD under Caretaker Status would result in the direct loss of 1,000 jobs and $52 million

in sales volumes in the ROI economy. The economic impact of these direct changes is not predicted to exceed historical thresholds for socioeconomic change in the ROI. The EIFS model is discussed in detail in Section 4.10.2.5, and in Appendix G.

Indirect. Long-term moderate adverse effects would be expected. Under caretaker status, the loss of LSAAP, RRAD, and DZI indirect employment and expenditures would translate into a loss of 400 jobs and almost $54 million in sales volumes. Total combined losses (direct and indirect) would translate into a loss of more than 1,400 total jobs, a $106 million reduction in total sales, a $41.6 million reduction in total incomes, and reductions in tax revenues for the local and ROI economies. While the reduction in total sales very nearly exceeds significance, the economic impact of these indirect changes is not predicted to exceed historical thresholds for socioeconomic change and sustainability in the ROI. Caretaker status would also represent foregone economic opportunity (e.g., job creation, sales and expenditures, and tax revenues) until the LSAAP and RRAD-WEP properties are conveyed to the community. Additionally, depending on how long the properties remain under caretaker status and the level of dilapidation the infrastructure suffers, facilities and local infrastructure could degrade over time, increasing costs for future development. The socioeconomic impact of these total (direct and indirect) changes, however, is not predicted to exceed historical thresholds for socioeconomic change and sustainability in the ROI, and can be expected to be reversed when the property enters into redevelopment.

Sociological Environment

Direct. Long-term minor adverse effects would be expected. Depending on how long the property remains in caretaker status and the ability of LSAAP and RRAD employees to find other work, as many as 760 individuals may move from the area, resulting in a contraction in the population.

Caretaker status is not expected to create impacts that disproportionately affect homeless programs, or minority or low-income communities within the ROI. Furthermore, access control and security measures will continue under caretaker status; therefore, no disproportionate risks to children are expected.

Indirect. Short-term and long-term minor adverse effects would be expected. Although security access would be controlled, reduced employee presence on LSAAP and RRAD-WEP may reduce the level of on-site security to prevent trespassers on the site. This could create potentially hazardous conditions for the safety and well-being of children who may trespass in areas formerly used for ammunition storage, testing, and demolition.

In addition, departure of LSAAP and RRAD employees from the community could result in a short-term reduction of housing demand, with a corresponding increase in the number of residential vacancies in the local real estate market. This effect would be localized and not affect the entire ROI equally.

Quality of Life

Direct. Short-term minor adverse effects would be expected. Discontinuation of the daily presence of the installation workforce at LSAAP and the slight reduction at RRAD could potentially create increased opportunity for vandalism, property theft, and other criminal activity such as poaching (animals or timber). Reduced staffing could also result in less timely discovery of fire and longer fire-fighting response times, as well as longer response times for medical emergencies for the caretaker force or visitors to the properties. Together these could result in adverse impacts for human safety and natural resources on the properties.

Caretaker status would also result in discontinued recreational hunting and fishing opportunities for military personnel and their families.

Indirect. Short-term minor adverse impacts would be expected. Local school districts would no longer receive Federal Impact Aid support for children with parents in uniformed service who were affected by closure and realignment activities at LSAAP and RRAD.

Installation Agreements

Direct. No direct effects would be expected.

Indirect. No indirect effects would be expected.

4.10.2.4 No Action Alternative

No direct or indirect effects would be expected under the no action alternative. For this alternative, the Army would continue operations at LSAAP and RRAD at levels similar to those occurring prior to the BRAC Commission's recommendations for closure and realignment, which would have no effect on any socioeconomic metrics in the immediate vicinity of LSAAP or RRAD-WEP, nor within the ROI. Overall, no effects would occur relative to continuation of the Army's mission and conditions in November 2005.

4.10.2.5 Intensity-Based Probable Use Scenario

Socioeconomic Impact Assessment Method of Analysis

To determine the secondary socioeconomic effects of the implementation of the two reuse scenarios for LSAAP and RRAD-WEP, the U.S. Army's EIFS model was used. The EIFS model is a computer-based economic tool that calculates multipliers to estimate the direct and indirect impacts resulting from a given action. The model requires input data for: the names of counties comprising the ROI; the number and income of civilian and military personnel affected by the action and reuse scenarios; change in local expenditures due to the action and reuse scenarios; the number of civilians expected to relocate; and the number of military personnel who live on base. Changes in employment and spending represent direct effects resulting from the action and reuse scenarios. Forecast changes in ROI sales volume, employment, income, and population represent indirect effects and are based on the input data and calculated multipliers within the model.

For the purposes of analysis, a change is considered significant if it falls outside the normal range of ROI economic variation. To determine normal variability, the EIFS model calculates a rational threshold value (RTV) profile for the ROI based on historical fluctuations in sales volume, employment, income, and population patterns. The historic extremes for the ROI become the threshold of significance for social and economic change. If the calculated effect of a reuse scenario falls outside the RTV, the impact is considered significant. Appendix G describes the EIFS model in detail as well as the calculation of input parameters, and presents model input and output tables and RTV parameters for both reuse intensity scenarios considered.

For the LIR and MLIR scenarios, the years of expected maximum economic change in the ROI economy were modeled, as was predicted total economic change over a 15-year phased build-out period. The year(s) of maximum economic change is expected to occur in the first three years after LSAAP closure and RRAD realignment, during which two ethanol plant modules may be under construction, with the attendant short-term pulse in employment and expenditures. Construction of all three plant modules could cost from $350 to $400 million and generate between 4,000 to 6,000 worker-years of construction employment (RRRA 2007).[8] Expected impacts of the reuse scenarios during the year(s) of maximum economic change are discussed below along with their EIFS output reports. Table 4.10-9 presents model input assumptions and projected outputs and change for both the LIR and MLIR reuse scenarios during the peak construction year(s).

EIFS model analysis was also conducted for predicted total economic change, with model inputs reflecting anticipated economic development over the RRRA's planned 15-year phased build-out. The proportion of development that would occur in any given year is not known, but the expected average annual change is estimated. To be conservative, the model was run for each reuse scenario based on the metrics for full build-out. Table 4.10-10 presents model input assumptions and projected outputs and change for both the LIR and MLIR reuse scenarios over the total 15-year phased build-out period, along with total and average annual change estimates.

Comparison of economic change during peak construction years and total predicted change over the 15-year build-out period show that the peak economic output change during construction would be less than half of what is projected over the total 15-year build-out period, though would considerably exceed the 15-year average during any given year. EIFS analysis input and output tables for peak construction years and the total change over the 15-year build-out phase are presented in Appendix G.

[8] According to the RRRA Reuse Plan, construction of the two ethanol and one associated cellulose plant will cost up to $400 million total, requiring a maximum of 6,000 construction worker-years (RRRA 2007, p12-9, 12-28). Analysis here assumes $150 million construction costs for each of the two corn-processing ethanol plant modules, and 2,000 workers per plant module, with the two corn-processing ethanol plants built simultaneously in years 1-3.

Table 4.10-9 RRAD/LSAAP Reuse Intensity Scenarios: EIFS Model Input Parameters, Forecast Output, and Significance for Predicted Year of Maximum Economic Change

INPUT PARAMETERS [1]					
Reuse Intensity Scenario	**Low Intensity**		**Medium-Low Intensity**		
Change in Local Expenditures	$106,803,500		$114,620,200		
Net Change in Civilian Employment	1,486		1,673		
Change in Military Employment	-2		-2		
Average Income of Affected Civilian	$30,000		$30,000		
Average Income of Affected Military	$66,000		$66,000		
Percent Expected to Relocate	75		75		
FORECAST OUTPUT					
	LIR		**MLIR**		**RTV Range (%)**
	Projected change	**Percent change**	**Projected change**	**Percent change**	
Sales Volume					
Direct	$136,618,300		$148,193,700		
Indirect	$140,716,800		$152,639,600		
Sales Total:	**$277,335,100**	**9.92**	**$300,833,300**	**10.76**	**-3.86 - 5.06**
Employment					
Direct	2,551		2,829		
Indirect	1,099		1,193		
Employment Total:	**3,651**	**5.55**	**4,022**	**6.12**	**-6.44 – 3.29**
Income					
Direct	$66,370,490		$73,584,960		
Indirect	$28,883,550		$31,330,810		
Total (place of work)	**$95,254,040**	**3.79**	**$104,915,800**	**4.18**	**-3.22 – 5.6**
Population					
Total Population Change	**2,770**	**2.16**	**3,119**	**2.43**	**-0.79 – 2.64**
(1) Sources and calculations of input parameters are presented in Appendix G					

Table 4.10-10 RRAD/LSAAP Reuse Intensity Scenarios: EIFS Model Input Parameters, Forecast Output for Total Economic Change Over 15-year Phased Build-Out

INPUT PARAMETERS [1]				
Reuse Intensity Scenario	**Low Intensity**		**Medium-Low Intensity**	
Change in Local Expenditures	$80,152,450		$197,403,500	
Net Change in Civilian Employment	2,296		5096	
Change in Military Employment	-2		-2	
Average Income of Affected Civilian	$30,000		$30,000	
Average Income of Affected Military	$66,000		$66,000	
Build-out Period	15 years		15 years	
FORECAST OUTPUT				
	LIR		**MLIR**	
	Projected change in 15 years	**Percent change in 15 years (annual avg change in parentheses)**	**Projected change in 15 years**	**Percent change in 15 years (annual average change in parentheses)**
Sales Volume				
Direct	$126,249,100		$299,780,100	
Indirect	$130,036,500		$308,773,500	
Sales Total:	**$256,285,600**	**9.17 (0.5)**	**$608,553,500**	**21.77 (1.3)**
Employment				
Direct	3280		7436	
Indirect	1016		2413	
Employment Total:	**4296**	**6.53 (0.4)**	**9849**	**14.98 (0.9)**
Income				
Direct	$85,202,100		$193,269,000	
Indirect	$26,691,310		$63,378,860	
Total (place of work)	**$111,893,400**	**4.46 (0.2)**	**$256,647,900**	**10.22 (0.4)**
Population				
Total Population Change	**2,000-9,000**	**1.5 - 6.7 (0.1 - 0.4)**	**14,000 to 20,000**	**10 – 15 (0.2 – 1)**

[1] Sources and calculations of input parameters are presented in Appendix G.

Economic Development

Medium-Low Intensity, Direct. Long-term direct moderate to significant beneficial effects would be expected during the maximum peak construction year. A MLIR scenario during a year of maximum economic change could create significant beneficial impacts for long-term job creation and sales, and moderate beneficial effects on income generation. According to the RRRA's reuse plan, the construction of two corn-processing ethanol plant modules and one associated cellulose-processing ethanol plant module is expected to generate up to 6,000 construction worker-years of employment over five years (RRRA 2007). The two corn-processing ethanol plants are expected to be built within the first three years of LSAAP closure and RRAD realignment. The associated construction and expenditures are expected to have a moderate beneficial effect to economic development in the ROI. Table 4.10-9 shows that an estimated 2,829 direct jobs could be created during each of the three years of ethanol plant construction, generating direct increases of more than $73 million in income and $148 million in sales volume each year. Based on the EIFS analysis for the maximum peak construction year presented in Table 4.10-9, the economic impact of these direct changes is predicted to slightly exceed historical RTV thresholds for sales expenditures and employment. Further analysis of these significant effects is discussed under *Medium-Low Intensity, Direct Plus Indirect.*

Over the entire 15-year build-out period, as shown in Table 4.10-10, an estimated 7,436 direct jobs could be created under the MLIR scenario, averaging nearly 500 jobs per year. This direct job creation could generate a long-term direct increase in income of more than $193 million ($12.8 million per year, on average) and direct increases in sales volume by almost $300 million ($20 million per year, on average). Based on analysis of the EIFS results, the average annual change in economic activity, outside of the peak construction year period discussed above, would still fall well within the historical thresholds of sustainable socioeconomic change, as can be seen by comparing the average annual percent changes presented in Table 4.10-10 and the RTV metrics in Table 4.10-9.

Medium-Low Intensity, Indirect. Long-term indirect moderate to significant beneficial impacts would be expected. Table 4.10-9 shows that, under a MLIR scenario during a year of maximum economic change resulting from peak construction, indirect sales expenditures ($153 million) could result in significant beneficial effects, while moderate beneficial effects would occur for employment and income generation. Indirect effects may include secondary job creation, increased tax revenues, and induced economic activity from building construction and infrastructure development, such as roads, utilities, schools, etc. The economic impact of indirect changes in sales volume during the peak construction year(s) (i.e., $153 million) is predicted to exceed historical thresholds for socioeconomic change in the ROI.

Over the entire 15-year build-out period, approximately 2,400 indirect jobs could be created under the MLIR scenario, averaging nearly 160 secondary jobs per year, with increases in indirect income of nearly $63.4 million ($4.2 million per year, on average) and secondary sales volume by almost $308 million (nearly $20.6 million per year, on average). However, based on analysis of EIFS results, the average annual change in economic activity, outside of the peak construction year period discussed above, would still fall well within the historical thresholds of sustainable economic change, as can be

seen by comparing the average annual percent changes presented in Table 4.10-10 and the RTV metrics in Table 4.10-9.

Medium-Low Intensity, Direct plus Indirect. Long-term moderate to significant benefits would be expected during the maximum peak construction years. Table 4.10-9 shows that during the peak construction year(s), an estimated total of 4,022 jobs could be created (direct and indirect), which represents an increase of more than six percent over 2005. The short-term infusion of jobs could help to reduce regional and local unemployment to the extent that local skills match the needs of plant construction and associated employment demands. Total income generation (direct and indirect) could increase by nearly $105 million, or nearly 4.2 percent over 2005, and total sales volumes (direct and indirect) could increase by more than $300 million, or nearly 11 percent over 2005. The economic impact of total changes in sales volume and employment during the peak construction year(s) is predicted to exceed historical thresholds for socioeconomic change in the ROI. However, this change is based on a conservative assumption that two very large facilities (such as two ethanol plants) are constructed simultaneously. If this were to occur, many of the jobs would be short-term in nature and would be drawn from beyond the ROI; therefore, this short-term change in economic activity is not expected to result in an unmanageable level of growth in the area. Beyond the peak construction period, average annual economic activity is predicted to still fall well within historic thresholds of sustainable economic change, based on supplemental analysis of EIFS results, as can be seen by comparing the average annual percent changes presented in Table 4.10-10 and the RTV metrics in Table 4.10-9. Based on these results, it is predicted that the MLIR scenario would not represent an unmanageable level of activity for the ROI economy.

Over the 15-year build-out period, Table 4.10-10 shows that an estimated total of 9,849 jobs could be created (direct plus indirect), which represents an increase of nearly 15 percent over 2005. The additional 650 jobs per year, on average, could help to reduce some of the ROI's unemployment, though this would likely take place primarily within the local economy. Over the 15-year build-out, total income generation could increase by more than $256 million, or more than 10 percent over 2005 ($17 million per year, on average); total sales volume could increase by more than $608 million, or approximately 22 percent over 2005 ($40.5 million per year, on average). However, as previously discussed, this level of economic activity is predicted to not exceed the RTV range beyond the peak construction period.

Low Intensity, Direct. Long-term moderate to significant beneficial impacts would be expected during the maximum peak construction year. An LIR scenario could have a significant beneficial impact on sales, and moderate beneficial effects on income generation and employment. Table 4.10-9 shows that an estimated 2,550 direct jobs could be created during each of the three years of predicted major facility construction (such as construction of two ethanol plant modules), generating direct increases of $66 million in income and $137 million in sales volume. The economic impact of the direct changes in sales during peak construction years is predicted to exceed historical thresholds for socioeconomic change. However, these effects are expected to take place in the short term, due to the nature of construction activities (as discussed above). Further analysis of these significant effects is discussed under *Low Intensity, Direct Plus Indirect.*

Table 4.10-10 shows that, over the 15-year build-out period, an estimated 3,280 direct jobs could be created (averaging over 200 jobs per year). This direct job creation could generate a long-term direct increase in income of approximately $85 million ($5.6 million per year, on average), and a direct increase in sales volume by an estimated $126 million ($8.4 million per year, on average). Based on analysis of EIFS results, the average annual change in economic activity, outside of the peak construction year period discussed above, would still fall well within the historical thresholds of sustainable economic change, as can be seen by comparing the average annual percent changes presented in Table 4.10-10 and the RTV metrics in Table 4.10-9.

Low Intensity, Indirect. Long-term moderate beneficial impacts would be expected. Table 4.10-9 shows that direct job creation, income generation, and spending related to reuse could also result in secondary job creation (1,100 jobs), income generation ($28.9 million), sales ($140.7 million) and expenditures, and tax revenues, including economic activity from building construction and infrastructure redevelopment, such as roads, utilities, schools, etc. The economic impact of the indirect changes during the peak construction year(s), as well as average 15-year build-out, is predicted to fall within historical thresholds of sustainable economic change in the ROI.

Over the 15-year build-out period, as shown in Table 4.10-10, an estimated 1,016 indirect jobs could be created under the LIR scenario, averaging nearly 68 jobs per year, with increases in indirect income of nearly $26.7 million (nearly $1.7 million per year, on average) and secondary sales volume by almost $130 million (nearly $8.7 million per year, on average).

Low Intensity, Direct plus Indirect. Long-term moderate to significant beneficial impacts would be expected. Table 4.10-9 shows that during the peak construction year(s), an estimated total of 3,651 jobs could be created (direct plus indirect), which represents an increase of more than 5.5 percent over 2005 levels. The short-term infusion of jobs could help to reduce regional and local unemployment to the extent that local skills match the needs of plant construction and associated employment demands. Total income generation (direct and indirect) could increase by nearly $95 million (direct and indirect) or almost four percent over 2005, and total sales volumes (direct and indirect) could increase by $277 million, or nearly 10 percent over 2005. For each of the three years of dedicated major facility construction (such as construction of ethanol plant modules), forecast increases in total income are well within historical thresholds for sustainable economic change in the ROI.

During the peak construction years, the pulses in total employment and sales volumes (direct and indirect) are predicted to exceed historic thresholds for economic change in the ROI. However, this change is based on a conservative assumption that two very large facilities (e.g., two ethanol plants) are constructed simultaneously. If this were to occur, many of the related construction jobs would be short-term in nature and would be drawn from beyond the ROI; therefore, this short-term change in economic activity is not expected to result in an unmanageable level of growth in the area. Beyond this conservative peak construction scenario, average annual economic activity is predicted to fall well within historic thresholds of sustainable economic change (i.e., the RTV range),

based on supplemental EIFS analysis. Based on these results, it is predicted that the LIR scenario would represent a manageable level of activity for the ROI economy.

Table 4.10-10 shows that, over the 15-year build-out period, approximately 4,296 total jobs could be created (direct plus indirect), an increase of 6.53 percent. The additional 286 jobs per year, on average, could help reduce some of the unemployment within the ROI, though this would take place mainly within the local economy. Long-term income generation (direct and indirect) could increase by nearly $112 million, or approximately 4.5 percent; total sales volume (direct and indirect) could increase by approximately $256 million, or 9.17 percent. Based on analysis of EIFS results, the average annual change in economic activity, outside of the peak construction year period discussed above, would still fall well within the historical thresholds of sustainable economic change, as can be seen by comparing the average annual percent changes presented in Table 4.10-10 and the RTV metrics in Table 4.10-9.

Sociological Environment (Including Environmental Justice and Protection of Children)

Medium-Low Intensity, Direct. Long-term minor beneficial impacts would be expected. The direct jobs created under this scenario (about 2800 during peak construction years, and nearly 500 jobs per year on average over the 15 year build-out period) could attract individuals from within the ROI, increasing the local population by 10 to 15 percent over several years, with an attendant increase in housing demand.

The MLIR scenario for the LSAAP and RRAD-WEP properties would not create disproportionately high or adverse human health or environmental impacts on minority or low-income populations of the surrounding communities. Low-income populations could benefit from the creation of low-skill and unskilled jobs. No impacts would be expected for environmental justice or homeless and other special programs.

Residential development will not be permitted on LSAAP or RRAD-WEP, and access control and security measures will continue in the future; therefore, no disproportionate risks to children are expected.

From an environmental justice perspective, it is unlikely that adverse impacts potentially resulting from the proposed plant would disproportionately impact minority or low income populations. Conversely, the new jobs created could provide important benefits to those populations.

With respect to public safety and protection of children, ethanol is a harmful, flammable, and irritating substance. The presence of denaturant gasoline, sulfuric acid, ammonia, lye, and other dangerous chemicals on the site would contribute to the inherent hazards, particularly to workers. Safe operations would require implementation and enforcement of stringent OSHA-compliant safety protocols. Due to the large quantities of ethanol and supporting chemicals that would be produced, stored and transported daily, the operation is inherently dangerous, but not unlike the risks associated with the transport, storage, and handling of other similar hazardous substances, such as truck and rail tankers carrying bulk quantities of gasoline on area interstates and railway. With respect to plant

operations, workers would be at risk from accidents, including explosions and fire risks. Risks would be reduced through implementation of high safety standards, control equipment, and handling procedures that are dictated by Federal, state, and local requirements for the safe handling of such materials. Ethanol plant operations are planned to be located within the interior of the property, with sufficient buffer zones to minimize risks to the general public. Beyond chemical handling, there are also risks posed by transport operations associated with large increases in train and truck traffic, which may pose a risk to the general public and children in the region, particularly related to an increased potential for automobile accidents.

Medium-Low Intensity, Indirect. Long-term minor beneficial and adverse effects would be expected. Indirect jobs created under this scenario (about 1,200 during the peak construction year(s), and approximately 160 additional jobs per year on average over the 15-year build-out period) could attract individuals from within the ROI to the local economy and increase the local population. Public support services could adapt to the demands of the expanded local population base, funded by new property tax revenue and sales taxes. Minor adverse effects would be expected if increased total demand for local rental and owner-occupied housing exceeds the ROI's 10 percent vacancy rate, potentially resulting in higher housing prices in the local economy, and making housing less affordable to the unemployed and individuals living below the poverty level in the area.

Low Intensity, Direct. Long-term minor beneficial effects would be expected. The direct jobs created under an LIR scenario (2,550 during the peak construction year(s), and more than 200 per year on average over the 15-year phased build-out period) could attract individuals from within the ROI, increasing the local population with beneficial impacts on the local economy. The intensity of effects to the sociological environment would be similar to those described for the MLIR scenario, but to a lesser degree.

The LIR scenario for the LSAAP and RRAD-WEP properties would not create disproportionately high or adverse human health or environmental impacts on minority or low-income populations in surrounding communities. Low-income populations could benefit from the creation of low-skill and unskilled jobs. No effects would be expected for environmental justice or homeless and other special programs.

Residential development will not be permitted on LSAAP or RRAD-WEP, and access control and security measures will continue in the future; therefore, no disproportionate risks to children are expected.

Low Intensity, Indirect. Long-term minor beneficial and adverse impacts would be expected. Indirect jobs created under this scenario (about 1,100 during peak construction years, and about 70 additional jobs per year on average over the 15-year build-out), could attract individuals from within the ROI to the local economy and increase the local population. Public support services could adapt to the demands of the expanded local population base, funded by new property tax revenue and sales taxes. Short-term negative impacts might be expected, since additional increased demand for local rental or owner-occupied housing may exceed the ROI's 10 percent vacancy rate, resulting in

higher local housing prices and making housing less affordable to the unemployed and individuals living below poverty in the area.

Quality of Life

Medium-Low Intensity, Direct. Long-term minor adverse effects would be expected. The impact of an expanded population on the local school system during peak construction years could result in increased student populations and localized resource shortages. Long-term annual average increases in the population over the 15-year build-out period will likely have less adverse impacts, as the time frame will allow for local and regional planning to address the needs of a growing student population. These impacts will likely be localized rather than taking place throughout the ROI in the long-term.

Medium-Low Intensity, Indirect. Long-term minor adverse effects would be expected. The pulse in student population during the peak construction years will create a short-term need for new facilities and infrastructure. An expanded student population from a cumulative 15-year build-out period could result in the need for new construction and educational and funding resources. An increase in population and the need for new construction and public infrastructure could also have an adverse effect on visual and aesthetic values in the area, as well as create an increased demand for public support services, health and medical services, shops and services, and recreational resources.

Low Intensity, Direct. Short-term minor adverse effects and no long-term effects would be expected. The impact of an expanded population on the local school system during peak construction years could result in increased student populations and localized resource shortages. On average per year over the 15-year build-out period, changes in the demand on the public school system would likely be within the economic and institutional capacities of the local school district.

Low Intensity, Indirect. Short-term minor adverse effects and no long-term effects would be expected. The pulse in student population during the peak construction years will create a short-term need for new facilities and infrastructure. On average per year, over the 15-year build-out period, changes in the demand for public support services, schools, health and medical services, shops and services, and recreational resources would likely be within the economic and institutional capacities of local public and private organizations.

Installation Agreements

Medium-Low Intensity, Direct. No effects would be expected. Installation agreements between the U.S. Army and local agencies for the provision of various services would be continued until disposal of the installation properties was complete. Those services are presently provided, and would continue to be provided by local agency suppliers outside the boundaries of the LSAAP and RRAD-WEP areas.

The ethanol plant modules outlined in the reuse plan are expected to have no effect on installation agreements.

Medium-Low Intensity, Indirect. No effects would be expected.

Low Intensity, Direct. No effects would be expected. Installation agreements between the Army and local agencies for the provision of various services would be continued until disposal of the installation was complete. Those services are presently provided, and would continue to be provided by local agency suppliers outside the boundaries of the LSAAP and RRAD WEP areas.

Low Intensity, Indirect. No effects would be expected.

4.11 TRANSPORTATION

4.11.1 Affected Environment

4.11.1.1 Roadways and Traffic

LSAAP. LSAAP has easy access to U.S. 82, which is directly north of the installation, and I-30, which is directly north of U.S. 82 (see Figure 4.2-1). Both roads run generally east to west. U.S. 67 runs east-west southeast of LSAAP. Facility boundaries include U.S. 82 to the north, RRAD to the west and southwest, FM (Farm-to-Market) Road 991 to the southeast, and improved and unimproved facility roads to the west.

Access to LSAAP is by secure Gates 4 and 7 along U.S. 82 north of the facility. Gate 7, the Main Gate, is located off U.S. 82 and Spur 74 and is the primary access point for vehicle traffic. Four other entrances, Gates 1, 2, 4, and 14 also access U.S. 82. Gate 4 is the main truck entrance to LSAAP entering the facility from Central Avenue, and is also the busiest gate. Post 6 on the west side of the facility provides access between LSAAP and neighboring RRAD. Gate 36 is located on the south end of the facility and formerly provided access from FM Road 991. Gates 37 and 38 are located on the east side of the facility and formerly provided access to unpaved roads to the east.

RRAD-WEP. Three principal highways: U.S. 67, U.S. 82 and I-30 provide access to RRAD. Direct access to RRAD-WEP is from U.S. 82 from a gated access point approximately ½ mile east of Highway 8. There is considerable road frontage associated with RRAD-WEP, but no direct access points have been established other than the north gate on U.S. 82 and the interior access via RRAD. Access to RRAD is through the Main Gate (the former East gate prior to BRAC 95) and the West Gate, along the northern border of the depot, and through the Concord gate, which is located south of Elliot Lake. Access between RRAD from LSAAP is through Post 6 (Ramsauer 2006) (see Figure 4.2-1).

U.S. 82 runs adjacent to the northern boundary of RRAD between Texarkana and New Boston, providing access between Amarillo, Texas, and Montgomery, Alabama. U.S. 67 borders the southern boundary of the depot and connects the cities of Dallas, Texas and St. Louis, Missouri. The interstate system is accessed by I-30, which is less than ½ mile north of RRAD's Main Gate and provides access from the Dallas/Fort Worth area to Texarkana and Little Rock, Arkansas. Texas Highway 8 borders the west boundary of RRAD-WEP and connects U.S. 82 with U.S. 67.

The average daily traffic count for 2004 along U.S. 82 in the vicinity of the RRAD Main Gate was 3,950 vehicles and in the vicinity of the East Gate was 4,100 vehicles. Along I-30 on the stretch between New Boston and Hooks, the 2004 average daily count was 28,000 vehicles (Hutsell 2006).

4.11.1.2 Installation Transportation

LSAAP. Installation infrastructure on LSAAP includes approximately 141 miles of roadway. Many of the roads date back to World War II and the initial construction of the installation. Approximately 32 miles of the roads are paved, and approximately 109 miles of road are gravel. A 32-mile loop that circles the main production areas of LSAAP consists of asphalt streets with ditches. This system was reconstructed in the 1990s. The road system to the south of the loop road consists of gravel surfaced roads with ditches. The roads have been well maintained and are in fair to excellent condition (Sewell 2006). DZI maintains roads on the facility.

RRAD-WEP. The RRAD-WEP road network consists of approximately 46 miles of roads, 43 of which are unimproved. Most roads are unpaved/gravel fire or access roads mostly in fair to good condition, although some are in poor condition. The perimeter road along the northern, western, and southern portions of the BRAC property was paved at one time but is now a gravel surface (Ramsauer 2006). RRAD maintains all roads within the depot. There is no excess capacity on the gravel or dirt roads. Assuming no maintenance, the existing roads will be overtaken by forests within five years (RRRA 2007).

4.11.1.3 Public Transportation

Neither LSAAP nor RRAD-WEP is served by public transportation.

4.11.1.4 Rail

LSAAP. LSAAP is served by rail track provided by Cotton Belt Route Railroad, Union Pacific, and TNER. Approximately 32 miles of railroad track are located on the facility, nine miles of which are still active (all within the installation; no rail service extends onto or off of LSAAP). A rail classification yard is located on the west end of the facility. The rail yard is currently not in use. The condition of the rail is fair to excellent and is currently being leased by LRS, which offers short-term storage of empty cars with a current inventory of 1,500 cars. LRS has performed $1 million worth of repairs to the rail in the recent past (Sewell 2006).

Although the sections of rail leased by LRS are used continuously and have been upgraded, many sections of rail lines accessing the production areas on LSAAP have been abandoned and would require substantial reconstruction efforts to return them to a usable state. Furthermore, a rail spur that runs through the southern portion of LSAAP, crosses RRAD property and connects to the Union Pacific main line in Redwater, Texas has also been abandoned and would require significant upgrades (RRRA 2007).

RRAD-WEP. There is no active rail directly serving RRAD-WEP. TNER rail in this area was removed during the 1990s. However, active rail spurs are located within relative close proximity and could be extended to the area if required (Ramsauer 2006, RRRA 2007). In addition, money is currently programmed to repair the south spur so that it can be brought back into usable condition (Ramsauer 2006). Many of the rail spurs that could serve RRAD-WEP have been out of use for at least 20 years.

Rail service to RRAD is provided by TNER and Cotton Belt Route Railroad (a subsidiary of Union Pacific). Primary access is by rail spurs entering from the north. Union Pacific owns the rail bed for these spurs but leases it to TNER for operations. The TNER system runs from Texarkana to Annona, Texas, but the system has been abandoned from Clarksville to Paris, Texas.

RRAD owns and maintains approximately 52 miles of track. The rail system serves all major operational areas of the depot and is used for transporting large items such as vehicles and returned goods. The track that RRAD uses regularly is maintained, and is therefore in good condition; however, a fair amount of track is in unusable condition.

The south side of the depot is served by the Cotton Belt Route Railroad system, providing service from Redwater, Texas, to Texarkana, Texas-Arkansas in the east and Greenville, Texas, to the west. A spur, owned by RRAD, extends from this system near RRAD-WEP.

4.11.1.5 Air Traffic and Airspace

There has never been airspace utilization at LSAAP.

RRAD had a single visual flight rule helipad that was transferred to RRRA under the BRAC realignment action in 1995. The helipad has been abandoned by RRRA for several years and is currently not in use at this time (Ramsauer 2006).

4.11.2 Consequences

4.11.2.1 Early Transfer Disposal Alternative

Direct. Short- and long-term minor adverse and beneficial effects to transportation infrastructure would be expected on LSAAP and RRAD-WEP. For off-site transportation networks, minor short- and long-term adverse effects would be expected. It is anticipated that early transfer would result in increased traffic and increased usage of transportation infrastructure both on and off the installation. This increase would cause greater wear and tear on existing roadways and possibly other transportation infrastructure, such as the rail lines, thereby causing short- and long-term minor adverse effects both on- and off the installations. Off-site, area roads are operating well below design capacities; therefore, only minor adverse are expected. On site, this minor adverse effect would be offset to some degree, as existing transportation infrastructure would be better maintained and possibly upgraded under this alternative. Thus, beneficial effects would also be expected on both LSAAP and RRAD-WEP at particular locations.

The Army's proposed retention of 1.06 miles of active rail at LSAAP for use by RRAD (as shown on Figure 2.1-1) is anticipated to result in a minor beneficial effect. In order to use this rail to transport large items, the Army would provide regular maintenance, and possibly upgrade this portion of the rail track.

Indirect. Long-term minor adverse effects would be expected near LSAAP and RRAD-WEP. In the long term, disposal of LSAAP and RRAD-WEP may spawn additional economic growth in the region, which could generate additional residential and

commercial traffic within the area and adversely affect traffic flow. However, road networks are operating well below their design capacities; therefore, only minor effects are expected.

4.11.2.2 Traditional Disposal Alternative

***Direct*.** Short- and long-term minor adverse and beneficial effects to transportation infrastructure would be expected on LSAAP and RRAD-WEP. For off-site transportation networks, minor short- and long-term adverse effects would be expected. Effects would be similar to those described under the early transfer disposal alternative, but the effects would occur further into the future.

***Indirect*.** Long-term minor adverse effects would be expected near LSAAP and RRAD-WEP. Effects would be similar to those described under the early transfer disposal alternative, but the effects would occur further into the future.

4.11.2.3 Caretaker Status Alternative

Direct. Long-term minor adverse and beneficial effects would be expected. Caretaker status would result in fewer demands on roads and other transportation elements. Roads would receive less use, and therefore less wear and tear, and traffic would be reduced. Reduced use and maintenance over a prolonged period of caretaker status would result in gradual deterioration of roads. Regular maintenance of the rail retained at LSAAP for use by RRAD would still occur under this alternative. No effects on regional traffic patterns would be expected.

***Indirect*.** No effects would be expected.

4.11.2.4 No Action Alternative

No direct or indirect effects would be expected. Under the no action alternative, the Army would continue operations at LSAAP and RRAD-WEP at levels similar to those occurring prior to the BRAC Commission's recommendations for closure and realignment, including implementation of road and other infrastructure maintenance. Thus, no effects would occur relative to continuation of the Army's mission and conditions in November 2005.

4.11.2.5 Intensity-Based Probable Use Scenario

***Medium-Low Intensity, Direct*.** Long-term minor adverse and beneficial effects would be expected at LSAAP and RRAD-WEP. Medium-low intensity reuse of LSAAP would result in an estimated increase in employees from 300 to 4,400, while medium-low intensity reuse of RRAD-WEP would result in an estimated increase in employees from none as of November 2005 to 1,100. As these figures represent long-term build-out of these facilities, infrastructure investments commensurate with this growth would minimize adverse effects to transportation (RRRA 2007). In the short term, increased demands on the installation's transportation infrastructure could cause greater wear and tear on available infrastructure both on and off the installations.

Furthermore, construction associated with reuse could result in short-term adverse impacts by affecting traffic on the installation properties. Off site, road networks are currently operating at levels well below carrying capacity; therefore, this increase in employment at LSAAP and RRAD would only cause minor adverse effects to regional infrastructure. Furthermore, this increase in traffic would likely spur long-term improvements to infrastructure resulting in some beneficial effects. In addition, depending on the types of uses established, improvements to some of the transportation infrastructure, such as the rail network and gate access and intersection upgrades, may be required. The RRRA's reuse plan addresses requirements for transportation networks at LSAAP and RRAD-WEP, as well as adequate circulation for the projected number of employees (RRRA 2007).

The Army's retention of 1.06 miles of rail at LSAAP for use by RRAD is not anticipated to have an adverse effect on redevelopment and reuse activities at the LSAAP property. The Army's plan to retain the rail at the site does not preclude the next owner of the property from either securing rights to use the rail if desired, or constructing new rail to extend off site.

The ethanol plant modules outlined in the reuse plan are expected to have a minor adverse effect on transportation in the short and long term, as well as beneficial effects in the long term, should they or a similar industrial use be constructed at the site. The railway has 90-pound-per-linear-foot design capacity. If corn is delivered to the ethanol plant module(s) by rail, a study of the module(s)' ability to support such traffic is recommended. According to the reuse plan, it is likely that the installation of new rail ties and ballast will be required (RRRA 2007). Furthermore, the road transportation infrastructure may experience adverse effects as these systems are upgraded over time. Thus, minor adverse effects may occur to the transportation network as construction and ethanol plant operations increase, while these systems are upgraded and replaced to meet increased demand and use. On the other hand, plant construction and operations will necessitate the investment of millions of dollars to upgrade and replace dilapidated transportation systems thereby resulting in an overall beneficial effect in the long term.

***Medium-Low Intensity, Indirect*.** Long-term minor adverse effects would be expected near LSAAP and RRAD-WEP. This reuse scenario will generate additional economic growth in the region, which could result in additional residential and commercial traffic beyond the levels specifically addressed in the reuse plan. This added growth could adversely affect traffic as well. However, road networks are operating well below their design capacities, and new roads, such as the proposed I-69 corridor, are currently being planned for the region; therefore, only minor effects are expected.

***Low Intensity, Direct*.** Long-term minor adverse and beneficial effects would be expected. Use of LSAAP as of November 2005 was characterized as a low, or very low intensity. Low intensity reuse of LSAAP would result in an estimated increase in employees from 300 to 2,200. Furthermore, low intensity reuse of RRAD-WEP would result in an estimated increase in employees from zero to 500. Although this increase is less than that predicted for the MLIR scenario, this increase would still result in greater demands on the installation's transportation infrastructure but to a lesser degree.

***Low Intensity, Indirect*.** Long-term minor adverse effects would be expected. Effects from the LIR scenario are similar to, but less than the effects from the MLIR scenario.

4.12 UTILITIES

4.12.1 Affected Environment

As part of the BRAC realignment of RRAD in 1995, the depot transferred ownership of its water, sanitary sewer, and industrial wastewater utility systems to the RRRA. The water, sanitary sewer, and industrial wastewater utility systems located on LSAAP and RRAD are currently owned by the RRRA and operated by URS, an engineering and facilities management contractor.

The transfer of utility systems to the RRRA included a provision for an easement on RRAD and LSAAP installation property for water, sanitary sewer, and industrial wastewater treatment facilities, including all pipelines, distribution systems, pump stations, valves, manholes, equipment, appurtenances, and related facilities as required for the collection, transmission, treatment, and distribution or disposal of water, industrial wastewater, and sanitary sewage for public and private use (these facilities are listed in Appendix H). The easement extends 15 feet on either side of all existing water and sewer lines, pipelines, appurtenances, related facilities, and improvements and 30 feet around lift stations and pump stations. The easement stipulates, “in the event of disposal of the United States’ underlying fee, these rights and conditions will not transfer with the land.” (USDoA 2002a).

4.12.1.1 Potable Water Supply

LSAAP. LSAAP purchases drinking water, water for fire protection, and industrial process water from Texarkana Water Utilities (TWU). The source of this water is primarily Wright Patman Lake. Two water towers store water for LSAAP: the 200,000-gallon-capacity eastern water tower north of Area P and the 200,000-gallon-capacity western water tower located south of Area A. These water towers are generally in good condition. Water flows from the towers through 16-inch-diameter water mains that generally parallel Fourth Street and Washington Avenue. The main water distribution system consists of 6- to 16-inch-diameter lines that form a loop around the production and administrative areas. From the exterior loop, smaller diameter lines feed into each of the production areas. No water distribution lines are in the igloo areas (U.S. Army 2006b). A concrete-lined, ground-level tank with a storage capacity of 15 million gallons, located in Area Z and originally designed for fire protection, was taken out of service in 1968 and is now used for recreational fishing (U.S. Army 2006a).

There are approximately 50 miles of water distribution pipelines located on LSAAP. DZI maintains the LSAAP water lines, some of which were installed in the 1940s and are considered to be in poor condition (U.S. Army 2006f). In 1992 and 1993, 12-inch and 18-inch polyvinyl chloride (PVC) pipes were installed to upgrade the main loop of the water distribution system (USACE 1998). In 2005, LSAAP consumed 111,249,000 gallons of water for potable and industrial process uses (Sai 2006). Average daily water consumption for LSAAP ranges from approximately 240,000 to 460,000 gallons. TWU can supply LSAAP with 1,100 gallons per minute, and up to 3,300 gallons per minute is available for fire response, as necessary. Furthermore, based on current pipe capacities, TWU could potentially supply up to 5 Mgd of water (RRRA 2007). Additional untreated

water capacity is also available from Lake Wright Patman of up to 100 million gallons per day (mgd) (RRRA 2007).

A secondary source of potable water for LSAAP is Caney Creek Reservoir and the water treatment plant operated by URS in the southeastern portion of RRAD. Water is piped from Caney Creek Reservoir to LSAAP via a 16-inch water main. This source of water would only be used in the case of failure of the primary water source (LSAAP 2002).

RRAD. As described in the section above, the water treatment plant and distribution system that provides potable water for RRAD, located at Caney Creek Reservoir, is owned by the RRRA and is operated by URS. The treatment plant uses conventional (primary and secondary) treatment methods, is in good condition, and meets Texas Surface Water Treatment Rules and USEPA regulations. Treated water is sent to underground clear wells with a combined capacity of 767,000 gallons per day for storage. The design capacity of the treatment plant is three mgd. However, due to equipment limitations at Elliott Creek Reservoir (the pump equipment and pipeline network from Elliott Creek Reservoir to Caney Creek Reservoir is not considered to be reliable), actual existing water supply capacity is approximately one mgd (USACE 1998).

The primary source of water for this system is Caney Creek Reservoir, which has a maximum storage capacity of 1,340 acre-feet (445 million gallons) with a safe yield of one mgd. An alternate water source is Elliott Creek Reservoir, which has a maximum storage capacity of 1,930 acre-feet (621 million gallons) with a safe yield of 1.3 mgd (USACE 1998).

Water from Caney Creek Reservoir is carried through a 16-inch transmission line, which is connected to a network of distribution mains and service lines. This distribution network totals approximately 41 miles of pipelines. Like the system on LSAAP, most of the piping system was built in the 1940s, and consists mainly of cast iron pipe with lead joints. The water supply system also consists of an elevated 500,000-gallon storage tank and a one million gallon ground-level storage tank (USACE 1998).

In FY 2003, RRAD purchased an estimated 216 million gallons of potable water from the RRRA. Water use from this year can be broken down into the following categories: commercial use (57 percent), industrial use (42 percent), and leaks/losses (one percent) (RRAD 2004).

There are no water utilities within RRAD–WEP (U.S. Army 2006b).

4.12.1.2 Wastewater System

LSAAP. Wastewater, including sanitary sewage and industrial wastewater, generated by operations at LSAAP is treated at the sanitary wastewater treatment plant located on LSAAP property, or at one of the IWTP that are owned by RRRA and operated by URS.

The sanitary wastewater treatment plant is located in the middle of LSAAP south of Old Boston Road near the fire pump station. The average daily design capacity of the plant is 1.5 Mgd, but the plant is permitted for peak flows up to 3 Mgd (USACE 1998). The plant is

a conventional trickling filter plant with a single treatment train: one primary clarifier, one trickling filter, one secondary clarifier, and one chlorine contact chamber (USACE 1998). Wastewater from both LSAAP and RRAD is treated at the plant. After treatment, the sewage effluent is discharged to East Fork Elliott Creek, which flows south and eventually empties into Wright Patman Lake (LSAAP 2002, U.S. Army 2006b).

The sanitary sewer collection system serving LSAAP consists of approximately 32 miles of sewer lines, three lift stations (one of which is a RRAD lift station), and two force mains. The main trunk pipes are serviced by URS, and the smaller lines to the production areas are serviced by DZI (U.S. Army 2006b). The sewage system operates primarily by gravity, augmented by lift stations and the force mains (LSAAP 2002). The sanitary sewer lines have been camera surveyed to evaluate their condition in the past, and were not known to have leaked (U.S. Army 2006a). In 2004, oil was found seeping from a sanitary sewer line where it crossed an unnamed creek east of Area I (U.S. Army 2006a). Although the area of contamination was remediated, there is no evidence that any attempt has been made to locate and quantify potentially contaminated soil around points of ex-filtration. Explosive residue and other hazardous chemicals have the potential to be collected in or transported along the industrial and sanitary sewer lines and backfill (U.S. Army 2006a).

Lateral sewer lines, in many areas composed of old clay tile, are in poor condition (Sai, 2006). For parts of the system, the sanitary sewer and storm sewer lines are combined, and the installation sometimes experiences difficulties with infiltration and inflow (stormwater entering into sanitary sewer) (Galloway, 2006). In areas in modified caretaker status (MCS) on the installation, sewer laterals have been plugged (Haltom, 2006). As a result of infiltration problems, no appreciable capacity remains for the existing sanitary sewer wastewater treatment plant, as flows can peak to above three mgd (RRRA 2007). Furthermore, the cracks in the distribution lines may have resulted in subsurface soil contamination in localized areas.

Seven IWTPs on LSAAP, used by LSAAP and RRAD, are regulated under a TPDES permit. Five are pink water[9] treatment plants, one is for heavy metals removal, and another is for lead removal. Five of the plants are currently active, including three plants in Areas F, G, and O that treat pink water, one plant in Area P that handles lead, and one plant in Area G that treats chrome- and pyrotechnic-contaminated wastewater (U.S. Army 2006a). The industrial sewer system was privatized as part of the BRAC realignment of RRAD in 1995, but RRAD maintains two outfalls: one discharging to Panther Creek and one discharging to Wright Patman Lake. These outfalls are covered under the TPDES permit (U.S. Army 2006b). There is currently one active underground industrial sewer system running from Buildings G-5, 11, G-13, and G-33 to the treatment plant at G-130. The underground industrial sewer systems in Areas P and Q (composed of PVC material) are no longer in use today, but still remain underground. The underground lines in Area P have been replaced by an aboveground system. The production line at Area Q burned down, and the industrial sewer system was not replaced (U.S. Army 2006a).

[9] Pink water is wastewater that is contaminated with residues from explosives.

Treated sanitary and industrial wastewater is released into the following permitted primary outfalls (U.S. Army 2006a):

- Outfall 001: Plant "X" (wastewater treatment plant) treated effluent; discharges to Sulphur River below Wright Patman Lake
- Outfall 002: Area "K" Lagoon (oxidation pond) effluent; discharges to a sanitary sewer that feeds into Area X (regulated by Permit No. 02206 and operated by RRRA)
- Outfall 003: Effluent from process wastewater, steam condensate, and groundwater at a daily average flow not to exceed 75,000 gallons; discharges to a sanitary sewer that feeds into Area X (regulated by Permit No. 02206 and operated by RRRA)
- Outfall 004: Stormwater runoff (from the salvage yard and the HEDG) and effluent from steam condensate on an intermittent and flow variable basis; discharges to Lower Red River
- Outfall 005: Stormwater runoff (from the salvage yard and the HEDG) and effluent from steam condensate on an intermittent and flow variable basis; discharges to Wright Patman Lake

RRAD. The wastewater treatment plants serving RRAD are located on LSAAP and are described above. In FY 2003, it is estimated that RRAD discharged approximately 66.7 million gallons of industrial wastewater and 93.8 million gallons of sanitary wastewater (RRAD 2004b).

The sanitary sewer collection system serving RRAD consists of approximately 9.5 miles of 6-inch to 12-inch pipes in a combination of gravity mains and pump/lift stations. The sanitary sewer system collects wastewater and conveys it northerly to a wet well collection reservoir and pump station; then it is conveyed to the wastewater treatment plant.

Other wastewater treatment systems serving RRAD include a septic tank, a 1.2-acre treatment lagoon at Area K, and a 0.58-acre total retention lagoon serving the recreational area at Elliott Lake. The Area K lagoon discharges to Rock Creek (USACE 1998).

Operations on RRAD-WEP area do not generate sewage. Treated wastewater from the City of New Boston's wastewater treatment plant flows into a drainage located within RRAD-WEP area, and eventually flows into Big Creek.

4.12.1.3 Stormwater System

LSAAP. Runoff from rainfall at LSAAP generally follows the slope of the land into drainage ditches, then into creeks and streams leaving LSAAP, and eventually flows into either the Red or Sulphur Rivers (U.S. Army 2006a). Only Areas H, I, and D on the installation have storm sewers; other areas are served by drainage ditches and natural features for stormwater control (U.S. Army 2006a). Storm sewer main lines are primarily

constructed out of concrete and are in good condition; lateral lines are primarily constructed out of older clay pipe and are typically in poor condition. LSAAP holds a TCEQ Industrial Storm Water Multi-Sector General Permit that requires a SWPPP. A SWPPP was most recently prepared for LSAAP in July 2003. The plan identified 31 non-point source discharges requiring annual monitoring. The discharges also must be inspected quarterly, at the time of sampling and annual site compliance evaluation (U.S. Army 2006b). As mentioned above, the installation's sanitary sewers and storm sewers are, in some areas, combined, and the installation sometimes has problems with infiltration and inflow (Sai 2006).

RRAD-WEP. Most of the stormwater that falls on RRAD-WEP flows south through various creeks and intermittent streams located across the installation, which ultimately flow into Big Creek, and exits the installation to the south (U.S. Army 2006b). Like LSAAP, RRAD also holds a TCEQ Industrial Storm Water Multi-Sector General Permit that requires a SWPPP. The most recent plan prepared for RRAD is currently under revision.

The stormwater system serving the main industrial area of RRAD is designed to collect and transport surface runoff. The stormwater system consists of approximately 11,460 linear feet of pipes with various diameters (12 to 54 inches) and one 4-foot by 6-foot box culvert, plus various trenches and ditches. The majority of the pipes are concrete, although a few are made of vitrified clay and corrugated metal. In 2004, approximately 5,439 linear feet of stormwater pipelines were repaired to prevent infiltration of contaminated groundwater into the stormwater system (Parsons 2004).

There are two stormwater monitoring sites located in the northern portion of RRAD-WEP, in the area of the OTC landfill. There are no other stormwater system facilities located in RRAD-WEP area.

Table 4.12-1 lists permits addressing stormwater at LSAAP and RRAD.

Table 4.12-1 Stormwater Permits, LSAAP and RRAD

Permit ID Number	Permit Number	Statute/Agency	Issuance Date	Expiration Date
LSAAP				
8538	TXR05L095	Stormwater/CWA/State	20 August 2001	20 August 2006
9662	TXR158473	Stormwater/CWA/State	12 August 2003	5 March 2008
RRAD				
NA	TX0000132	Stormwater/CWA/State	9 September 2006	NA
NA	TXR05000	Stormwater/CWA/State	14 August 2006	NA
Source: U.S. Army 2006a, U.S. Army 2006b				

4.12.1.4 Energy Sources

LSAAP. Electricity is primarily supplied to LSAAP by the SWEPCO's Bann substation near Leary, Texas, and the New Boston substation; some electricity is also supplied by the Bowie Cass Electricity Cooperative. The 69-kilovolt (kV) supply line serves RRAD and

the town of Hooks in addition to LSAAP. Electrical service enters the installation at the northeastern part of the base along U.S. 82 via overhead lines. The primary electrical distribution system on LSAAP consists of a substation with two 3,750 kilovolt-amperes (kVA) forced air cooled transformers and one 5,000 kVA voltage regulator (LSAAP 2002). The substation is further divided into four primary supply lines serving production and storage areas. Additionally, there are two smaller, government-owned substations located near Area P (990 kVA) and I-30 (500 kVA) (USACE 1998). There are approximately 105 miles of electrical distribution lines on LSAAP. In 1998, the two primary electrical grids (poles and wiring) and the substation were replaced/upgraded. However, the secondary production line electrical system was not upgraded and is considered to be in poor to fair condition since the system dates back to the original 1940s installation (U.S. Army 2006f, Galloway 2006). Additionally, in case of temporary power loss, LSAAP has 30 diesel-powered generators to provide electricity to production areas.

In 2005, LSAAP consumed approximately 12 million kilowatt hours (kWH) of electricity (Sai 2006). The majority of the electricity was supplied by SWEPCO (11,988,000 kWH); Bowie Cass Electricity Cooperative supplied a relatively small amount of electricity (11,880 kWH) (Sai 2006).

In 2005, LSAAP consumed approximately 180,000 million British thermal units of natural gas (Sai 2006). Natural gas is currently supplied from the Centerpoint Energy Gas Transmission pipeline. Gas is piped through approximately 14 miles of gas pipelines to administrative, maintenance, production, and storage areas on LSAAP. Nearly all of the gas transmission lines were replaced in the 1990s; the new transmission lines all have cathodic protection (U.S. Army 2006a).

At LSAAP, 14 boilers provide steam used for building heat and industrial processes. Each of the boilers is fired by natural gas (primary) or fuel oil (alternate), and is rated for production of 30,000 pounds per hour (estimated usage is approximately 20 percent) (Sai 2006). With the exception of the Combustion Engineering boiler in Building Q-36, all of the LSAAP boilers are more than 50 years old, and their condition is fair to poor (USACE 1998, Sai 2006).

Compressed air housed in several large compressor buildings is also used throughout the installation to power equipment for production processes. Condensate from the compressors passes through oil/water separators before discharging to the sanitary sewer (U.S. Army 2006a).

RRAD. The Army currently purchases electric power from SWEPCO. As part of the BRAC realignment of RRAD in 1995, RRAD transferred ownership of its electric utility system to the RRRA. The electricity distribution system on RRAD is operated by SWEPCO. The system includes a 12.47-kV electrical distribution system with approximately 138 miles of overhead electrical lines, 44.5 miles of underground electrical lines, substations and distribution transformers, and 2,000 feet of exterior lighting (Ramsauer 2007) (these facilities are listed in Appendix H). The transfer of the electrical utility system to the RRRA included the provision of an easement for electric facilities including all poles, lines, cables, overhead and underground wires, substations, equipment, appurtenances, and related facilities as required for the transmission and distribution of electric power for

public and private use. The easement extends 15 feet on either side of all existing electric lines, poles, appurtenances, related facilities and improvements, and 30 feet around switching stations and pad-mounted transformers. The easement stipulates, "in the event of disposal of the United States' underlying fee these rights and conditions will not transfer with the land" (USDoA 2002b).

Two electrical transformers serve RRAD and provide a total steady-state power level of 20 kVA and peak power of 25,000 kVA. SWEPCO does not have any known capacity limits for providing electricity (USACE 1998). Other than a high-voltage line that runs across part of the property and power provided to the northwestern truck entrance, there are no additional electrical utilities within RRAD-WEP (Ramsauer 2007, U.S. Army 2006b). There are no other energy-consuming uses on RRAD-WEP.

Natural gas is supplied from the Centerpoint Energy Gas Transmission pipeline. The natural gas system consists of over 20,000 linear feet of pipelines. The pipelines were largely replaced with polyethylene pipe in 1988 and are in good condition (USACE 1998). Small quantities of fuel oil and propane are also used at RRAD. Buildings in remote areas, not served by natural gas, use propane or diesel fuel for heating. Diesel fuel is also used for seven small boilers on the facility (USACE 1998). There are no natural gas or other fuel utilities on RRAD-WEP.

RRAD's primary source of heating is steam. The boiler house, located in Building 336 contains three boilers with a total capacity of 150,000 pounds per hour of steam generation and a maximum pressure of 135 pounds per square inch. During the coldest months of the year, the boilers run at approximately 80 percent capacity (USACE 1998). The steam system burns low-sulfur coal and scrap wood (Ramsauer 2007). No boilers are located on RRAD-WEP.

4.12.1.5 Communications

Telecommunications lines enter both installations at multiple locations. A central telecommunications switch in Building 4 at RRAD and a subordinate remote switching unit in Building I-4 at LSAAP provide telecommunications for both installations. In the event of equipment or software failure at RRAD's central switch in Building 4, the LSAAP remote switching unit is capable of providing internal service to LSAAP. Trunk lines connect to the Army's communication system at LSAAP Building I-4 and RRAD Building 4 (USACE 1998). Some limited phone service extends to RRAD-WEP, and some old utility poles not currently in use still stand on the property (Moore, 2006).

A fiberoptic service has been added to both installations, as well as upgrades to wiring, routers, and switches to modernize telecommunications. Windstream is the local carrier and provides support to the LSAAP-owned system (RRRA 2007).

4.12.1.6 Solid Waste

LSAAP. The installation maintains an Integrated Solid Waste Management Plan for LSAAP, which was updated in March 2002. An overview of solid waste storage and disposal practices at LSAAP are outlined below.

Lone Star operates a municipal, non-hazardous (Type 1) solid waste landfill under TCEQ Permit Number 1898. The landfill opened in 1994 and is in full compliance with Subtitle D regulations (DZI undated). The landfill is permitted to accept municipal and Class II industrial wastes, including residential and commercial solid waste, office waste, rubber, water treatment plant non-hazardous sludge, scrap wood, and material contaminated with up to 1,500 parts per million (ppm) total petroleum hydrocarbons (LSAAP 2002, U.S. Army 2006a). The landfill covers approximately 60 acres and is located southwest of Area A near the boundary between LSAAP and RRAD. The landfill is lined with a 60 mm polyethylene liner and a 2-foot clay liner (U.S. Army 2006a). This landfill is approximately 10 percent full, and assuming the current LSAAP usage rate, has disposal capacity for the next 100 years. Currently, the landfill only accepts waste from LSAAP; however, the landfill could accept municipal waste from offsite.

An active Class II landfill (known as the Eastern Active Landfill, or OBR landfill) is also located near the eastern boundary of LSAAP south of Area AA. This landfill is registered (non-permitted) for the disposal of miscellaneous inert refuse (construction/demolition debris). Additional cells may be added to this landfill, and therefore the capacity of the landfill may be expanded as needed (U.S. Army 2006a). This landfill is registered for asbestos disposal and, approximately eight years ago, RRAD disposed of large quantities (approximately one million pounds) of stockpiled asbestos at the landfill (U.S. Army 2006a). This landfill does not have a leachate collection system.

There are three inactive landfills at LSAAP that have been closed, and are discussed in Section 4.13, Hazardous and Toxic Substances.

Explosive materials are treated at the high-explosive burning ground (HEBG) or the HEDG. Materials received at the HEBG are burned the day they are received (weather permitting). Residues from the burns are stored in covered drums until laboratory analysis has been completed and disposition has been determined. Four pads at the HEBG are authorized to accept 14,500 pounds per day (total for all four units) of explosives for burning. The HEBG also includes a container storage area (35,200 gallon capacity). The HEDG is used for treatment of high explosive and high explosive-contaminated wastes that cannot be safely disposed of at the HEBG. Up to 5,400 pounds per day of explosives are authorized to be destroyed at the HEDG. The high explosive wastes are detonated under conditions that are designed to contain and direct the release of explosive energy and ensure destruction of the waste material (LSAAP 2002). Further information about the HEBG and HEDG may be found in Section 4.13, Hazardous and Toxic Substances.

Some igloos on LSAAP also store solid waste.

With respect to recycling and salvage, scrap metal is salvaged on LSAAP and sold; otherwise, the installation does not perform other recycling. Used oil is recycled off-site (Haltom and Galloway, 2006).

RRAD. RRAD and its tenants generate waste from various activities involved in performing the missions of the installation (including vehicle rebuild, storage, and demilitarization of ammunition, and receipt and storage of supplies). These uses do not extend to RRAD-WEP and no solid waste is generated on the excess property from these

uses. Some minor solid waste disposal takes place as the result of the operation of a small guard shack and truck terminal on RRAD-WEP.

4.12.2 Consequences

4.12.2.1 Early Transfer Disposal Alternative

***Direct*.** No short-term effects, but minor long-term adverse and beneficial effects to utilities would be expected on LSAAP. In the short term, DZI and its tenants on LSAAP consume most of the utilities. Under the early transfer alternative, the ownership of the property would change, but the activities and utility consumption would not change in the short term on LSAAP. On RRAD-WEP, most of the land is undeveloped and is not serviced by any utilities, so transfer of ownership would not change utility consumption or result in utility operational changes in the short term. Thus, there would be no effect from closure on RRAD-WEP.

RRRA would become responsible for maintenance of all utility systems. RRRA is the current owner of the wastewater treatment plant and some sewer lines on LSAAP. RRRA also owns the electrical distribution system on RRAD. These easements would remain in effect and RRRA, or the companies operating these facilities, would not be denied access to these facilities as a result of disposal.

In the long term, minor beneficial and minor to moderate adverse effects to the utility systems may occur. Minor beneficial effects will occur as private ownership and market forces enable badly needed upgrades to utility systems, including upgrading sewer lines, industrial and wastewater treatment plant facilities (including the potential construction of a new wastewater treatment plant), electrical systems, stormwater systems, and power infrastructure. On the other hand, minor to moderate adverse effects may occur if market forces and redevelopment outpace to some degree infrastructure upgrades that are needed. Through careful planning by RRRA and others, stressors to system capacity will be minimized to ensure that sufficient utility service is provided to current and new tenants into the future. Some of the infrastructure concerns that will require upgrades in the long term are outlined below.

Most of the utility infrastructure on LSAAP was constructed in the 1940s. These systems have been repaired and upgraded to some extent, but certain systems are badly in need of upgrading or entire replacement. Of particular concern is the degree of infiltration impacting the wastewater treatment plant that services RRAD, the RRCP, and LSAAP. This system is at capacity principally due to infiltration caused by leaking pipes across the service area (RRRA 2007).

On LSAAP, the main electrical distribution system was recently upgraded; however, the tie circuits and radials off of these main lines are of older construction. Most of the ties and laterals are unsuitable for use in a privatized utility system due to age, lack of maintenance, and the outdated standards used for construction (RRRA 2007). These substandard circuits will require removal and disposal after closure. These electrical lines and circuits may contain hazardous materials that would require removal and disposal in accordance with federal and state laws. In addition, excess electrical transformers

containing PCBs are currently stored in building A-8 and in the I-39 yard. All transformers not slated for reuse needs should be disposed of under the environmental remediation program (RRRA 2007).

Any additional utility upgrades necessary for reuse would be the responsibility of the RRRA and would occur after disposal.

***Indirect*.** Short-term minor adverse effects on LSAAP may result from the early transfer disposal alternative because the acceleration of the disposal may make it difficult to replace, remove, or remediate the electrical and sewer lines. No effects are expected on RRAD.

4.12.2.2 Traditional Disposal Alternative

Direct. No short-term effects, but minor long-term adverse and beneficial effects to utilities would be expected on LSAAP. No effects would be expected on RRAD-WEP. Effects would be similar to those described under the early transfer disposal Alternative, but the effects would occur further into the future.

***Indirect*.** No effects would be expected for either LSAAP or RRAD-WEP. Under traditional disposal, there would be more time to assess the exact condition of utilities and any necessary repairs or upgrades to existing utilities could be performed with limited impact to on-site operations.

4.12.2.3 Caretaker Status Alternative

***Direct*.** Minor long-term adverse effects would be expected on LSAAP, while no effects would be expected on RRAD-WEP. Caretaker status would result in decreased demands on installation infrastructure, which could extend the life of some utility systems, particularly the landfill. However, most utility systems (water treatment, wastewater treatment, electricity distribution) are designed to be continually used over the life of the system and suspending use of the system would likely do more harm than good. Reduced use and maintenance of utility systems could result in gradual deterioration over time, resulting in a long-term adverse effect.

Indirect. No effects would be expected for either LSAAP or RRAD-WEP

4.12.2.4 No Action Alternative

No direct or indirect effects would be expected. Under the no action alternative, the Army would continue operations at LSAAP and RRAD-WEP at levels similar to those occurring prior to the BRAC 2005 Commission's recommendations for closure and realignment; thus, no effects would occur relative to continuation of the Army's mission and conditions in November 2005.

4.12.2.5 Intensity-Based Probable Use Scenario

Medium-Low Intensity, Direct. Long-term minor beneficial and adverse effects would be expected on LSAAP and RRAD-WEP. Under MLIR, utility consumption would be higher than under the existing conditions. Most of the utility systems serving LSAAP and RRAD were constructed in the 1940s. These utilities have been repaired and maintained as needed, but have never been fully modernized (RRRA 2007). Furthermore, infrastructure is relatively nonexistent on RRAD-WEP, although it would likely be economically feasible to service parcels near roadways where infrastructure is nearby. Overall, substantial new utility work would be required to accommodate reuse, as further described below.

Currently, water for LSAAP operations is supplied by TWU. Under normal conditions TWU supplies 1,100 gallons of water per minute to LSAAP. Increased development on LSAAP would require the purchase of additional water. TWU has sufficient capacity to add heavy water users resulting from the RRRA reuse of LSAAP (RRRA 2007). The 30-inch water main that supplies water to LSAAP is large enough to supply up to five Mgd of treated water (RRRA 2007). In addition, approximately 100 Mgd of water is available by permit from Wright Patman Lake. Water conveyance systems on LSAAP would have to be improved and reconfigured to accommodate the additional water needs, as many of the water distribution lines are in poor condition. The main water distribution lines were constructed in the 1990s and run in a loop that is generally bounded by Fourth, Fifth/Sixth, Lincoln, and Washington Streets. This main line would be suitable to serve new industrial development in this area, but significant new line work would be needed in the production areas. Construction would likely occur over time as new water lines were needed.

A new water distribution system would be required to be constructed on RRAD-WEP to serve the areas that will undergo redevelopment, as no water distribution facilities current exist on the property.

Wastewater from both RRAD and LSAAP is treated at the sanitary wastewater treatment plant or at one of the IWTP. The sanitary wastewater treatment plant is currently operating at approximately 33 percent capacity, and could theoretically accommodate treatment of additional effluent. Aging cracked sewer lines allow stormwater inflow and infiltration, however, which results in peak flow rates up to three Mgd (approximately twice the capacity of the treatment plant) during rain events. With the current inflow and infiltration issues, the wastewater treatment plant has little or no capacity to treat additional wastewater. In addition, the wastewater treatment plant has reached the end of its serviceable life and upgrades and/or replacement is needed. An upgrade or replacement of the wastewater treatment plant would result in beneficial impacts to site utilities in that the potential for Infiltration/Inflow will be reduced. When upgrades/replacement occurs, future effluent should be directed north of LSAAP into the Red River Basin, instead of south to Wright Patman Lake, which currently provides drinking water to the City of Texarkana (RRRA 2007).

Sewer line replacement/upgrades and construction of new sewer line would be needed at both LSAAP and RRAD-WEP to accommodate future development. Some sewer

replacement/repair may occur during disposal, but additional work would likely be required as part of the reuse to accommodate new development.

On LSAAP, stormwater systems are only located in areas H, I, and D. Stormwater from other areas flows through natural drainages. Adding more impermeable surfaces associated with development outside of areas H, I, and D would require construction of additional stormwater facilities. Stormwater generated on RRAD-WEP currently flows through natural drainages into Big Creek. Stormwater drainage patterns on most of RRAD-WEP would not change as a result of redevelopment. New stormwater systems would be required to be constructed in areas proposed for new impermeable development (e.g., the proposed industrial/ warehouse/ commercial area in the northwestern portion of the installation), however. New stormwater facilities on both installations would be required to comply with applicable water quality laws and permits. Maintenance of existing ditch systems and other stormwater facilities would be the responsibility of the RRRA.

Implementation of the MLIR scenario would result in increased demand for electricity on LSAAP. The SWEPCO electrical lines and the Centerpoint Energy Natural Gas Transmission pipeline could accommodate the increased demand. The primary electricity distribution system on LSAAP has recently been upgraded and could accommodate the additional demand. However, replacement of the secondary electrical distribution system and the natural gas distribution system would be required. Currently RRAD-WEP does not have electrical or natural gas distribution facilities. Those facilities would be required to be constructed as a part of redevelopment.

A relatively new fiber optic telecommunication system serves both RRAD and LSAAP and is serviced by Windstream. Current wiring, routing, and switching is sufficient to provide most anticipated services under the reuse scenario; however, additional bandwidth may be required by users providing logistical services (RRRA 2007). Some system modifications may be needed under the reuse scenario. Currently, there are no telecommunications lines within RRAD-WEP, and the construction of new lines would be required as part of the new development.

LSAAP operates a municipal solid waste landfill that has ample capacity to accommodate the additional waste from new development at both LSAAP and RRAD. In addition, the reuse plan includes proposed construction of a hazardous waste landfill that would be used to dispose of waste generated by redevelopment.

The ethanol plant modules outlined in the reuse plan are expected to have a minor to moderate adverse effect on infrastructure in the short term, as well as beneficial effects in the long term, should they or a similar industrial use be constructed. The RRRA's reuse plan notes that, with the exception of a small section of potable water pipes constructed in the 1990s and concentrated in the installation's northwest corner, almost all existing water pipes, natural gas lines, sewer lines, roads, and railways were installed in the 1940s and will require replacement or extensive repair. As previously discussed, water and wastewater management will also require major upgrades to the infrastructure, including construction of a new wastewater treatment plant. Thus, short-term to long-term minor to moderate effects to infrastructure may occur as existing systems are stressed during

construction and build-up of operations, while other systems are replaced or updated. On the other hand, such requirements will necessitate the investment of millions of dollars to upgrade and replace dilapidated systems thereby resulting in an overall beneficial effect in the long term.

Medium-Low Intensity, Indirect. No indirect effects to utility systems would be expected. Economic growth generated from redevelopment at LSAAP and RRAD-WEP could generate additional infrastructure and utility demands for the areas, but the long-term change and capacity of the regional systems are expected to be sufficient to address growing needs.

Low Intensity, Direct. Minor beneficial and adverse effects are anticipated. The low intensity reuse of LSAAP and RRAD-WEP would result in additional development and increased employment on both installations. This would result in an increase in utility usage; however, the usage would be less than that under the MLIR scenario. Existing utility systems would be able to better accommodate this scenario because utility demand would be less than under the MLIR scenario. Most utility distribution systems, however, would still require repairs, upgrades, and possible replacement to accommodate the anticipated demand.

Low Intensity, Indirect. No indirect effects to utility systems would be expected.

4.13 HAZARDOUS AND TOXIC SUBSTANCES

4.13.1 Affected Environment

Information in this section is largely based on information contained in the *Environmental Condition of Property Report* prepared for LSAAP (LSAAP ECP) (U.S. Army 2006b), and the *Environmental Condition of Property Report* prepared for the Red River Army Depot (RRAD-WEP ECP) (U.S. Army 2006a).

4.13.1.1 ECP Designation

LSAAP. The LSAAP ECP identified 72 parcels in accordance with the criteria described in the ASTM 5746-98 Standard Classification of Environmental Conditions of Property Area Types for Defense Base Closure and Realignment Facilities. CERFA directs federal agencies to evaluate all base closure and realignment property to identify uncontaminated parcels, and allows the transfer of remediated parcels when the successful operation of an approved remedy has been demonstrated. Of the approximately 15,546 acres comprising LSAAP as of 2005, 13,548.14 are designated as Categories 1, 2, 3, or 4; the remaining 1,997.86 acres are designated as Categories 5, 6, or 7 (see Figure 4.13-1).

Areas that were designated as Category 1, 2, 3, or 4 are considered suitable for transfer or lease, subject to the applicable qualifiers. Areas that were designated as Category 5, 6, or 7 may not be suitable for transfer by deed. Table 4.13-1 shows the breakdown of categories, by acreage and definition.

Table 4.13-1 LSAAP ECP Designations (Total Area of LSAAP 15,546 Acres)

Category	Definition	Area (acres)
1	Areas where no release or disposal of hazardous substances or petroleum products has occurred, including no migration of these substances from adjacent areas.	13,136.50
2	Areas where only releases or disposal of petroleum products has occurred.	11.57
3	Areas where release, disposal, and/or migration of hazardous substances has occurred, but at concentrations that do not require a removal or remedial action.	322.58
4	Areas where release, disposal, and/or migration of hazardous substances has occurred, and all removal or remedial actions to protect human health and the environment have been taken.	77.49
5	Areas where release, disposal, and/or migration of hazardous substances has occurred, and removal or remedial actions are underway, but all required actions have not yet been implemented.	145.42
6	Areas where release, disposal, and/or migration of hazardous substances have occurred, but required removal or remedial actions have not yet been initiated.	0
7	Areas that are not evaluated or require additional evaluation.	1,852.44
Note: If complete asbestos surveys have not been conducted, facilities constructed before 1985 are assumed to contain asbestos. If complete LBP surveys have not been conducted, facilities constructed before 1978 are assumed to contain lead. These parcels were qualified for ACMs, LBP, PCBs, and MEC based on information from record reviews, interviews, and visual inspections.		

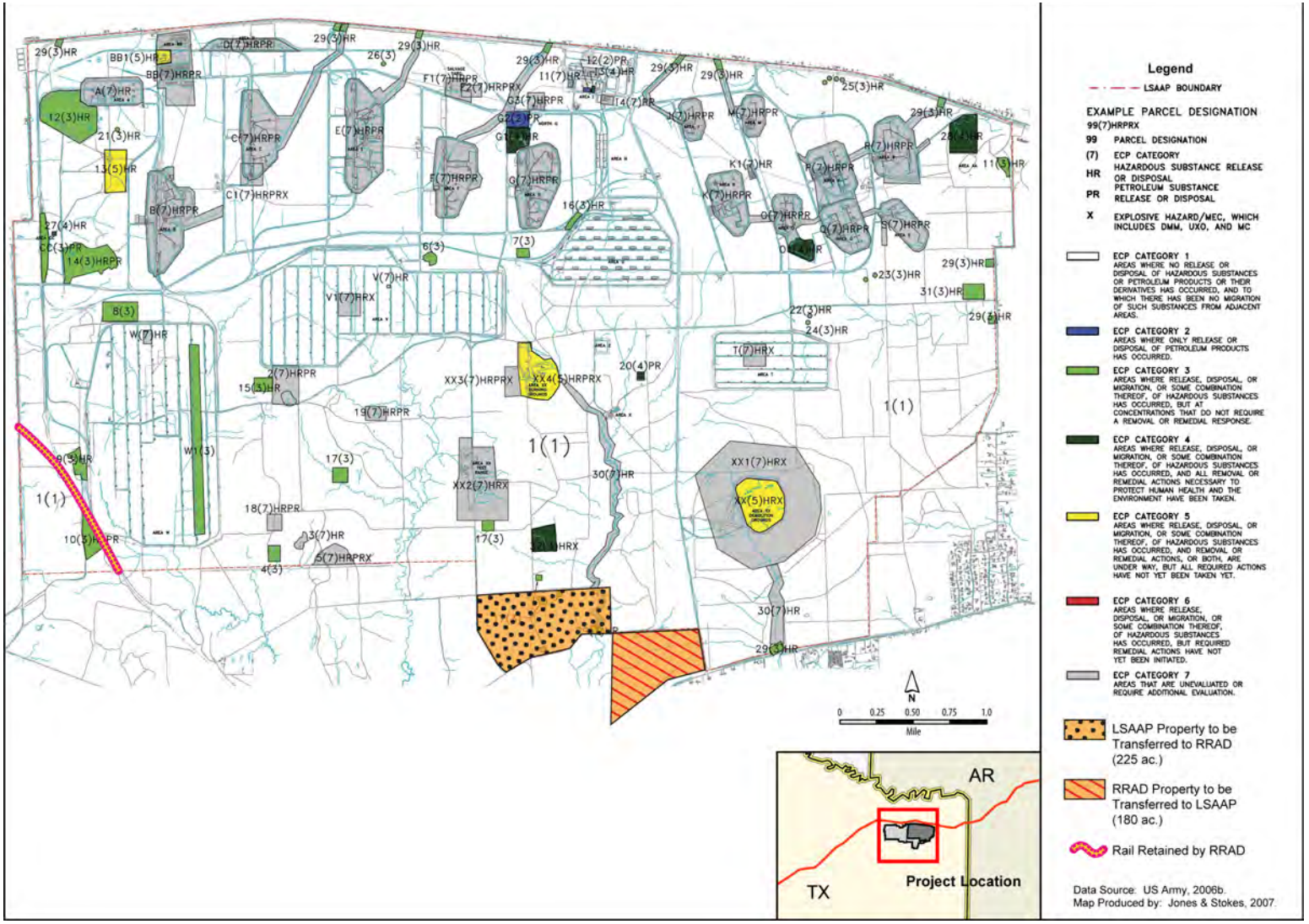

Figure 4.13-1 LSAAP ECP Categories

RRAD-WEP. The RRAD-WEP ECP identified ten parcels in accordance with the criteria described in the ASTM 5746-98 Standard Classification of Environmental Conditions of Property Area Types for Defense Base Closure and Realignment Facilities. Of the approximately 3,800 acres, 3,618.43 are designated as Categories 1, 2, 3, or 4; the remaining 216.53 acres are designated as Categories 5, 6, or 7 (see Figure 4.13-2).

Areas that were designated as Category 1, 2, 3, or 4 were considered suitable for transfer or lease, subject to the applicable qualifiers. Areas that were designated as Category 5, 6, or 7 may not be suitable for transfer by deed. Table 4.13-2 shows the breakdown of categories by acreage and definition.

4.13.1.2 Storage and Handling Areas

LSAAP is divided into 27 separate areas. The production areas (Areas B, C, E, F, G, J, K, M, O, P, Q, R, and S) support, or have supported in the past, load assembly and pack operation of ammunition items. Areas not used for production munitions (including Areas A, D, H, I , T, U, V, W, X, Y, Z, AA, CC, and XX) are used for various storage of inert materials, munitions, raw materials, administrative functions, support functions, landfills, and munitions and components destruction areas. Areas B, C, D, E, and G have also been used for demilitarization and/or renovation of various munitions.

LSAAP is a RCRA large-quantity generator, and manages hazardous waste in accordance with Permit No. HW-50292-001, for Industrial Solid Waste Management. This permit was originally issued in 1992 and will expire in 2013. The authorized RCRA permitted units at LSAAP include seven container storage areas, the HEDG, and HEBG (Pads 1 through 4). Hazardous waste facilities at LSAAP include the HEBG (Solid Waste Management Units [SWMU]16), the Demolition Area, and Building P-82.

The RCRA-D permit (#MSW-1898) was issued for the subtitle D landfill that serves LSAAP. The permit was originally issued in 1993 and updated in 2004. There is no expiration date, and the permit is valid until the landfill is closed.

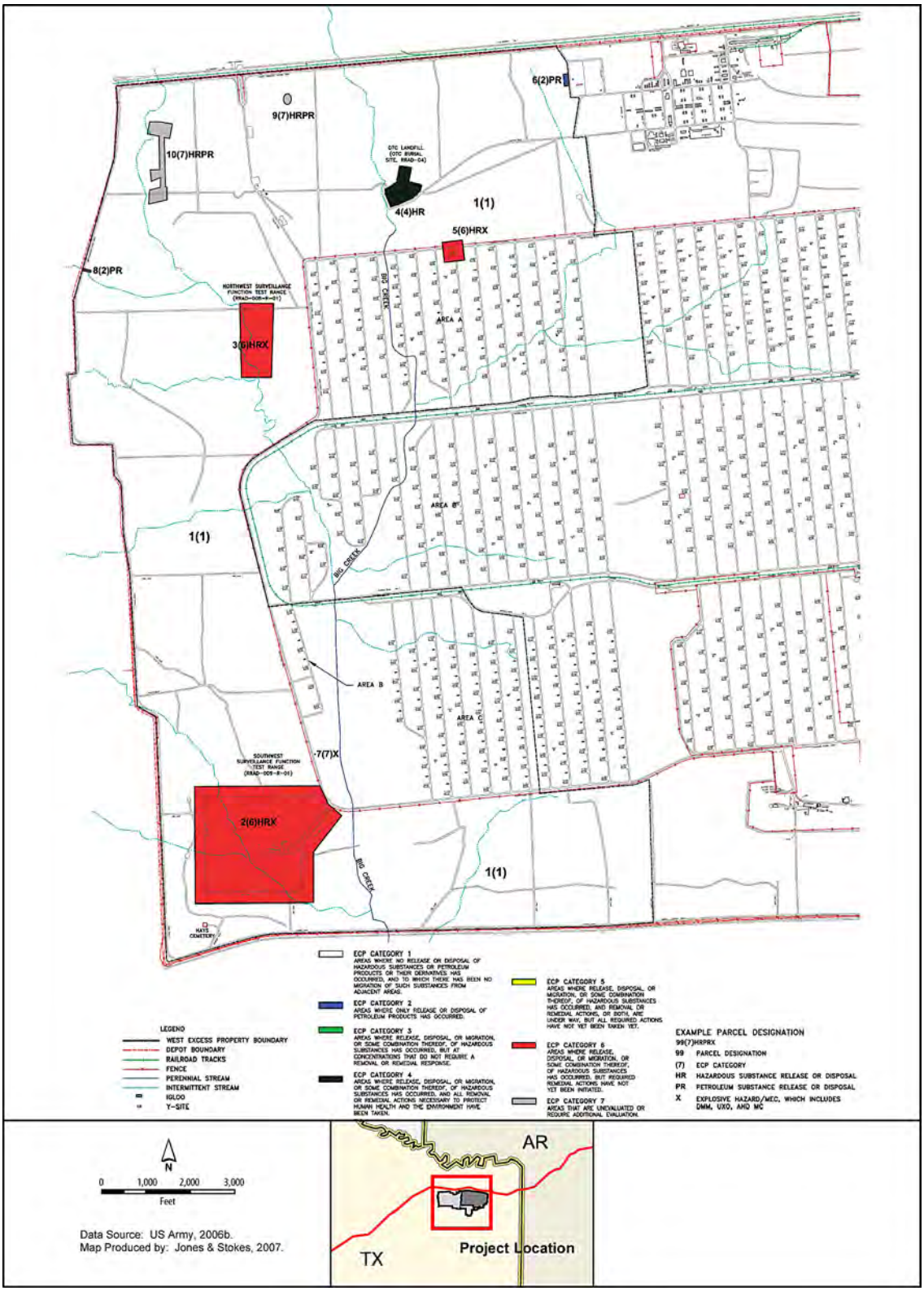

Figure 4.13-2 RRAD ECP Categories

Table 4.13-2 RRAD ECP Designations (Total Area of RRAD 3,835 Acres)

Category	Definition	Area (acres)
1	Areas where no release or disposal of hazardous substances or petroleum products has occurred, including no migration of these substances from adjacent areas. Breakdown: • Forested land (approximately 2,055 acres) • Other vegetated areas (approximately 505 acres) • Munition storage (approximately 1,048 acres)	3,608.45
2	Areas where only releases or disposal of petroleum products has occurred.	0.90
3	Areas where release, disposal, and/or migration of hazardous substances has occurred, but at concentrations that do not require a removal or remedial action.	0
4	Areas where release, disposal, and/or migration of hazardous substances has occurred, and all removal or remedial actions to protect human health and the environment have been taken.	9.08
5	Areas where release, disposal, and/or migration of hazardous substances has occurred, and removal or remedial actions are underway, but all required actions have not yet been implemented.	0
6	Areas where release, disposal, and/or migration of hazardous substances have occurred, but required removal or remedial actions have not yet been initiated.	205.14
7	Areas that are not evaluated or require additional evaluation.	11.43

Notes: If complete asbestos surveys have not been conducted, facilities constructed before 1985 are assumed to contain asbestos. If complete LBP surveys have not been conducted, facilities constructed before 1978 are assumed to contain lead. These parcels were qualified for ACMs, LBP, PCBs, and MEC based on information from record reviews, interviews, and visual inspections.

The RCRA Facility Assessment, conducted in 1992, identified releases or potential releases that require further investigations: 500 SWMU and five Areas of Concern (AOC). This RCRA Facility Assessment assessed the conditions of surface water, groundwater, surface soils, and subsurface soils. Areas of investigation included production areas, landfills, open burning areas, open detonation area, and maintenance and support areas. Of the 500 SWMUs, 279 were active and 221 were inactive. Eleven SWMUs were listed as RCRA-regulated.

The five AOCs have been addressed through various environmental programs, as described in the ECP report for LSAAP (U.S Army 2006b).

Hazardous Waste Container Storage Igloos T-2-1, T-3-2, and T-4-2 are used to store hazardous explosive-contaminated or explosive reactive waste. The igloos have concrete floors and are covered, enclosed, and locked. Each igloo has a maximum capacity of 216 drums. No liquid waste is stored in these igloos.

There are seven IWTPs on LSAAP. Five IWTPs are used for the pre-treatment of pinkwater (i.e., water that has come in contact with explosives) located on the facility. Areas C (inactive), E (closed), F, G, and O are not operated on a continuous basis and have automatic controls. One IWTP in area P (building P-78) treats lead-contaminated wastewater on a “batch”-type basis. The plant has spill control curbing around its perimeter and is not operated on a continuous basis. The IWTP in Area G treats chrome

and pyrotechnic-contaminated waste also on a “batch”-type basis in addition to the pink water system.

RRAD is a RCRA large-quantity generator, and manages hazardous waste in accordance with Permit No. HW-50178-000, for Industrial Solid Waste Management, issued in 1988 and renewed in 1995 and 2001; the permit will expire in 2011. Operations on the installation include tactical vehicle maintenance, training of maintenance forces, base support to the Red River Industrial Complex Missions, and ammunition storage and timber management.

The closed OTC Landfill (OTC Burial Site, RRAD-04) is the only authorized RCRA unit located within the RRAD-WEP. The OTC Landfill operated from 1942 to approximately 1982, and was used for several different disposal purposes. The compliance monitoring plan requires at least 30 years of post-closure care due to hazardous waste closed in place.

Other storage within RRAD-WEP includes:

Area A - 97 igloos built to store finished ammunitions

Area B - 6 igloos built to store finished ammunitions

Area C - 56 igloos built to store finished ammunitions

4.13.1.3 Hazardous Waste Disposal

LSAAP utilizes the following methods of hazardous waste disposal:

High Explosive Burning Ground Area. The HEBG Area is used to thermally treat various explosive and explosive-contaminated wastes. Explosive-contaminated liquids and sludges are burned in elevated metal pans that are lined with refractory material. Materials received at the HEBG are burned on the day received, weather permitting, or they are stored in XX-97 (a covered building with spill control curbing). Burn residue is stored in closed drums until EP Toxicity testing is completed. Hazardous residue is transported off site to a permitted facility. The on-grade metal pans used for burning are covered when not in use to prevent accumulation of rainwater.

High Explosive Demolition Ground Area. The HEDG Area is used to thermally treat high explosive and high explosive-contaminated wastes that cannot be safely disposed of at the HEBG. The wastes are detonated under conditions that are designed to contain and direct the release of the explosive energy and ensure destruction of the waste material.

There are 2 active landfills and 12 abandoned landfills within the boundaries of LSAAP; these are discussed in the following section.

4.13.1.4 Site Contamination and Cleanup

Contaminated Sites LSAAP

The Installation Action Plan (IAP) outlines the multi-year restoration program for a facility. It is focused on contamination resulting from past activities, and is funded by the Environmental Restoration, Army (ER,A) budget account. As indicated in the 2006 IAP for LSAAP, 58 sites were originally identified by the program. Of those, 14 were eliminated because they were not ER,A eligible (because they were part of ongoing operations). Ten are active Installation Restoration Program (IRP) sites. Most of the IRP sites are related to associated SWMUs or AOCs identified in the Corrective Action Requirements of the RCRA Part B Permit. Primary contaminants of concern in the production areas and open burning areas are explosives and metals. Past operations at LSAAP have resulted in the generation of metals and explosive-contaminated wastes in landfills and open burn/open detonation areas. Low levels and explosives have been found in the groundwater at several sites (LSAAP 2006a).

Table 4.13-3 lists sites considered “Response Complete” in the IAP program. Of these, 15 sites (shaded orange) are deemed to require additional work, either because they were deferred for not being ER,A-eligible or because the potential for risk under a property transfer action still exists. In addition, seven sites (shaded yellow) have encumbrances or may have if transferred.

The full facility RCRA Facility Investigations (RFI) (Phases I and II) were conducted per RCRA requirements. Due to concerns that chemicals from the source material at the site may be contaminating the surrounding environment, the ODA was designated a Superfund site in 1987 and placed on the NPL. The source material poses a low-level health and ecological threat, and remedy controls that involve excavation pose safety hazards for site workers. Remedial action for the ODA, including surface removal of MEC and demolition debris, was completed in 2002. The ODA was covered with a soil cap, leaving some buried (including unexploded) MEC in place. The Record of Decision for the ODA was signed in 1999. The USEPA declared LSAAP-017 Construction Complete in 2002. The final Closeout Report was submitted to the USEPA for NPL deletion in 2004.

The sites investigations are detailed in the IAP. Sites that require ongoing monitoring are presented in Table 4.13-4.

Table 4.13-3 Sites Considered Response Complete in the IAP (2006) Program

Site	Description	Comment
LSAAP – 003	Eastern Active Landfill	Not ER,A eligible
LSAAP –004	Eastern Inactive Landfill	No significant contamination found Deed listing
LSAAP -005	Paint Filter Site	Soil removed, no encumbrances noted
LSAAP – 008	Abandoned Landfill 2	No encumbrances noted, but visible waste present
LSAAP – 010 SWMU 010	Abandoned Landfill	No encumbrances noted, but contains construction debris
LSAAP – 11 SWMU – 11	Abandoned Landfill	No encumbrances noted
LSAAP–12 SWMU – 12	Abandoned Landfill	No encumbrances noted
LSAAP – 13 SWMU – 13	Abandoned Landfill	No encumbrances noted
LSAAP – 14 SWMU – 14	Abandoned Landfill	Construction and demolition only. No encumbrances noted
LSAAP – 15	Road Oil Burial Site	No encumbrances noted
LSAAP – 19 AOC -1	Creeks, Streams, Drainage	No encumbrances noted
LSAAP – 022	Container Storage Area T-4-2	Not ER,A eligible
LSAAP – 23 SWMU 19-24	Chemical Burial Site	Not found during PA/SI
LSAAP – 27	Container Storage Area T-3-2	Not ER,A eligible
LSAAP – 28	Container Storage Area T-2-1	Not ER,A eligible
LSAAP – 29	Container Storage Area P-78	TCEQ approved
LSAAP – 31	Salvage Yard	Not ER,A eligible
LSAAP – 35	RR Classification Yard (RFI-AOC 4)	No sign of release
LSAAP -37	Chrome Plating Area (Site 20)	TCEQ approved
LSAAP -38	Area W Wells (SWMU 38-44)	Wells not located
LSAAP -39	Bulk Fuel Storage Area	Currently in LUST program
LSAAP -40	Container Storage Area A-8	Not ER,A eligible
LSAAP -44	Wells and Cisterns	No evidence of release
LSAAP -45	Cistern VII (SWMU 45)	TCEQ approved
LSAAP -46	Cistern II (SWMU 46)	TCEQ approved
LSAAP -47	Cistern III (SWMU 47)	TCEQ approved
LSAAP -48	Cistern IV (SWMU 48)	TCEQ approved
LSAAP -53	Cistern VI (SWMU 53)	No encumbrances noted
LSAAP -54	Cistern VIII (SWMU 54)	No encumbrances noted
LSAAP -67	RDX Pit B-46	TCEQ approved
LSAAP -73	RDX Pit K-2 (SWMU 73)	Soil removed
LSAAP -75	K-15 South and K-15 North	TCEQ approved
LSAAP -76	Landfill Near Area W Two	Deed recordation, waste in place

LSAAP -77	**Landfill Near Area W Three**	**Deed recordation, waste in place**
LSAAP -78	**Area Behind Building F-7**	**TCEQ approved**
LSAAP -79	**Area Behind Building F-11**	**TCEQ approved**
LSAAP -80	**Area Behind Building F-13**	**TCEQ approved**
LSAAP -100	**P-29 Area**	**Suspect Perchlorate**
LSAAP -201	**RDX Pits, Settling Pits and WW Sumps**	**Lead-contaminated water**
LSAAP -422	**B-8 Battery Washdown Sump**	**Deed recordation, Encumbered**
LSAAP -498	**Sanitary Sewer System**	**TCEQ approved**
LSAAP -499A	**Pinkwater Treatment Facs and Auxiliary Equipment**	**Not ER,A eligible**
LSAAP -499C	**Lead Wastewater Treatment Fac P-78 and Auxiliary Equipment**	**Not ER,A eligible**
LSAAP –499D	**Chrome Wastewater Treatment Fac G130 and Auxiliary Equipment**	**Not ER,A eligible**
LSAAP – 499E	**Industrial Sewer Lift Station P-78 and Pipes**	**TCEQ approved**

Notes:
PA/SI = Preliminary Assessment/Site Investigation; RDX = Research Department Composition X;
Orange = Sites deemed to require additional work (deferred because not ER,A-eligible or because of the potential for risk under a property transfer action).
Yellow = Sites with existing or likely future encumbrances.

RRAD IRP Sites with Ongoing Monitoring

One IRP site, the former OTC Landfill (RRAD 04), is located within RRAD-WEP. This site was used from 1942 through 1982 for several different purposes. Prior uses included a Wastewater Treatment Plant and an Industrial Waste Batch Treatment Plant, a drum storage area, and finally a landfill. Closure of this site was completed with the installation of a RCRA cap in 1985. A corrective measure plan was developed in 2004 for the groundwater monitoring wells surrounding the area. Land Use Controls are required for this site to restrict groundwater use and digging, and long-term monitoring will continue indefinitely.

Table 4.13-4 LSAAP IAP Sites with Ongoing Monitoring

Site Designations	Current Status	Description	Investigation History
LSAAP - 002	Ongoing long-term monitoring	Inactive Western Sanitary landfill 26 acres	RFI Phase I RFI Phase II
LSAAP - 009	Fence and access restrictions	Abandoned Construction Landfill	RFI Phase I RFI Phase II
LSAAP - 016	Active site Ongoing groundwater monitoring	HEBG 12 acres	PA/SI RFI Phase I RFI Phase II
LSAAP - 017	Soil cover maintenance, deed recordation, long-term monitoring	Old Demolition Area 12 acres	RFI Phase I RFI Phase II Data gap study NPL Site
LSAAP - 024	Deed recordation Access controls	Abandoned Landfill 5 acres	RFA RFI Phase I RFI Phase II
LSAAP - 033	Ongoing groundwater sampling	Area G Ponds	RFA RFI Phase I RFI Phase II NOV 1997
LSAAP - 034	Ongoing sampling Groundwater monitoring Cap maintenance	Area O Ponds	RFI Phase I
LSAAP - 016	Active site Ongoing groundwater monitoring	HEBG 12 acres	PA/SI RFI Phase I RFI Phase II

Notes:
PA/SI = Preliminary Assessment/Site Investigation; RDX = Research Department Composition X; RFI = RCRA Facility Investigation

Range Inventory and MMRP

DoD established the Military Munitions Response Program (MMRP) under the ER,A Program and Defense Environmental Restoration Program to address MEC, discarded military munitions, and munitions constituents located on current and former military installations where suspected releases occurred prior to 30 September 2002. Operational military ranges, permitted munitions disposal facilities, or operating munitions storage ranges are not eligible for the MMRP. Three ranges are listed on the Active/Inactive Range Inventory and no MMRP sites are on LSAAP, as shown in Table 4.13-5. Two MMRP sites are located on RRAD-WEP, as shown in Table 4-13.6.

Table 4.13-5 LSAAP Range Inventory

Range Designation/ Size	Uses	Status
Area X-X Demolition Ground 131.6 acres	Heavy demolition range; firing points; 12 variable locations; regulated under RCRA subpart X permit.	Active under restrictions. Outer installation boundary perimeter access control.
Area X-X HE Burning Ground 42.78 acres	Flames operation range; firing points; variable; regulated under RCRA subpart X permit. Burns explosives powder bags and flash metals.	Active under restrictions. Outer installation boundary perimeter access control.
Area X-X Testing Range 57.96 acres	Research, Design, Testing, and Evaluation RDT&E range; firing points; variable; combat pistol range; firing points – 4	Active under restrictions Fence access control. Perimeter fence with gate.
Source: IAP 2006; Self 2008		

Table 4.13-6 RRAD Range Inventory

Range Designation/ Size	Uses	Status
NW Surveillance Function Test Range RRAD -10 20 acres	Used between 1953 and 1960	In MMRP Program Non Active Soil Remediation and MEC Clearance to be completed. LTM will include Land Use Controls
SW Surveillance Function Test Range RRAD - 09 105.77 acres	Used between 1948 and 1960	In MMRP Program Non Active Soil Remediation and MEC Clearance to be completed. LTM will include Land Use Controls
Source: IAP 2006		

4.13.1.5 Special Hazards

Asbestos – Every building on LSAAP contains suspect ACMs. A survey was conducted at LSAAP to identify all ACMs in 1992. It also prioritized abatement efforts. However, asbestos abatement of friable materials has not been completed. The LSAAP ECP identifies areas that have been slated for asbestos abatement.

Storage igloos that contain ACMs are located on RRAD-WEP. Igloo doors may also contain asbestos. No other area associated with RRAD-WEP is suspected to contain ACMs.

Lead and Lead-Based Paint – No LBP survey has been performed at LSAAP. It is assumed that facilities constructed prior to 1978 contain LBP. A survey based on the date of building construction has been performed, but no abatement activities have been undertaken, nor has any effort been made to evaluate drip lines. No effort has been made to evaluate potential lead contamination around buildings. In addition to lead in paint,

some buildings on LSAAP included lead floors (for certain types of load line buildings that handled explosives) (U.S. Army 2006b).

Doors on igloos located on RRAD-WEP are reported to contain LBP. No abatement has been known to have been conducted.

Polychlorinated Biphenyls – All 482 transformers at LSAAP have been sampled for PCBs. Eighty-three were identified as having concentrations of PCBs greater than 50 ppm. The remaining 399 transformers have fluids with a PCB content of less than 50 ppm. There have been minor leaks, and one cleanup of transformer fluids. Units containing more that 500 ppm have been removed. Building A-8 on LSAAP is currently used for storage of PCBs. The building is covered, enclosed, locked, and managed as regulated under the TSCA program.

Surveys of equipment on RRAD-WEP have not indicated PCB concentrations greater than 50 ppm. No historical documents identify PCB-containing items or spills in RRAD-WEP.

Radon – LSAAP conducted a radon survey at 58 sampling locations, from May 1990 through May 1991. Laboratory results showed the presence of less than 4.0 picoCuries per liter of air (pCi/L), which is the USEPA Action Level for radon. The highest levels were reported at 2.7 and 2.5 pCi/L for two separate locations within Building I-5. With the exception of these locations, all other locations had reported concentrations below 1.0 pCi/L (U.S. Army 2006b).

A radon survey was conducted at RRAD (including RRAD-WEP) in 1989. The survey indicated that radon is not a concern at RRAD.

Storage Tanks Underground and Aboveground – LSAAP originally had 23 permitted underground storage tanks (USTs) and three heating oil tanks; these have been removed. There is currently one UST in use at LSAAP, at Area BB-27, the Pesticide Storage Mixing Facility, containing pesticide equipment washdown water. Six former tank sites were listed in the Texas Leaking Petroleum Storage Tank database. Five of the cases were completed and closed. One site, G38 (LPST 91312), remains open with TCEQ. Groundwater was impacted by the tank release and is currently being monitored quarterly by TCEQ within the guidelines of its leaking UST program. That tank has been removed.

LSAAP currently has 33 aboveground storage tanks (ASTs), five of which are currently active. Three of the five are used at the vehicle refueling station (I-72). Two 10,000-gallon tanks are used for gasoline, and one 10,000-gallon tank is used for diesel. The remaining two active ASTs are located near F-29 and consist of one 6,000-gallon tank and one 10,000-gallon tank containing road oil (MC-30 and RC-250) for asphalt (U.S. Army 2006b).

There are 17 oil-water separators located on LSAAP. All but one, located at C-79, are active.

There are no active USTs at RRAD-WEP. No historic USTs or oil/water separators were identified within RRAD-WEP. Two 7,000-gallon ASTs were located in the northeast area of RRAD-WEP, west of the former OTC Hospital area. It is estimated that the tanks were removed in the late 1950s to early 1960s when the OTC Hospital was deactivated. Underground piping associated with these tanks is still present in RRAD-WEP.

Pesticides and Herbicides – Pesticides are used and stored at the Pesticide Storage Building BB-27 on LSAAP. An Integrated Pest Management Plan (IPMP) is in place to regulate storage and use of these materials. The building was designed to meet applicable OSHA and USEPA requirements. Spill clean-up and disposal procedures are listed in the IPMP. American Dehydrated Foods, a tenant on LSAAP, is required to adhere to the conditions in the LSAAP IPMP.

RRAD also maintains a Pest Management Plan (PMP) that addresses pesticides and herbicides. There is no documentation that PMP chemicals are stored within RRAD-WEP.

Medical and Biohazardous Waste – A health clinic facility on LSAAP performed employee screening and monitoring in the past (until the mid 1980s). The building for the former clinic still stands at LSAAP; no action has yet been taken to characterize any remnant wastes at the site, although sampling will take place prior to transfer.

No medical or biohazardous wastes have been identified in RRAD-WEP, including the northeast area of RRAD-WEP, in the area of the former location of the OTC Hospital.

Radionuclides – LSAAP held two Nuclear Regulatory Commission (NRC) Licenses for sealed sources related to non-destructive testing for quality control and related measurements. Two of the more significant isotopes have been removed, and closure documentation is available. The permits were not renewed, but activities continue under an authorization from the NRC for non-licensed (x-ray producing) radiological materials. No work involving depleted uranium munitions has ever been conducted on the property. Based on the methods of OB/OD disposal practices as LSAAP, burial of radioactive material is not a concern.

RRAD has four current NRC licenses, and held three that have expired. No permitted radiological activities or NRC licenses are associated with RRAD-WEP.

Spills – LSAAP has a Spill Prevention, Control, and Countermeasure (SPCC) Plan in place. The latest revision to the SPCC Plan was made in 2002. Training for spill response is given to facility personnel on an annual basis. Employees are not permitted to work in unsupervised areas involving hazardous waste until they have completed the required training.

4.13.1.6 Ongoing Remedial Actions

Site closure requirements are addressed as a condition of all RCRA Part B permits. These include, but are not limited to, the decommissioning of production facilities and associated infrastructure. For LSAAP, Site Assessments on range and production locations are required to be conducted prior to closure. Ongoing monitoring commitments,

including some long-term commitments, and periodic review of monitoring data will also be required. Other areas that will require further investigation at LSAAP are presented in the sections below.

Explosives Residues

Residues containing explosive components may be present in production areas at LSAAP (such as in buildings, ventilation systems, vacuum systems, sewer lines, and dispensing lines), but have not been characterized or quantified. Also, the physical structures may have explosive residue embedded in walls, ceilings, duct work, sewer lines, settling tanks, and sumps and equipment located within the building. Additionally, the concrete slab areas around expansion joints in the floors, piping, and/or utilities located on or under the slab, and the area under the slab itself may contain residual explosives that present a potential explosive hazard. Any and all of these materials should be evaluated during building renovation or demolition, and prior to disposal of any materials.

Many production buildings on LSAAP indicate explosive decontamination levels (1X, 3X, and 5X). Assigned decontamination levels only apply to the equipment remaining in the buildings at LSAAP. Explosive residue classification for LSAAP buildings is described in the LSAAP ECP.

Mercury in Facilities/Construction

No evaluation has been done on mercury in facilities and construction components, such as vapor lights mercury switches, at LSAAP.

4.13.2 Consequences

4.13.2.1 Early Transfer Disposal Alternative

The Army has characterized the existing environmental conditions at LSAAP and RRAD-WEP in the separate ECP reports (U.S. Army 2006a, 2006b). Each facility was divided into parcels (72 parcels at LSAAP and 10 parcels at RRAD-WEP). These parcels were further evaluated and assigned a score of 1 through 7 based on ECP area types. Category 1 is assigned to an area where no release or disposal of hazardous substances or petroleum products has occurred (including no migration of these substances from adjacent areas). Categories 1 through 4 are considered suitable for transfer.

Category 7 is assigned to areas that have not been evaluated or that require additional evaluation. The ECP reports (U.S. Army 2006a, 2006b) assigned a Category 7 to 1,825.44 acres on LSAAP and 11.43 acres at RRAD-WEP.

CERCLA 120(h) requires that, prior to transfer, necessary remedial actions be completed or in place and proven to be operating properly and successfully. Under the ETA in CERCLA 120(h)(3)(C), property can be transferred before all necessary remedial actions have been completed (Categories 5-7). The CERCLA covenant deferral request must be approved by the state Governor for sites not listed on the NPL, or the Governor and the EPA Administrator for sites listed on the NPL.

Regardless of the type of disposal, the Army is required to characterize contamination, define the appropriate remediation in coordination with regulatory agencies, and conduct the required remediation. The new use must be consistent with the remedial constraints, land use restrictions, and the protection of human health and the environment. The new owner may agree to perform all required environmental remediation and monitoring, waste management, and environmental compliance activities, or the Army may choose to continue to conduct or contract remedial and other activities. The Army will provide notification on the storage of hazardous substances for one year or more in quantities greater than or equal to 1,000 kg or the hazardous substances CERCLA reportable quantity (whichever is greater). MEC-contaminated property could be transferred to non-federal entities prior to the completion of remedial activities under the early transfer alternative (in that case, LUCs would be employed until remedial activities are complete); otherwise, MEC-contaminated property can only be transferred after remedial activities have been completed. If additional remedial actions are needed beyond the transfer date, the government is responsible for only those that are attributable to activities of the federal government prior to transfer.

DoD policy with regard to LBP and ACMs is to manage these substances in a manner protective of human health and the environment and in compliance with all applicable laws. DoD will manage LBP at LSAAP and RRAD in accordance with the provisions of the Residential Lead-Based Paint Hazard Reduction Act of 1992 (Title X of Public Law 102-550), a relatively conservative standard given that there are no residential buildings on LSAAP or the RRAD-WEP, and no residential uses anticipated as part of redevelopment and reuse. These laws require federal property constructed between 1960 and 1978 that is being transferred for residential use to be inspected for LBP and related hazards, and that the results of such inspections be provided to prospective purchasers or transferees.

Before transfer or conveyance, the Army would remove or encapsulate all friable asbestos that posed a risk to human health per Army policy (Office of the Secretary of Defense 1994). Transfer or conveyance documents would notify owners or lessees of the property that they would be responsible for any future ACM remediation found to be necessary.

Direct. Minor adverse effects would be expected. Remediation of hazardous substances would continue in accordance with approved plans in concurrence and consultation with appropriate regulatory agencies. Necessary land use restrictions will be put in place to ensure protection of human health and the environment as remediation efforts continue in accordance with regulatory agencies. Furthermore, parcel-specific land use restrictions will be placed on parcels that are still under investigation and clean-up. Early transfer could actually facilitate accelerated clean-up and demolition efforts at LSAAP and RRAD-WEP, thereby providing a long-term beneficial effect.

Timber harvesting activities are expected to be widespread across the excess properties at both LSAAP and RRAD-WEP, and to have the potential to disturb soil at or near ongoing cleanup sites. Measures to avoid these sites, such as the establishment of buffer zones of up to 100 feet in width around sites undergoing cleanup, would be implemented as part of timber harvesting activities. In addition, construction, demolition, timber harvesting, renovation, and enhanced operational activities will increase the potential for

minor spills of petroleum products, including fuels and oils. Implementing a spill prevention program would minimize this potential.

With regards to the transfer of land between LSAAP and RRAD (as shown on Figure 4.13-1), some ECP Category 3 sites exist on the area of land to be transferred to RRAD, but these areas do not require further cleanup actions and as a result no effects are expected.

Indirect. Minor long-term beneficial and adverse effects may occur. Although existing remedial programs will continue under either federal or non-federal ownership, under non-federal ownership additional resources may be available to renovate or remove facilities that are in disrepair, as well as remove debris and cracked subsurface pipes. Thus, market forces may provide indirect beneficial effects from the removal of residual sources of contaminants and enhance environmental quality in the long term as compared to status quo conditions. On the other hand, long-term minor adverse effects may occur as enhanced industrial use of LSAAP and RRAD-WEP may lead to the increased potential for incidental spills and/or releases of hazardous substances, which could have localized adverse effects.

4.13.2.2 Traditional Disposal Alternative

Direct. No effects would be expected. This alternative is similar to early transfer, and would require the continuance of ongoing remedial and monitoring actions; however, because of the additional time for transfer, additional monitoring and closure will be completed. The long-term remedies must continue to be monitored and shown to be operating properly and successfully. Until that determination is made and agreed to by all parties, the property cannot be transferred. This alternative would require the disclosure and commitment of ongoing remedial actions. The Army would take the necessary remedial action(s) to protect human health and the environment in accordance with all applicable federal, state, and local laws. Future site assessment, closure, and decommissioning of production, treatment, and storage and disposal areas would be negotiated.

Before transfer or conveyance, the Army would remove or encapsulate all friable asbestos that posed a risk to human health, and include language in conveyance documents to notify owners or lessees of the property that they would be responsible for any future ACM remediation found to be necessary, as described above under the early transfer disposal alternative.

Indirect. Minor long-term beneficial and adverse effects may occur. As compared to early transfer disposal, remedial programs and redevelopment would occur over a longer period, but the effects would be similar.

4.13.2.3 Caretaker Status Alternative

Direct. Remedial effects that would occur during caretaker status would result in minor beneficial effects. Storage and use of hazardous materials would decline to a minimal level. Furthermore, unused storage, treatment, disposal, and production areas would be

decommissioned in accordance with applicable federal, state, and local regulations. The decreased storage and use of hazardous substances would result in long-term beneficial effects relative to status quo operating conditions. In any event, remediation of hazardous substances would continue in accordance with approved plans in concurrence and consultation with appropriate regulatory agencies. Furthermore, ACMs, LBP, PCB equipment, and radiological materials would be subject to Army policies and requirements.

Indirect. Minor adverse effects would be expected. ACMs, LBP, and PCB equipment are still located in structures. Certain studies and renovations that would have otherwise taken place may not be initiated for idle production and support facilities, resulting in long-term adverse effects relative to status quo operating conditions.

4.13.2.4 No Action Alternative

No direct or indirect effects would be expected. Under the no action alternative, the Army would continue operations at LSAAP and RRAD-WEP at levels similar to those occurring prior to the BRAC 2005 Commission's recommendations for closure and realignment, including implementation of ongoing remedial programs required under CERCLA and RCRA. Thus, no effects would occur relative to continuation of the Army's mission and conditions in November 2005.

4.13.2.5 Intensity-Based Probable Use Scenario

Medium-Low Intensity, Direct. Minor adverse and minor beneficial effects would be expected. As previously discussed, the Army will take all necessary actions to ensure the protection of human health and the environment before transfer of property for reuse. In general, medium intensity use of LSAAP and RRAD-WEP would result in increased capital investments for final closure, demolition, and upgrade of facilities, which could accelerate long-term beneficial effects associated with clean-up actions. On the other hand, construction, demolition, timber harvesting, renovation, and enhanced operational activities will increase the potential for minor spills of petroleum products, including fuels and oils. Implementing a spill prevention program would minimize this potential. Furthermore, increased volumes of hazardous wastes would be generated by renovating or demolishing buildings that contain ACMs, LBP, PCBs, or other hazardous substances (e.g., explosive dusts that have accumulated over the years in the production areas). Use of buildings and structures on the property would require minor quantities of hazardous materials, such as cleaning products, lubricants, and fuels. In any event, federal, state, and local regulations will govern all aspects of demolition and future use of hazardous substances, thereby minimizing the potential for further contamination of environmental media and ensuring the protection of human health and the environment.

The ethanol plant modules outlined in the reuse plan are expected to have a minor adverse effect on waste management and hazardous waste generation, should they or another similar industrial use be constructed at the site. The ethanol industry is generally considered a "green industry" and often creates efficiencies by reusing waste products. The corn that is used in the distillation process is typically dried to a 10 percent moisture content level and sold as an animal feed known as "distiller grain." Plant modules of the

size contemplated at LSAAP (50 MGY generators) typically generate approximately 150 tons of distiller grain annually.

Carbon dioxide (CO_2) created as a byproduct of the distillation process is often considered a low value byproduct and is vented into the atmosphere. However, the USEPA now views it as a pollutant of concern because of its possible contribution to global warming. Ethanol producers are increasingly selling CO_2 to third parties for liquefaction and resale to the food industry. Plant modules of the size contemplated at LSAAP (generating approximately 50 MGY of ethanol fuel) could each generate upwards of 150,000 tons of raw CO_2 annually, and CO_2 processing facilities may be operated adjacent to the ethanol plants (Badger State Ethanol 2007). A CO_2 processing facility may be constructed as part of the ethanol plant modules described in the RRRA's reuse plan, and would assist in offsetting potential impacts related to CO_2 emissions.

Such plants typically produce approximately 4,000 pounds of primarily calcium carbonate scale annually, which is cleaned from equipment periodically and sent to a landfill, several of which already exist on the site. Such plants also will generate minor amounts of petroleum wastes, spent oils, degreasers, solvents, and other wastes associated with heavy machinery operation, which would be handled by permitted hazardous waste haulers and disposal companies that service other tenants in the area.

Medium-Low Intensity, Indirect. Long-term minor beneficial effects would be expected. In localized areas, enhanced renovation and debris disposal may prevent future degradation of soils from leaching heavy metals and other substances. Accelerated renovation and remediation of potential sources may reduce the potential future release of residual contamination.

Low Intensity, Direct. Short- and long-term minor adverse effects would be expected. Effects would be similar to those discussed under MLIR, but of a lesser degree.

Low Intensity, Indirect. Long-term minor beneficial effects would be expected. Effects would be similar to those discussed under MLIR, but of a lesser degree.

4.14 CUMULATIVE EFFECTS SUMMARY

4.14.1 INTRODUCTION

In this section, the cumulative effects of the proposed alternatives are identified. Cumulative impacts are considered those that result from the incremental effects of an action when considering past, present, or reasonably foreseeable future actions, regardless of the agencies or parties involved. In other words, cumulative impacts can result from individually minor, but collectively significant, factors occurring over time as they may relate to the installation properties and the entire ROI.

This section summarizes potential cumulative impacts for each alternative, and within each resource area as appropriate. For most resources, the analysis area is the same as introduced in the resource-specific consequences section. The geographic boundaries of the analysis vary, depending on the resource and potential effects. If different, the analysis area is specifically defined under each resource section. Cumulative impacts are considered for the 15-year period of the RRRA's initial time frame for implementing redevelopment at LSAAP and RRAD-WEP.

4.14.2 CUMULATIVE ACTIONS

Planned and ongoing development in the ROI includes development associated with several industries and commerce centers, including the New Boston Industrial Park, the International Paper Sawmill facility, and the RRCP. Although most of the land in the county is rural, some farmland is being converted for urban uses in cities near LSAAP and RRAD, specifically in Texarkana. Commercial development along I-30 has extended westward from the urban center of Texarkana in recent years. The greatest demand for residential and commercial development, however, is generally confined to the area (suburban fringe) within approximately five miles of Texarkana.

The largest proposed or planned developments in the ROI currently are, by far, the LSAAP and RRAD-WEP reuse and redevelopment actions. According to the reuse plan (RRRA 2007), the large size of the property at LSAAP exceeds the ROI's capacity to absorb the land for job-generating purposes. As a result, LSAAP will be marketed to a larger set of end users who may not be in the ROI, but who would consider the site a positive business location. In contrast to the LSAAP property, the RRAD-WEP property is largely untouched, and does not include any existing production-related structures, utilities, or major infrastructure improvements. As such, the property is not positioned to support development in the near future.

In addition to business development on LSAAP and RRAD-WEP, the reuse plan (RRRA 2007) identifies the potential for new business development and associated facility operations in the immediate vicinity of LSAAP and RRAD-WEP. For example, an ethanol module that is cellulose-based may be located in the area, either on LSAAP or RRAD-WEP, or possibly at another location nearby. Furthermore, either one or both corn-based ethanol plant modules that are envisioned in the reuse plan could be placed either on the LSAAP or RRAD-WEP parcels, or at a location nearby. In that case, the effects analyzed and discussed in Section 4.0, Affected Environment and Consequences, may be considered cumulative, given that any or all of the three modules may or may not actually

be constructed on the LSAAP or RRAD-WEP parcels. However, to be conservative, the effects of these plants were analyzed collectively as if they were to occur on either LSAAP or RRAD-WEP.

4.14.3 ALTERNATIVES OVERVIEW

4.14.3.1 Early Transfer Disposal

Under the early transfer alternative, cumulative minor beneficial and adverse effects are anticipated for land use, aesthetics and visual resources, noise, water resources, socioeconomics, and transportation. Cumulative moderate adverse effects are anticipated for air quality and biological resources, and cumulative significant beneficial effects are anticipated for socioeconomics. No cumulative effects are anticipated for geology and soils, cultural resources, utilities, and hazardous and toxic substances.

Land Use. Long-term minor beneficial and adverse cumulative effects are anticipated for land use under the early transfer alternative. Land use patterns in the areas of the installation would be altered, and the integration of the installation properties with the surrounding communities would result in more wide-ranging and regional land use changes. These changes would likely stimulate economic growth and enhanced quality of life in the community.

Minor adverse effects could also be expected because the intensity of this development scenario could be higher overall than that in surrounding communities. In addition, depending upon how disposition of the properties takes place, redevelopment could take place in an uneven or fragmented fashion, impeding the orderly or rational redevelopment of installation properties. An influx of new employees associated with construction and new developments in the area of the installation excess properties could result in an increased demand for new housing and associated services, and could place stress on existing infrastructure in the area. For further details, see the discussion of potential cumulative land use effects related to implementation of the reuse scenarios, below.

Aesthetics and Visual Resources. Short- and long-term minor adverse cumulative effects are also expected for visual and aesthetic resources under early transfer disposal. Preservation of the scenic landscape and natural aesthetics at LSAAP and RRAD-WEP would depend on, for example, the number of mature trees preserved and the amount of surface disturbance. For further details, see the discussion of potential cumulative aesthetics and visual resources impacts related to implementation of the reuse scenarios, below.

Air Quality. Short-term moderate adverse cumulative effects are expected under the early transfer alternative. Cumulative air quality impacts occur when multiple projects affect the same geographic areas at the same time or when sequential projects extend the duration of air quality impacts on a given area over a longer period. Ozone precursor emissions associated with engine exhaust from construction equipment and vehicles would contribute slightly to areawide and regional air quality conditions. Long-term moderate adverse cumulative effects would be expected as a result of increased activity at both LSAAP and RRAD-WEP, including operational emissions and increased traffic

flow. Disposal of LSAAP and RRAD-WEP may also stimulate additional economic growth in the ROI, which could generate additional emissions from traffic and industry operations within the area. These cumulative effects are not expected to rise to the level of significance, given the status of the ROI as an attainment area for air emissions, and given that any new sources will be regulated and permitted by the TCEQ. For further details, see the discussion of potential cumulative air quality impacts related to implementation of the reuse scenarios, below.

Noise. Minor long-term adverse cumulative effects would be expected for the early transfer disposal alternative, from noise impacts to residential areas located along public roads serving LSAAP and RRAD-WEP, due to increases in construction and other employment and corresponding traffic.

Water Resources. Minor short- and long-term cumulative adverse effects would be expected under the early transfer alternative. These effects would occur as a result of direct and induced economic growth and development that will generate increased construction within the watershed, increases in impervious surface within the watershed, increased timber harvesting activities, increased water usage from key regional water sources, and increased wastewater discharge. These impacts would have the potential to affect areas beyond the installation properties boundaries at the watershed level. However, the effects are expected to be minor because erosion and sediment control and other best management practices would routinely be employed during timber harvesting, construction, demolition, and renovation activities, and because the impacts would be spread over a very large land mass over many years.

Biological Resources. Short- and long-term adverse moderate cumulative impacts are expected to occur as a result of early transfer disposal. Increased timbering could result in moderate adverse effects to regional forest resources and associated ecological communities, including loss of large quantities of high-quality, historically important communities that once were widespread across the region. Implementation of existing measures such as state-recommended forest management practices, industry standards, and conservation of high-quality habitat and riparian/wetlands buffer zones would serve to reduce these effects to a minor level.

Socioeconomics. Significant beneficial and minor adverse cumulative effects on the sociological environment and economic development would be expected to occur under early transfer. Direct jobs would be created through implementation of reuse objectives, generating new income and increasing personal spending. Such spending generally creates secondary jobs, increases business volume, and increases revenues for schools and other social services. However, if reuse were not implemented, any negative economic effects from the realignment and reduction in force at LSAAP and RRAD under caretaker status would remain. This situation could lead to minor to negligible induced adverse cumulative effects for the ROI, including reduced income generation, reduced business volume, reduced housing demand, out-migration, and less funding for schools and other services. For further details, see the discussion of potential impacts on the sociological environment and economic development related to implementation of the reuse scenarios, below.

Transportation. Long-term minor adverse cumulative effects would be expected near LSAAP and the RRAD-WEP as a result of the early transfer disposal alternative. Disposal of LSAAP and RRAD-WEP and reuse may stimulate additional economic growth in the region, generating additional residential and commercial traffic within the area, which may adversely affect traffic flow, and may result in some deterioration of road networks. Road networks are currently operating well below their design capacities, however (RRRA 2007); thus, only minor cumulative effects are expected.

The Army's retention of 1.06 miles of rail at LSAAP for use by RRAD is not anticipated to result in a cumulative adverse effect on redevelopment and reuse activities at the LSAAP property, or rail connections between the LSAAP property and other sites. The Army's plan to retain the rail at the site does not preclude the next owner of the property from either securing rights to use the rail if desired, or constructing new rail to extend off site.

4.14.3.2 Traditional Disposal

Under the traditional disposal alternative, cumulative impacts would be very similar to those described above for the early transfer alternative, but would occur further into the future.

4.14.3.3 Caretaker Status

Under caretaker status, long-term minor cumulative beneficial effects would occur with respect to land use, aesthetics and visual resources, air quality, noise, water resources, biological resources, certain elements of the sociological environment, transportation, and utilities. Reduced facility operations will result in decreases in mission activities, resulting in fewer point and non-point emissions, reduced water usage, and reduced wastewater generation within the watershed and region. With respect to economic development, caretaker status would result in minor cumulative adverse effects within the ROI, as job loss and decreased expenditures associated with closure would have some effect on the overall economy and economic development. This reduction will in turn result in long-term minor beneficial cumulative effects to transportation and utilities as demand will decrease slightly within the region.

4.14.3.4 No Action Alternative

The no action alternative would result in no cumulative effects. Under the no action alternative, the Army would continue operations at LSAAP and RRAD-WEP at levels similar to those occurring prior to the BRAC Commission's recommendations for closure and realignment. Thus, no effects would occur relative to continuation of the Army's mission and conditions in November 2005.

4.14.3.5 MLIR and LIR Reuse Scenarios

Under MLIR and LIR scenarios, minor beneficial and adverse cumulative effects would be anticipated for land use, aesthetics and visual resources, noise, water resources, socioeconomics, and transportation. Moderate adverse cumulative effects would be anticipated for air quality and biological resources, and significant beneficial effects would

be anticipated for socioeconomics. No cumulative effects would be anticipated for geology and soils, cultural resources, utilities, and hazardous and toxic substances. In general, effects that would take place under the LIR scenario would similar to, but less intense than, those under the MLIR scenario.

Land Use. Under the reuse scenarios, long-term minor beneficial and adverse cumulative effects would be expected. Under reuse, the intensity of redevelopment would be above the current use of the property, and thus would change the land use patterns in the region being developed. Development of the LIR, as well as MLIR scenarios, would likely involve an increase of development and investment capital in the ROI. Implementation of the reuse plan may stimulate further development and alteration of land use in the area that could support economic growth and enhanced quality of life in the community. The proposed redevelopment could also have the effect of better integrating the property at LSAAP into surrounding communities, because the proposed industrial/warehousing, business and commercial uses associated with redevelopment would be more consistent with surrounding land uses than the existing ammunition manufacture and associated operations.

Minor adverse impacts could be expected under the LIR and MLIR reuse scenarios. Depending upon how disposition of the properties takes place, redevelopment could take place in an uneven or fragmented fashion, impeding the orderly or rational redevelopment of installation properties. In addition, minor adverse impacts could result because the intensity of development could be higher overall than that in surrounding communities. The level of employment represented by the LIR and MLIR scenarios would not be consistent with the levels of employment in nearby communities such as New Boston or Hooks, for example. While the existing regional labor market would be able to supply some of the employees represented by this projection, it is likely that other employees would commute or relocate to the area; these employees could potentially increase demand for new housing and associated services, and could place stress on existing infrastructure in the area.

Aesthetics and Visual Resources. Short-term minor adverse cumulative effects are expected on visual and aesthetic resources as a result of implementation of either the LIR or MLIR reuse scenarios. After completion of redevelopment, the built environment surrounding LSAAP and RRAD-WEP would noticeably increase due to induced growth. Preservation of the scenic landscape and natural aesthetics at LSAAP and RRAD-WEP would depend on, for example, the number of mature trees preserved, the amount of surface disturbance, and the design of new facilities. These cumulative effects would be long-term and minor.

Air Quality. Long-term moderate adverse cumulative effects are expected for either the LIR or MLIR reuse scenarios. Cumulative air quality impacts occur when multiple projects affect the same geographic areas at the same time or when sequential projects extend the duration of air quality impacts on a given area over a longer period. Ozone precursor emissions associated with engine exhaust from construction equipment and vehicles would contribute slightly to areawide and regional air quality conditions. Long-term moderate adverse cumulative effects would be expected as a result of increased construction activity associated with two corn processing ethanol plants modules

(including a CO_2 processing facility), a potential cellulose-processing plant module, a potential highway, a wastewater treatment plant, and installation-wide utility upgrades as well as subsequent operations at both LSAAP and RRAD-WEP including operational emissions and increased traffic flow. Disposal of LSAAP and RRAD-WEP may also stimulate economic growth in the ROI, which could generate additional emissions from traffic and industry operations within the area. Furthermore, the construction of a potential third cellulose-based ethanol plant module either on LSAAP, RRAD-WEP, or adjacent properties could increase regional emissions of criteria pollutants, as well as hazardous substances. These cumulative effects are not expected to rise to the level of significance, given the status of the ROI as an attainment area for air emissions, and given that any new sources will be regulated and permitted by the TCEQ.

Noise. Minor long-term adverse cumulative effects would be expected as a result of implementation of either of the reuse scenarios, from noise impacts to residential areas located along public roads serving LSAAP and RRAD-WEP. These effects would be due to increases in employment and corresponding commute traffic and delivery trucks associated with redevelopment and economic development that may be induced within the immediate vicinity of the property.

Geology and Soils. No cumulative effects are expected to geology and soils.

Water Resources. Minor short- and long-term cumulative adverse effects would be expected under either the LIR or the MLIR reuse scenario. These effects would occur as a result of direct and induced economic growth and development that will generate increased construction within the watershed, increases in impervious surface within the watershed, increased timber harvesting activities, increased water usage from key regional water sources, and increased wastewater discharge. These impacts would have the potential to affect areas beyond the installation properties boundaries at the watershed level. However, these effects are expected to be minor because erosion and sediment control and other best management practices would be employed during timber harvesting, construction, demolition, and renovation activities, and because they would be spread over a very large land mass over many years.

Biological Resources. Short- and long-term moderate adverse cumulative impacts are expected to occur as a result of implementation of either the LIR or the MLIR reuse scenario. Redevelopment and increased timbering could result in moderate adverse effects to regional forest resources and associated ecological communities, including loss of large quantities of high-quality, historically important communities that once were widespread across the region. Implementation of existing measures such as state-recommended forest management practices, industry standards, and conservation of high-quality habitat and riparian/wetlands buffer zones would serve to reduce these effects to a minor level.

Cultural Resources. No cumulative effects would be anticipated.

Socioeconomics. Significant beneficial and minor adverse cumulative effects on the sociological environment and economic development would be expected to occur as a result of implementation of the LIR or MLIR scenarios, as described in Section 4.10,

Socioeconomics. Direct jobs would be created through implementation of reuse objectives, generating new income and increasing personal spending. Such spending generally creates secondary jobs, increases business volume, and increases revenues for schools and other social services.

Transportation. Long-term minor adverse cumulative effects would be expected near LSAAP and the RRAD-WEP as a result of implementation of either the LIR or the MLIR reuse scenarios. Disposal of LSAAP and RRAD-WEP and reuse may stimulate additional economic growth in the region, which could generate additional residential and commercial traffic within the area, which may adversely affect traffic flow, and may result in some deterioration of road networks. Road networks are currently operating well below their design capacities, however. Therefore, only minor cumulative effects are expected.

The Army's retention of 1.06 miles of rail at LSAAP for use by RRAD is not anticipated to result in a cumulative adverse effect on redevelopment and reuse activities at the LSAAP property, or rail connections between the LSAAP property and other sites. The Army's plan to retain the rail at the site does not preclude the next owner of the property from either securing rights to use the rail if desired, or constructing new rail to extend off site.

Utilities. No cumulative effects are expected.

Hazardous and Toxic Substances. No cumulative effects are expected.

4.15 MITIGATION SUMMARY

Beyond the placement of encumbrances on the land as described in Section 3.2.4 (i.e., measures required by law and deed notification requirements), and adherence to sustainable timber practices to ensure the protection of natural and cultural resources as described in Section 3.2.1, no specific mitigation is required of the Army with the exception of possible wetlands mitigation. Wetlands mitigation may be required as part of planned timbering actions (e.g., road construction). Relative to property redevelopment, federal, state, and local regulations and policies will govern to a large extent the proper use and conservation of the environment including air quality, wetlands resources, water quality, cultural resources, and other resources. Certain other management measures beyond these may also be implemented by the Army or the RRRA to successfully manage the disposal and redevelopment of LSAAP and RRAD-WEP according to the principles of sound and sustainable planning. Unlike wetlands mitigation which may be required, these other additional management measures would not be required to reduce potential effects to a level that is less than significant, and would therefore not constitute mitigation measures, but could be applied by the Army or RRRA as management measures to reduce or avoid adverse effects.

In keeping with the assumptions of this EA, specific measures will be enacted by the Army and RRRA, along with, potentially, optional management measures to ensure successful management of environmental resources according to the principals of sound and sustainable planning, as presented below for each alternative.

Early Transfer/Traditional Disposal. Beyond the placement of encumbrances on the land and adherence to sustainable timber practices to ensure the protection of natural and cultural resources, no specific mitigation is required of the Army with the exception of wetlands mitigation. Wetlands mitigation may be required as part of planned timbering actions (e.g., road construction) as further described below. In addition, management measures that the Army will take to avoid, reduce, or compensate for adverse effects that might occur as a result of early transfer or traditional disposal are outlined below.

- It is possible that a small percentage of wetlands on LSAAP and RRAD-WEP could be impacted through road construction or modification to existing road networks to ensure necessary access to remote areas for timbering, as well as limited disturbance from timbering operations (particularly in upland areas). To mitigate adverse impacts to this resource, project-specific wetlands delineations, permitting, and wetlands avoidance and/or mitigation requirements will be necessary prior to road construction and other types of disturbances that would trigger wetlands permitting actions. Adherence to timber management measures outlined below and proper sequencing of mitigation requirements will ensure that impacts will be avoided if possible, then minimized if unavoidable, and as a last resort mitigated through creation, restoration, banking and other means in consultation with the USACE, Fort Worth District. In addition, timbering in upland forested wetlands should be limited to dry periods to protect these important resources.

- Execute the planned timber harvest in accordance with sustainable timber practices, including:

    - Harvest stands such that at least 10 seed trees, at 16 inches DBH, would be left per acre harvested, in order to allow for natural regeneration.

    - Avoid and protect areas around water resource features, including wetlands. Actions to achieve this would include the establishment of undisturbed buffer zones of at least 100 feet in width next to streams and riparian wetlands.

    - Utilize existing road networks to the extent possible for timber access to minimize impacts to habitat, water resources, and wetlands. Wetlands delineation and possibly mitigation would be required in the event that new roads are constructed in close proximity to wetlands, in consultation with USACE, Fort Worth District as previously discussed.

    - Avoid and protect areas where designated cultural resources are located. Measures to achieve this would include the establishment of fences and buffer zones around sites where cultural resources listed or eligible for listing on the National Register of Historic Places (NRHP) have been identified. Buffer zones could include areas with a radial arc of between 50 and 100 meters (330 feet) in width around identified cultural resources sites, depending on consultation with the Texas State Historical Preservation Office.

    - Avoid areas undergoing cleanup for hazardous waste.

    - Maintain forested areas that would act as buffers for the potential impacts of timbering activities related to sensitive land uses, visual resources, and noise.

- Impose in transfer or conveyance of BRAC property appropriate language to identify past hazardous substance activities at each site, as required by CERCLA and CERFA.

- Continue to work with the RRRA to ensure that disposal transactions are consistent with the adopted community reuse plan.

- Continue to manage BRAC property in accordance with Army policies that require the identification, delineation, and, where appropriate, abatement of hazardous conditions.

- Until final disposal, maintain installation buildings, infrastructure, and natural resources in caretaker status to the extent provided by Army policy and regulations.

Caretaker Status Alternative. Beyond adherence to Army policy and procedures relative to long-term caretaker conditions, no specific mitigation is required of the Army to avoid significant adverse effects. The longer the LSAAP and RRAD-WEP properties remain in caretaker status, the greater the potential would be for adverse effects on various resources. The Army would implement the following measures to reduce or avoid adverse effects associated with caretaker status as they might occur:

- Conduct installation security and maintenance operations to the extent provided by federal policies and regulations.

- Identify clean or remediated portions of the installation excess properties for disposal and reuse and prioritize restoration and cleanup activities. Recycle solid waste and debris where practicable.

- Maintain necessary natural resources management measures, including continued close coordination with other federal agencies such as the USFWS.

No Action Alternative. Under the no action alternative, the Army would continue operations at LSAAP and RRAD-WEP at levels similar to those occurring prior to the BRAC Commission's recommendations for closure and realignment. Thus, no effects would occur relative to continuation of the Army's mission and conditions in November 2005. Therefore, no mitigation or management measures would be necessary to reduce effects.

MLIR and LIR Reuse Scenarios. Under the MLIR and LIR reuse scenarios, non-Army entities assume reuse planning and execution of redevelopment actions. Recommended measures for intensity-based reuse scenarios, except for those related to federally protected interests, remediation, or other Army concerns are not the responsibility of the Army. The following identifies general management measures that could be implemented by other parties for the reduction, avoidance, or compensation of effects resulting from their actions. Other than adherence to specific encumbrances imposed by the Army and compliance with federal, state, and local regulations and policies, no specific mitigation actions are required to reduce adverse effects below levels of significance. Encumbrances and management measures that are most important for reducing adverse effects from reuse are outlined below.

Land Use. Adverse effects associated with development of the BRAC properties at LSAAP and RRAD-WEP to a level of intensity equal to an MLIR or LIR scenario could be at least partially reduced through sound site planning and the design and creation of appropriate buffer zones. County and city officials could also evaluate the desirability of establishing new land use zoning mechanisms to provide for orderly growth throughout the ROI.

Aesthetics and Visual Resources. Similar to land use, adverse effects to aesthetics and visual resources at LSAAP and the RRAD-WEP associated with the level of development representative of the MLIR or LIR scenarios could be at least partially reduced through location of industrial facilities on interior parcels, establishment and maintenance of

adequate forested buffers between industrial uses and adjacent viewsheds, and screening of potential sources of light and glare.

Air Quality. The permit process established by the CAA provides effective controls over potential stationary air emission sources. Adherence to the State Implementation Plan's provisions for mobile sources could address that source category. Additional mechanisms, such as the application of traffic controls to minimize mobile air emission sources and best management practices to control fugitive dust during construction and demolition, could be used to control airborne contaminants.

Noise. Measures to reduce potential impacts related to noise include the establishment of buffers around noise-producing uses, or between the installation properties and surrounding uses. Hearing protection for ethanol plant workers, per OSHA standards, could also help reduce adverse impacts.

Geology and Soils. Disturbance of highly erodible soils should be avoided wherever possible. Should soil be disturbed, desilting basins, sediment traps, silt fences, straw barriers, and other erosion control measures could be constructed. Geotechnical studies required prior to construction could also result in fewer potential impacts.

Water Resources. Application of best management practices to reduce sediment loading to surface waters could aid in reducing effects on water quality. Construction of stormwater retention systems could help mitigate impacts associated with stormwater runoff from impervious surfaces. Business practices designed to reduce potential effects of operations on water resources, such as measures to prevent the release of engine oil into storm drains, could also be implemented at the installation properties during and after redevelopment.

Biological Resources. Additional timbering actions following disposal could result in the continued loss of high-quality communities and large quantities of historically important communities that once were widespread across the region. The RRRA and other parties to redevelopment could implement the following measures to address and protect biological resources:

- Implement state-recommended forest management practices and industry standards for the management of timber resources, including application of sustainable forest management practices (e.g., select cut timbering techniques).

- Establish, maintain, and conserve sufficient habitat buffer zones to ensure proper conservation and protection of wetlands, high-quality habitat, stream corridors, and other water bodies. Conserve large tracts of forest habitat (beyond the acreage required for riparian buffer zones for the protection of wetlands).

- Follow project-specific wetlands delineations, permitting, and wetlands avoidance and/or mitigation requirements prior to redevelopment and timbering of specific parcels, in consultation with the USACE, Fort Worth District. As required under Section 404 of the CWA, the sequencing of wetlands mitigation requirements would ensure that impacts would be avoided if possible, and then minimized if

unavoidable. As a last resort, wetlands mitigation, such as creation, restoration, banking, and other means would be required, in consultation with the USACE, Fort Worth District.

- Implement erosion and sediment controls, stormwater controls, and other appropriate best management practices to reduce or even avoid any potentially adverse effects on wetlands from construction activities.

- Construct physical barriers (e.g., fencing) around sensitive natural areas, including wetlands, to prevent intrusion and damage.

Cultural Resources. The RRRA and others will take measures to protect and preserve existing and potentially eligible cultural resources at LSAAP and RRAD-WEP. These measures would include:

Consistent with the NHPA, continue to maintain and protect properties deemed eligible for inclusion in the NRHP.

Consult with the Texas State Historic Preservation Officer prior to soil disturbing activities or any actions affecting cultural resources, and implement appropriate mitigations, as necessary.

Transportation. Redevelopment of the BRAC properties under the MLIR or LIR scenario levels would require sound planning to meet increased traffic and raw material hauling needs using rail. Extensive improvements to roads and railway access to and within the BRAC properties are planned over the 15-year planning horizon.

Utilities. Redevelopment will require an almost wholesale renovation of many utilities at LSAAP and RRAD-WEP. As outlined in the reuse plan (RRRA 2007), the RRRA will exercise careful planning to minimize system capacity stress, to ensure that sufficient utility service is provided to current and new tenants. Specific measures that would be taken by the RRRA to reduce adverse effects include:

Construct a new water distribution system on RRAD-WEP to serve the areas that would undergo redevelopment, as the property currently contains no water distribution facilities.

Upgrade and/or replace the wastewater treatment plant at RRAD (as it has reached the end of its serviceable life).

Replace/upgrade the existing sewer line and construct new sewer line, at both LSAAP and RRAD-WEP, to accommodate future development

Construct new stormwater systems in areas proposed for new impermeable development (e.g., the proposed industrial/ warehouse/ commercial area in the northwestern portion of the installation).

Replace the secondary electrical distribution system and the natural gas distribution system.

5 FINDINGS AND CONCLUSIONS

5.1 INTRODUCTION

This EA has been prepared to evaluate the potential effects on the natural and human environment from the disposal and subsequent reuse of LSAAP (15,471 acres) and the excess property at RRAD-WEP (3,835 acres). The EA has examined five types of actions: early transfer disposal, traditional disposal, caretaker status disposal, no action disposal, and reuse (redevelopment of the available property by the RRRA at a medium-low or low intensity level). The no action alternative is prescribed by the CEQ regulations to serve as the baseline against which the proposed actions are analyzed. The proposed action in this case is the disposal of the excess property by the Army to another entity. After disposal, the community will implement various aspects of the RRRA's reuse plan as part of redevelopment of the property. The following sections provide the findings and conclusions of this EA.

5.2 FINDINGS

The following subsections summarize the potential effects on the human and natural environment resulting from implementation of each type of action: no action, disposal, and reuse. Resource areas for which no effects were identified are not discussed. Table 5.1 notes the potential environmental and socioeconomic effects of the early transfer disposal alternative, traditional disposal alternative, caretaker status disposal alternative, and two intensity-based reuse scenarios (the no action alternative is not included in this table because no effects were identified). For a more detailed discussion of the analyses, refer to the appropriate subsections in Section 4.0, Affected Environment and Consequences.

Table 5-1 No Action, Disposal, and Reuse Effects Summary

RESOURCE AREAS	CARETAKER STATUS			EARLY TRANSFER DISPOSAL			TRADITIONAL DISPOSAL			REUSE SCENARIOS				
	Direct	Indirect	Cumulative	Direct	Indirect	Cumulative	Direct	Indirect	Cumulative	Medium-Low Intensity Direct	Medium-Low Intensity Indirect	Low -Intensity Direct	Low-Intensity Indirect	Cumulative
Land Use	●	■●	●	■⏢●	■●	■●	■●	■●	■●	■●	■⏢●	■●	■⏢●	■●
Aesthetic/Visual Resources	■		●	■●		■	■●		■	■●	■	■●	■	■
Air Quality	●		●	⏢	■⏢	⏢	■⏢	■⏢	⏢	⏢	■	⏢	■	⏢
Noise	●	●	●	■●	■	■	■●	■	■	■●	■	■●	■	■
Geology and Soils	■	●		■	■●		■	■●		■	●	■	●	
Water Resources	■●	●	●	■	■●	■	■	■●	■	■	■	■	■	■
Biological Resources	■	●	●	■⏢	■⏢	⏢	■⏢	■⏢	⏢	■⏢	■⏢	■⏢	■⏢	⏢
Cultural Resources	■			■⏢	■		■⏢	■		⏢		⏢		
Socioeconomics	■⏢	■⏢	■●	■●○	■●	■○	■●○	■●	■○	■●⊖○	■●⊖○	■●⊖○	■●⊖○	■○
Transportation	■●		●	■●	■	■	■●	■	■	■●	■	■●	■	■
Utilities	■		●	■●	■		■●			■●		■●		
Hazardous/Toxic Substances	●	■		■	■●			■●		■●	●	■	●	

● Beneficial Effect (Minor)
⊖ Beneficial Effect (Moderate)
○ Beneficial Effect (Significant)
[BLANK] No Effects Expected

■ Adverse Effects (Minor)
⏢ Adverse Effects (Moderate)
◘ Adverse Effects (Significant) NOTE: No significant adverse effects have been identified.

5.2.1 Consequences of the Early Transfer Disposal Alternative

For early transfer disposal, the preferred alternative, minor or moderate adverse effects would occur for all resource areas. For this alternative, no specific mitigation is required of the Army, with the exception of possible wetlands mitigation, which may be required as part of planned timbering actions. Moderate adverse effects would occur in the areas of land use, air quality, biological resources, and cultural resources. Minor beneficial effects would occur for land use, aesthetics and visual resources, noise, geology and soils, water resources, transportation, utilities, and hazardous and toxic substances. Significant beneficial effects would occur for socioeconomics. Significant beneficial and minor adverse cumulative effects would also occur in the context of socioeconomics. Minor adverse and beneficial cumulative effects would occur in the context of land use, aesthetics and visual resources, noise, water resources, socioeconomics, and transportation. Moderate cumulative effects would be expected to occur in the context of air quality and biological resources.

5.2.2 Consequences of the Traditional Disposal Alternative

For traditional disposal, minor or moderate adverse impacts would occur for all resource areas. For this alternative, no specific mitigation is required of the Army, with the exception of possible wetlands mitigation, which may be required as part of planned timbering actions. Moderate adverse impacts would occur in the areas of air quality, biological resources, and cultural resources. Minor beneficial effects would occur for land use, aesthetics and visual resources, noise, geology and soils, water resources, transportation, utilities, and hazardous and toxic substances. Significant beneficial effects would occur for socioeconomics. Significant beneficial and minor adverse cumulative effects would also occur in the context of socioeconomics. Minor adverse or beneficial cumulative effects would occur in the context of land use, aesthetics and visual resources, noise, water resources, socioeconomics, and transportation. Moderate cumulative effects would be expected to occur in the context of air quality and biological resources.

5.2.3 Consequences of the Caretaker Status Alternative

For the caretaker status alternative, minor adverse impacts would occur for land use, aesthetics and visual resources, geology and soils, water resources, biological resources, cultural resources, socioeconomics, transportation, utilities, and hazardous and toxic substances. Minor beneficial effects would also occur for land use, air quality, noise, geology and soils, water resources, biological resources, transportation, and hazardous and toxic substances. Minor beneficial cumulative effects would occur in the context of land use, aesthetics and visual resources, air quality, noise, water resources, biological resources, socioeconomics, transportation, and utilities; minor adverse cumulative impacts would also occur for socioeconomics.

5.2.4 Consequences of the No Action Alternative

Under the no action alternative, the Army would continue operations at LSAAP and RRAD at levels similar to those occurring prior to the BRAC Commission's recommendations for closure and realignment. Analysis of the no action alternative is included in this EA as a basis for comparing the effects of disposal and reuse. No beneficial, adverse, or

cumulative effects were identified for the no action alternative, as this alternative represents status quo conditions relative to the continuation of Army missions in November 2005 (i.e., baseline operating conditions).

5.2.5 Consequences of the Medium-Low and Low Intensity Reuse Alternatives

The MLIR scenario for LSAAP and RRAD-WEP would result in short-term minor adverse effects for all resource areas except cultural resources, for which the scenario would result in moderate adverse effects. No specific mitigation is required of the Army related to the MLIR or LIR scenarios, with the exception of possible wetlands mitigation, which may be required as part of planned timbering actions. Minor beneficial effects would occur for land use, aesthetics and visual resources, noise, geology and soils, socioeconomics, transportation, utilities, and hazardous and toxic substances. In addition, moderate adverse effects to land use, air quality, biological resources, and cultural resources (principally as a result of increased timbering practices on LSAAP and RRAD-WEP) would occur. Significant beneficial effects would also occur for socioeconomics (economic development). Reuse of LSAAP and RRAD-WEP at such an intensity level, representing greater amounts of built space and higher levels of employment, would add jobs and increase population in the ROI.

Reuse of the installation at low intensity, similar to the level of intensity presented in the RRRA's reuse plan, would result in effects identical to those under the MLIR scenario on all resource areas, but the LIR scenario would result in a lower level of effects overall than the MLIR scenario.

Cumulative effects related to reuse would be most noticeable with respect to achievement of the MLIR scenario. Minor adverse cumulative effects would occur related to land use, aesthetics and visual resources, noise, water resources, socioeconomics, and transportation. Moderate adverse cumulative effects would be expected to occur relative to air quality and biological resources. Net increases in air emissions from both stationary and mobile sources would occur at LSAAP, RRAD-WEP, and throughout the region. Minor beneficial cumulative effects could occur for land use. Significant cumulative beneficial changes in economic development, the sociological environment, and quality of life would occur as more jobs were created and the tax base increased. Cumulative effects under the LIR scenario would be similar to those under the MLIR scenario.

5.3 CONCLUSIONS

Analysis in the EA shows that implementation of the proposed action, with the inclusion of mitigation to address potential impacts to wetlands, would not result in significant adverse environmental effects. Redevelopment of the LSAAP and RRAD-WEP properties would result in significant beneficial and minor adverse effects related to the economic development and sociological environment resource area. CEQ regulations provide that economic or sociological effects by themselves do not require preparation of an EIS. Thus, issuance of a FNSI would be appropriate, and an EIS is not required prior to implementation of the proposed action.