FINAL

ENVIRONMENTAL ASSESSMENT FOR THE PROPOSED DROP ZONE IN KURTHWOOD AND SIMPSON TRAINING AREAS JOINT READINESS TRAINING CENTER (JRTC) AND FORT POLK, LOUISIANA

JULY 2021

UNCLASSIFIED

FINDING OF NO SIGNIFICANT IMPACT (FNSI)
PROPOSED DROP ZONE IN KURTHWOOD AND SIMPSON TRAINING AREAS
JOINT READINESS TRAINING CENTER (JRTC) AND FORT POLK, LOUISIANA

1. The findings and conclusions reached in this document are based on a thorough review of the impacts and analysis considered and disclosed in the Environmental Assessment (EA) attached to this document. The EA, including its data analysis and conclusions, are incorporated in this FNSI by reference.

2. **PROPOSED ACTION:** The JRTC and Fort Polk are proposing to construct a new Drop Zone (DZ) and Forward Landing Strip (FLS) within the Kurthwood and/or Simpson Training Areas. The purpose of the Proposed Action is to construct a new DZ/FLS to support Cargo Delivery System (CDS) and Dual Row Airdrop System (DRAS) missions. There is not currently sufficient space to conduct aerial resupply via CDS or DRAS within the Kurthwood or Simpson Training Areas, which therefore limits training opportunities and does not support the mission of JRTC and Fort Polk. Construction of the DZ/FLS would allow such operation in these areas.

   The need for the Proposed Action is to allow JRTC and Fort Polk the capability to ensure safe, efficient, and DRAS mission-ready capabilities for home station and rotational aircraft or future units that could be stationed at JRTC and Fort Polk. The current Avellino DZ/FLS is aging and does not support the ability to conduct training for sustained combat and aerial resupply operations.

3. **ALTERNATIVES CONSIDERED:** To address the purpose and need, JRTC and Fort Polk considered and analyzed five alternatives in the EA. Three consider different land areas, the fourth considers an alternate layout at one of the sites, and the fifth is the No Action Alternative. Four of the alternatives (1, 2, 3, and 4) met the purpose and need of the Proposed Action. Alternative 5 (No Action) would result in the continued use of the Avellino DZ/FLS in Peason Ridge and this alternative does not meet the purpose and need for the Proposed Action.

   Alternative 1 (West Drop Zone – Preferred Alternative): Alternative 1 is located in the eastern portion of the Kurthwood Training Area along Kurthwood Fire Tower Road. The project area is approximately 895 acres and would include the DZ with an imbedded FLS. Implementation of this action would fully meet the purpose and need for the Proposed Action.

   Alternative 2 (Central Drop Zone): Alternative 2 is located in the eastern portion of Kurthwood Training Area along Edwards Loop Road. The project area is approximately 1,232 acres and would include a DZ with an imbedded FLS. Implementation of this action would fully meet the purpose and need for the Proposed Action.

   Alternative 3 (Eastern Drop Zone): Alternative 3 is located in Kurthwood and Simpson Training Areas along Edwards Loop Road. The project area is approximately 1,592 acres and would include a DZ with an offset FLS. The FLS would be located to the southwest of the DZ on an approximately 438-acre tract. Implementation of this action would fully meet the purpose and need for the Proposed Action.

Alternative 4 (Eastern Drop Zone with Imbedded FLS): Alternative 4 is located in the Kurthwood and Simpson Training Areas along Edwards Loop Road. The project area is approximately 1,154 acres and would include a DZ with an imbedded FLS. Implementation of this action would fully meet the purpose and need for the Proposed Action.

Alternative 5 (No Action Alternative): Alternative 5 is the No Action Alternative. Consideration of the No Action Alternative is mandated in the Council on Environmental Quality (CEQ) 40 Code of Federal Regulations (CFR) Parts 1500-1508 and Environmental Analysis of Army Actions 32 CFR Part 651.34. The No Action Alternative serves as a baseline or reference point against which the potential effects of the Proposed Action and other alternatives are evaluated.

One other alternative, in addition to the Proposed Action and No Action Alternatives, was considered but eliminated from further consideration. This alternative and the reason for elimination from detailed analysis are provided below:

Cold Springs Training Area Drop Zone: This alternative is located west of LA-117 in the Cold Springs Training Area, within the more developed area of land acquired by JRTC and Fort Polk in 2010. The road and trail network are developed and usable by units conducting operations at the JRTC and Fort Polk, but the size of the Proposed Action would limit JRTC and Fort Polk's ability to conduct live fire operations while simultaneously using the new DZ/FLS. Although this alternative would meet the purpose, the known restrictions would lead to the need not being met and was thus removed from further consideration.

4. **ENVIRONMENTAL IMPACTS:** Potential impacts to water resources, biological resources (forest ecology, native plants, invasive species, species of concern, threatened and endangered species, migratory birds, and game species), soils, cultural resources, and noise impacts were considered and analyzed for

Alternative 1 (West DZ – Preferred Alternative), Alternative 2 (Central DZ), Alternative 3 (Eastern DZ), Alternative 4 (Eastern DZ with imbedded FLS), and Alternative 5 (No Action). Based upon the analysis of baseline conditions; proposed activities; potential environmental effects; continued environmental stewardship; environmental requirements; and monitoring measures and programs, no direct, indirect, or cumulative significant impacts on the environment would be expected to occur under the implementation of Alternative 1 (West DZ – Preferred Alternative), Alternative 2 (Central DZ), Alternative 3 (Eastern DZ), or Alternative 4 (Eastern DZ with imbedded FLS).

5. **PUBLIC COMMENT:** The EA and Draft FNSI were made available for public review from May 14, 2021 to June 14, 2021. Additional information regarding this decision may be obtained by contacting JRTC and Fort Polk Public Affairs Office listed below.

   Fort Polk Public Affairs Office
   Attn: Ms. Kimberly Reischling
   7033 Magnolia Drive
   Fort Polk, Louisiana 71459-5342
   (337) 531-7203

6. **CONCLUSIONS:** I have carefully reviewed the attached EA and the potential environmental impacts of each of the Alternative actions. Based on this review, I have determined that Alternative 1 (West Drop Zone – Preferred Alternative) will have no significant impacts on the environment.

7. **DECISION:** In light of the preceding conclusions, I have decided to implement

ALTERNATIVE #1 as described in this EA resources. This will allow for the construction and operation of a DZ/FLS to safely support CDS and DRAS mission as described in this EA and the continued implementation of the environmental stewardship monitoring measures and programs.

DAVID S. DOYLE
Brigadier General, USA
Commanding

Date: 23 JUL 2021

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FOR THE PROPOSED DROP ZONE IN
KURTHWOOD AND SIMPSON TRAINING AREAS
JOINT READINESS TRAINING CENTER (JRTC)
AND FORT POLK, LOUISIANA

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July 2021

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FOR THE PROPOSED DROP ZONE IN THE KURTHWOOD AND SIMPSON TRAINING AREAS
JOINT READINESS TRAINING CENTER (JRTC) AND FORT POLK, LOUISIANA

Approved By:

DAVID S. DOYLE
Brigadier General, USA
Commanding

Date: 23 Jul 2021

Prepared By:

Gulf South Research Corporation
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Reviewed By:

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Date: 15 Jul 21

Jonathan A. West
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Fort Polk, Louisiana

Date: 13 July 2021

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EXECUTIVE SUMMARY

Historically, units have conducted mission requirements such as air field seizures, single row air drop missions, large scale airborne operations, air assault operations, and defensive operations on Joint Readiness Training Center (JRTC) and Fort Polk, Louisiana. Current military requirements include training for the new Dual Row Airdrop System (DRAS) mission. The DRAS delivers equipment more safely and efficiently than the single row airdrop system. The system is used on C-17 cargo planes and the dual logistics rails (side by side rail system), which allows two rows of equipment to be airdropped from a C-17 versus a single row airdrop system. The DRAS allows loads to exit the aircraft sequentially by row. The system reduces drop zone dispersion, results in faster delivery of troops and equipment, and reduces threat exposure to both aircraft and airborne forces. The DRAS also reduces the number of C-17s needed to support units in their airdrop requirements and reduces the tactical insertion time. This system also more than doubles the capacity of each C-17, supporting the airdrops with heavy equipment or supplies. However, the DRAS requires a longer drop zone than a single-row system.

JRTC and Fort Polk require the capacity to provide a training environment capable of challenging and evaluating Brigade Combat Teams (BCTs) combat and sustainment operations over time. Currently, there is not sufficient space to conduct aerial resupply in the form of Cargo Delivery System (CDS) and DRAS delivery systems in the Kurthwood or Simpson Training Areas. The Proposed Action of developing a Drop Zone (DZ) and Forward Landing Strip (FLS) capable of these operations would allow such operation in these areas.

The current Avellino DZ/FLS in Peason Ridge is aging and does not support the ability to conduct training for sustained combat and aerial resupply operations of BCTs. The proposed DZ/FLS would be designed for CDS and DRAS missions, and is critical to the overall readiness of today's Army. The DZ would include a perimeter trail and seven sediment basins.

To meet this need, JRTC and Fort Polk propose to construct a new DZ and FLS within the Kurthwood and/or Simpson Training Areas. To address the purpose and need for the Proposed Action, the JRTC and Fort Polk considered and analyzed five alternatives in this Environmental Assessment (EA). Three consider different land areas, the fourth considers an alternate layout at one of the sites, and the fifth is the No Action Alternative. Alternatives 1, 2, 3, and 4 would meet the purpose and need for the Proposed Action by providing the infrastructure necessary to support combat and aerial supply operations, and decommission the aging Avellino DZ/FLS in Peason Ridge. Alternative 5 (No Action) would result in the continued use of Avellino DZ/FLS in Peason Ridge, and this alternative does not meet the purpose and need for the Proposed Action.

Alternative 1 (West Drop Zone - Preferred Alternative)

Alternative 1 is located in the eastern portion of the Kurthwood Training Area along Kurthwood Fire Tower Road. The project area is approximately 895 acres and would include the DZ with an imbedded FLS.

Alternative 2 (Central Drop Zone)

Alternative 2 is located in the eastern portion of Kurthwood Training Area along Edwards Loop Road. The project area is approximately 1,232 acres and would include a DZ with an imbedded FLS.

Alternative 3 (Eastern Drop Zone)

Alternative 3 is located in Kurthwood and Simpson Training Areas along Edwards Loop Road. The project area is approximately 1,592 acres and would include a DZ with an offset FLS. The FLS would be located to the southwest of the DZ on an approximately 438-acre tract.

Alternative 4 (Eastern Drop Zone with Imbedded Forward Landing Strip)

Alternative 4 is located in the Kurthwood and Simpson Training Areas along Edwards Loop Road. The project area is approximately 1,154 acres and would include a DZ with an imbedded FLS.

Alternative 5 (No Action Alternative)

This alternative provides the baseline against which the potential effects of the Proposed Action and other alternatives are evaluated. Under this alternative, the Proposed Action would not be implemented requiring the continued use of Avellino DZ in the Peason Ridge Training Area. The JRTC and Fort Polk would continue to be limited in the use of aerial supply systems due to the location of Avellino DZ in relation to the temporary and permanent impact areas and associated surface danger zones (SDZs). This alternative would not meet the purpose and need of the Proposed Action; however, this alternative (No Action Alternative) will be carried forward for analysis in the EA and provides a baseline for measuring the environmental impacts of the other four alternatives.

One alternative, in addition to the Proposed Action and No Action Alternatives, was considered but eliminated from further consideration. This alternative and the reason for elimination from detailed analysis are provided below.

Cold Springs Training Area Drop Zone

The eliminated alternative, located west of LA-117 in the Cold Springs Training Area, is located in the more developed area of land acquired by Fort Polk in 2010. The road and trail network are developed and usable by units conducting operations at JRTC and Fort Polk, but the size of the Proposed Action would limit JRTC and Fort Polk's ability to conduct live fire operations while simultaneously using the new DZ/FLS. Although this alternative would meet the purpose, the known restrictions would lead to the need not being met. Therefore, this alternative will not be carried forward for analysis in the EA.

This EA identifies environmental resource areas that have the potential to be affected as a result of the development of a DZ and FLS in the Kurthwood and/or Simpson Training Areas. The resource areas were analyzed in detail to determine the level of environmental impacts. Additionally, this EA identifies and documents alternatives to the Proposed Action that were considered but eliminated from further consideration.

Table ES-1 presents a summary of the environmental impacts for each Alternative and resource area analyzed in the EA.

Table ES-1. Summary of Environmental Impacts

Alternative	Alternative 1 (West DZ – Preferred Alternative)	Alternative 2 (Central DZ)	Alternative 3 (Eastern DZ)	Alternative 4 (Eastern DZ with Imbedded FLS)	Alternative 5 (No Action)
Meets Purpose	Yes	Yes	Yes	Yes	No
Meets Need	Yes	Yes	Yes	Yes	No
Water Resources: Streams, Wetlands, Other Water Resources	Direct, permanent, minor, and adverse impacts to streams, wetlands, and potential waters of the U.S.	Direct, permanent, minor, and adverse impacts to streams, wetlands, and potential waters of the U.S.	Direct, permanent, minor, and adverse impacts to streams, wetlands, and potential waters of the U.S.	Direct, permanent, minor, and adverse impacts to streams, wetlands, and potential waters of the U.S.	No impacts
Biological Resources: Forest Ecology, Native Plants	Direct, moderate, long-term, and adverse impacts	Direct, moderate, long-term, and adverse impacts	Direct, moderate, long-term, and adverse impacts	Direct, moderate, long-term, and adverse impacts	No impacts
Biological Resources: Invasive Species	Direct, long-term, and negligible	Direct, long-term, and negligible	Direct, long-term, and negligible	Direct, long-term, and negligible	No impacts
Biological Resources: Species of Concern, Sensitive Communities, and Threatened and Endangered Species	Direct, negligible, short-term, adverse impacts on up to 12 SGCN; direct, moderate, adverse impacts on 8 SGCN; no impacts on Red-cockaded Woodpecker (RCW); short-term, negligible, adverse impacts on Louisiana pinesnake (LPS)	Direct, negligible, short-term, adverse impacts on up to 12 SGCN; direct, moderate, adverse impacts on 8 SGCN; no impacts on RCW; short-term, negligible, adverse impacts on LPS	Direct, negligible, short-term, adverse impacts on up to 12 SGCN; direct, moderate, adverse impacts on 8 SGCN; no impacts on RCW; short-term, negligible, adverse impacts on LPS	Direct, negligible, short-term, adverse impacts on up to 12 SGCN; direct, moderate, adverse impacts on 8 SGCN; no impacts on RCW; short-term, negligible, adverse impacts on LPS	No impacts

Table ES-1, continued

Alternative	Alternative 1 (West DZ – Preferred Alternative)	Alternative 2 (Central DZ)	Alternative 3 (Eastern DZ)	Alternative 4 (Eastern DZ with Imbedded FLS)	Alternative 5 (No Action)
Biological Resources: Migratory Birds and Game Species	Direct, short-term, minor, and adverse impacts on migratory birds; negligible impacts on game species	Direct, short-term, minor, and adverse impacts on migratory birds; negligible impacts on game species	Direct, short-term, minor, and adverse impacts on migratory birds; negligible impacts on game species	Direct, short-term, minor, and adverse impacts on migratory birds; negligible impacts on game species	No impacts
Soils	Direct, short-term, moderate, and adverse	Direct, short-term, moderate, and adverse	Direct, short-term, moderate, and adverse	Direct, short-term, moderate, and adverse	No impacts
Cultural Resources	No direct impact to historic properties	Eligible cultural resources sites would be avoided or mitigation would be provided to minimize direct, long-term, adverse impacts	Eligible cultural resources sites would be avoided or mitigation would be provided to minimize direct, long-term, adverse impacts	Eligible cultural resources sites would be avoided or mitigation would be provided to minimize direct, long-term, adverse impacts	No impacts
Noise Impacts	Negligible impacts due to training activities; direct, long-term, and minor impacts due to single overflights	Negligible impacts due to training activities; direct, long-term, and minor impacts due to single overflights	Negligible impacts due to training activities; direct, long-term, and minor impacts due to single overflights	Negligible impacts due to training activities; direct, long-term, and minor impacts due to single overflights	No impacts

1.0 PURPOSE, NEED AND SCOPE

This section states the purpose and need of the Proposed Action and outlines the scope of the environmental analysis for the considered alternatives. Inherent to these objectives, the location and land ownership of the area under consideration, as well as the timing for the Proposed Action, is described. Additionally, the screening criteria used to develop the range of alternatives evaluated are explained. Finally, the decision to be made is identified.

1.1 Introduction

The Joint Readiness Training Center (JRTC) and Fort Polk has prepared an Environmental Assessment (EA) to evaluate and inform the decision makers of the potential environmental impacts associated with the development of a drop zone (DZ) and forward landing strip (FLS) in the Kurthwood and/or Simpson Training Areas. The proposed DZ/FLS would provide JRTC and Fort Polk the capacity to conduct training for sustained combat and aerial resupply operations of Brigade Combat Teams (BCTs). The proposed DZ/FLS would allow the aging Avellino DZ/FLS in Peason Ridge to be decommissioned. The Kurthwood and Simpson Training Areas are part of a previous land acquisition program in which JRTC and Fort Polk purchased an additional 42,500 acres of training land (Fort Polk 2010). These lands were added to the Peason Ridge Training Area and Wildlife Management Area and were divided into three parts: Cold Springs, Kurthwood, and Simpson Training Areas. These acquired lands are currently being developed for future training requirements in support of national defense. JRTC and Fort Polk require infrastructure that will support aerial delivery in the form of Cargo Delivery System (CDS) and Dual Row Aerial Supply (DRAS) capable missions.

Five alternatives are being proposed in the EA and are described in Section 2.0. Furthermore, alternatives considered but not carried forward along with the No Action Alternative are detailed in Section 2.0. The Proposed Action to develop a new DZ/FLS in the Kurthwood and/or Simpson Training Areas is critical to the overall readiness of

today's Army. Therefore, this EA will evaluate potential impacts to the human and natural environments and identify the preferred alternative. This document was prepared in accordance with the National Environmental Policy Act (NEPA) of 1969 (42 United States Code (USC) 4321 et seq.), Council on Environmental Quality (CEQ) regulations Title 40 of the Code of Federal Regulations (CFR) Parts 1500-1508 and Army Regulations (ARs) at 32 CFR Part 651 (Environmental Analysis of Army Actions). This document was prepared in accordance with the legacy CEQ NEPA regulations as the planning process was initiated prior to the release of the updated regulations in 2020.

1.1.1 Army Mission

The Army's mission is to deploy, fight, and win our nation's wars by providing ready, prompt, and sustained land dominance by Army Forces across the full spectrum of conflict as part of the joint force. The Army recruits, organizes, trains, and equips soldiers who, as vital members of their units and the Joint Team, conduct prompt, sustained combat and stability operations on land. The Army is also charged with providing logistics and support to enable the other Services to accomplish their missions when directed and to support civil authorities in time of emergency. Delivering the right Army forces at the right place and time is vital to the military's ability to defeat any adversary or control any situation in any environment across the full spectrum of military operations (Fort Polk 2019).

1.1.2 Fort Polk and JRTC Mission

The primary mission of JRTC and Fort Polk is to train BCTs/Security Force Assistance Brigades to conduct large scale combat operations on the decisive battlefield against a near-peer with multi-domain capabilities. Fort Polk enables assigned Forces Command (FORSCOM) units to build Readiness in support of globally deployable missions; while facilitating a high quality of life for Soldiers and Army families. The JRTC is one of three Army's Combat Training Centers (CTC), supporting up to 12 annual JRTC rotations, focused on Army Brigade level combat operations. The JRTC and Fort Polk is also designated as one of the Army's power projection platforms.

The JRTC and Fort Polk develops leaders and trains BCTs alongside Unified Action Partners to conduct Unified Land Operations in the Decisive Action Training Environment to enable FORSCOM to provide trained and ready forces to Combatant Commanders while taking care of soldiers, civilians, and family members. Tenant units assigned to JRTC and Fort Polk include JRTC Operations Group; 1-509th IN (ABN); 3rd Battalion, 353d (Training) Regiment; 3rd Brigade Patriots, 10th Mountain Division; 1st Battalion, 5th Aviation Regiment; 46th Engineer Battalion, 519th Military Police Battalion, and the 115th Combat Support Hospital (changes to the 32d Field Hospital in March 2019). Several Louisiana, Texas, and Mississippi Reserve and Army National Guard units are trained during annual training periods at JRTC and Fort Polk.

1.1.3 Installation Location and Land Ownership

JRTC and Fort Polk is located in west central Louisiana in Natchitoches, Sabine, and Vernon Parishes near the communities of Leesville and DeRidder, and about 15 miles east of the Texas-Louisiana border (Figure 1-1). Fort Polk is comprised of Department of Defense (DoD) and U.S. Forest Service (USFS) permitted lands totaling approximately 243,527 acres. DoD-owned lands are divided into two primary land masses: Fort Polk and Peason Ridge. USFS permitted lands are divided into three separate land masses: the Intensive Use Area (IUA), the Limited Use Area (LUA), and the Special Limited Use Area (SLUA) (Fort Polk 2019). None of the alternatives analyzed in this EA would impact or utilize any USFS permitted lands under the Special Use Permit Agreements.

Peason Ridge is comprised of approximately 78,841 acres and is used to support both Army maneuver and live-fire training, but is not utilized for long-term housing of Army personnel or civilians, which occurs on the Main Post. In February 2010, Fort Polk completed the *Joint Readiness Training Center and Fort Polk Land Acquisition Program Final Environmental Impact Statement* (*FEIS*) for the acquisition of private lands (Fort Polk 2010). The expansion of Fort Polk, up to 100,000 acres, was analyzed and the Installation received the authorization to actively pursue the land purchase program. To date, approximately 42,500 acres of new training lands have been purchased and is

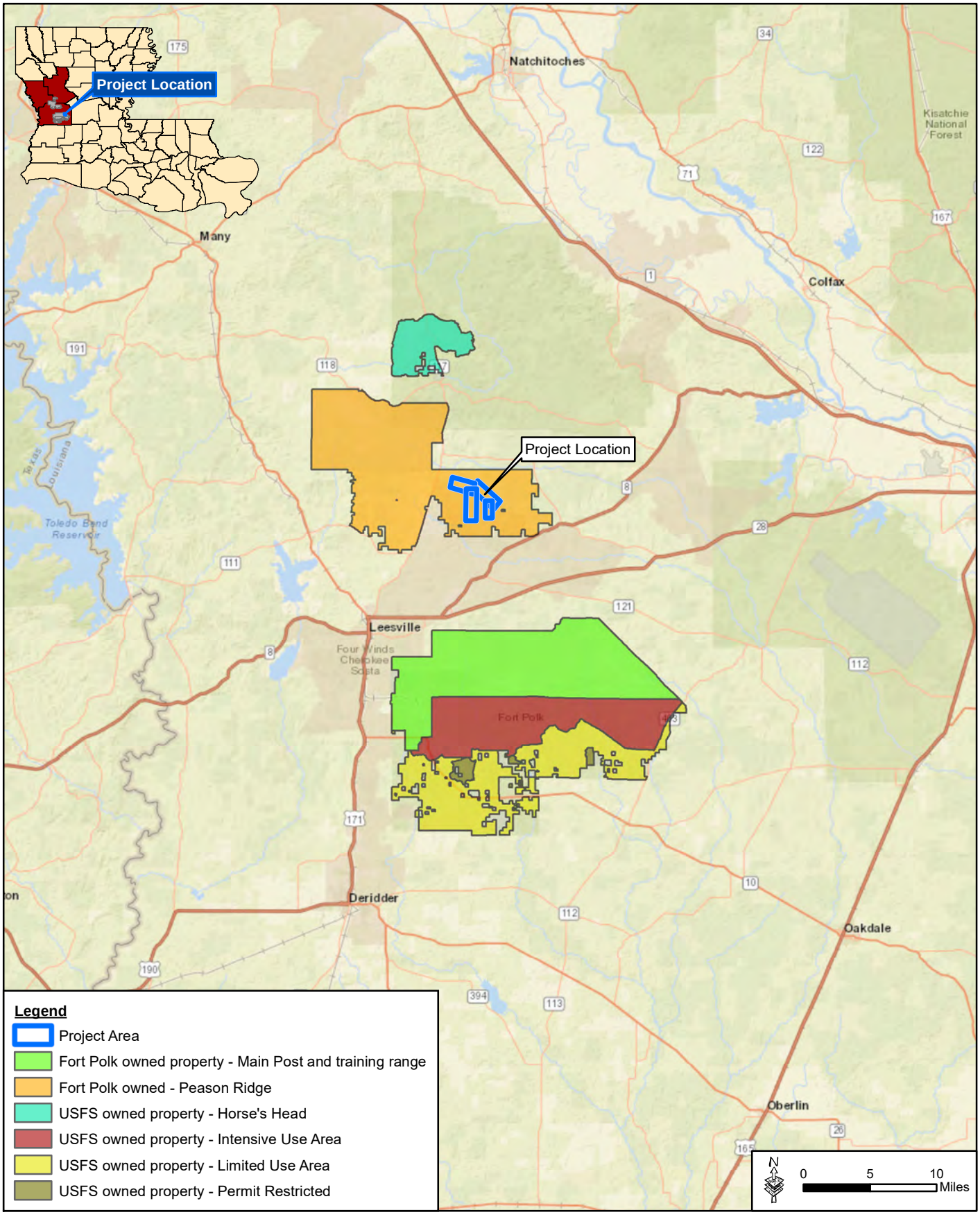

Figure 1-1. Fort Polk Location Map

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August 2020

reflected above in the new acreage amount for Peason Ridge. Fort Polk utilizes an area of USFS lands north of Peason Ridge designated SLUA. The SLUA consists of approximately 12,380 acres and is available for limited training by JRTC and Fort Polk. No live-fire activities are conducted in this area.

1.2 Purpose and Need for Proposed Action

JRTC and Fort Polk require the capacity to provide a training environment capable of challenging and evaluating BCTs combat and sustainment operations over time. Currently, there is not sufficient open space to conduct aerial resupply in the form of CDS and DRAS delivery systems in the Kurthwood or Simpson Training Areas. The Training Areas currently do not have the capabilities to conduct live fire and aerial resupply simultaneously. G3 Air has proposed to develop a DZ/FL in the Kurthwood and/or Simpson Training Area. The Proposed Action of developing a DZ/FLS capable of these operations would allow for the aforementioned combat and sustainment operations.

1.2.1 Purpose of the Proposed Action

The purpose of the Proposed Action is support of BCTs combat and aerial resupply sustainment operations.

1.2.2 Need of the Proposed Action

To meet the commitments within the Acquisition EIS for long-term, high-intensity combat and sustainment operations, the JRTC and Fort Polk require a mission capable DZ/FLS that will provide BCT training in airfield seizure and the use of aerial resupply operations, such as CDS or DRAS delivery systems. To accomplish this, JRTC and Fort Polk require a DZ/FLS that will provide an area for BCTs to train in airfield seizure and the use of aerial resupply operations, such as CDS or DRAS delivery systems.

The current Avellino DZ/FLS in Peason Ridge Training Area is old and in a state of disrepair, and is not of sufficient size to allow DRAS missions. Training opportunities

are also restricted at the Avellino DZ/FLS due to live fire exercises. Additionally, the current DZ/FLS is at the end of the training cycle instead of at the beginning. For real-life training purposes, the DZ/FLS should be located at the beginning of a training cycle for training activities to occur in sequence. The proposed development of a DZ/FLS in the Kurthwood and/or Simpson Training Areas would allow JRTC and Fort Polk to decommission the current DZ/FLS activities at Avellino DZ/FLS in Peason Ridge Training Area.

1.2.3 Criteria for Evaluation of Alternatives

Necessary characteristics of the alternatives considered include:

- Flight path/prevailing winds;
- Restricted areas around the location;
- Size of DZ/FLS able to support large package/DRAS/Heavies/Personal flights;
- Multiple DZ/FLSs in route (two different DZ/FLSs same flight path);
- Areas, ground rolling hills, creek flow, and road access;
- Use of possible abandoned homesteads for military training in urban terrain village build up;
- Runway with assault taxi way for rapid on-/off-load;
- Already open areas/type of vegetation for ease of clearing/marketable timber; and
- Type of mission: Airborne (ABN), 101st Airborne Division (AASLT), Air Lands, Staging areas (AVN).

1.3 Scope of Environmental Analysis

The EA will consider the direct, indirect, and cumulative effects of the evaluated alternatives and the no action alternative for the development and operation (analytic scope) of a proposed DZ/FLS in the Kurthwood and/or Simpson Training Areas (geographic scope). It also provides a discussion of the affected environment and the potential impacts to environmental (air, soil, water, etc.) and biological (flora and fauna)

resources. A team of subject matter experts identified the following Valued Environmental Components (VECs) for detailed evaluation:

- Water Resources: Streams, Wetlands, Bogs, and other Surface Water Features;
- Biological Resources: Forest Ecology, Native Plants (species and communities), Invasive Plant Species, Species of Concern, Threatened and Endangered Species, Sensitive Communities, Migratory Birds, Game Species;
- Noise Impacts;
- Cultural Resources;
- Safety; and
- Soils.

The decision to be made is whether to implement one of the Proposed Action Alternatives or No Action Alternative at this time. A Finding of No Significant Impact (FNSI) will be issued if the selected alternative results in no significant impact to human or environmental health. If the selected alternative results in a significant impact, an Environmental Impact Statement (EIS) shall be developed via a Notice of Intent (NOI).

1.4 Public Participation

To facilitate the analysis and the decision-making process, the Army maintains a policy of open communication with interested parties and invites public participation. All federal and state agencies, public and private organizations, and members of the public that have a potential interest in the Proposed Action, including minority, low-income, disadvantaged and Native American groups are urged to participate in the Army's EA and decision-making processes, as guided by CEQ regulations at 40 CFR Parts 1500-1508 and ARs at 32 CFR Part 651.

As a result of internal Fort Polk scoping, the location and design features of the Proposed Action, no formal public scoping was conducted. A 30-day public comment period was the only comment opportunity offered to the public. The Final Draft EA and Draft Finding of No Significant Impact (DFNSI) were made available to Federal, state,

and local agencies, Native American tribes, and the public for review and comment from May 14 through June 14, 2021. A Notice of Availability (NOA) announcing the release of the Final Draft EA and DFNSI was published in the *Beauregard Daily News*, *Leesville Daily Leader*, *Natchitoches Times*, *The Sabine Index*, *The Town Talk*, and *Fort Polk Guardian*. The Final Draft EA and DFNSI were made available for public access at the Beauregard Parish Library, the Vernon Parish Library, the Rapides Parish Library, the Natchitoches Parish Library, and the Sabine Parish Library during the 30-day comment period. The Final Draft EA and DFNSI were also made available on-line at http://www.jrtc-polk.army.mil/environmental_compliance/NEPA.html. Proof of publication and posting of the Draft Final EA and DFNSI at the public libraries is part of the Administrative Record. No public comments were received.

2.0 DESCRIPTION OF ALTERNATIVES

This section describes the Proposed Action and the alternatives. Screening criteria are defined (consistent with the purpose and need statements in Sections 1.2.1 and 1.2.2) as a baseline to evaluate each of the alternatives in order to determine which will be carried forward for environmental analysis. To address the purpose and need, five alternatives will be analyzed in the EA; one of which is the No Action Alternative (mandated in CEQ 40 CFR Parts 1500-1508 and Environmental Analysis of Army Actions 32 CFR Part 651.34). The Proposed Action is described in Section 2.1 and the alternatives, including the No Action Alternative, are presented in Section 2.2. Alternatives considered but eliminated from detailed analysis are discussed in Section 2.3. To be considered for evaluation in the EA, an alternative must be feasible (capable of being implemented) and must meet the purpose and need for the project.

2.1 Proposed Action

JRTC and Fort Polk requires the capacity to provide a training environment capable of challenging and evaluating BCTs combat and sustainment operations over time. Currently, there is not sufficient space to conduct aerial resupply in the form of CDS and DRAS delivery systems in the Kurthwood or Simpson Training Areas. The Proposed Action of developing a DZ/FLS capable of these operations would allow such operation in these areas.

The Proposed Action is to develop a DZ/FLS in the Kurthwood and/or Simpson Training Areas in support of BCTs combat and aerial resupply sustainment operations. The alternatives range in size from 895 to 1,592 contiguous acres. The proposed DZ/FLS would be designed for CDS and DRAS missions. The CDS is the most commonly used method for the aerial insertion of supplies quickly for military and contingency operations. A-series containers and CDS bundles are used as a means of delivery for equipment too heavy for the individual jumper to carry. The CDS is a single row-airdrop system.

The DRAS delivers equipment more safely and efficiently than the single row airdrop system currently used. The system utilizes C-17 cargo planes with dual logistics rails (side by side rail system), which allows two rows of equipment to be airdropped from a C-17 versus a single row airdrop system. The DRAS allows loads to exit the aircraft sequentially by row. The system reduces DZ/FLS dispersion, results in faster delivery of troops and equipment, and reduces threat exposure to both aircraft and airborne forces. The DRAS also reduces the number of C-17s needed to support units in their airdrop requirements and the tactical insertion time. This system would more than double the capacity of each C-17 supporting the airdrops with heavy equipment or supplies. The DZ would include a perimeter trail and up to seven sediment basins. Functional Sediment basins would be constructed prior to start of the project to protect watersheds from siltation. Appropriate follow-on NEPA analysis would be conducted in accordance with 32 CFR part 351 and applicable federal regulations. All alternatives, other than the No Action Alternative, would include clearing, grubbing, stumping, and shaping of the entire footprint of the project area.

The DZ would include a C-17-capable FLS (4,100 feet x 110 feet). Associated features would include three aircraft parking pads (200 feet x 225 feet each), cleared area (8,500 feet), septic tank, electrical connection (1,500 linear feet), and a fenced area (40,000 linear feet) with gate and optional taxiway (4,100 feet x 70 feet wide). Potential aircraft to be used include the C-17, C-130, any rotary winged aircraft, and unmanned aircraft. Flights would occur during the night and day.

Five Alternatives are considered in the EA for development of the proposed DZ/FLS: three consider different land areas, the fourth considers an alternate layout at one of the sites, and the fifth is the No Action Alternative. Alternatives 1, 2, 3, and 4 would meet the purpose and need for the Proposed Action by providing the infrastructure necessary to support combat and aerial supply operations, and decommission the aging Avellino DZ/FLS in Peason Ridge (Figure 2-1). Alternative 5 (No Action) would result in the continued use of Avellino DZ/FLS in Peason Ridge. This alternative does not meet the purpose and need for the Proposed Action.

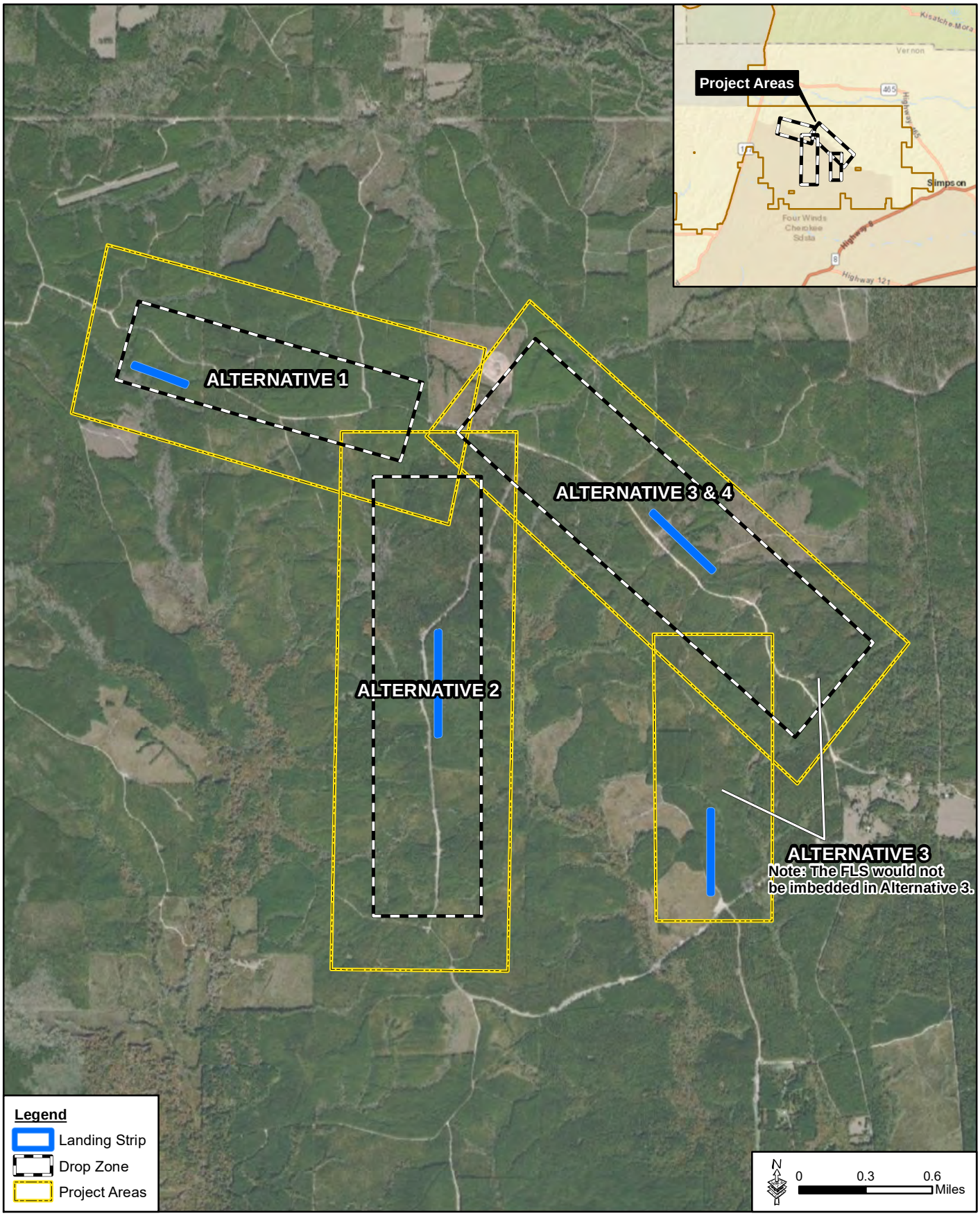

Figure 2-1. Alternatives Map

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2.2 Alternatives

2.2.1 Alternative 1 (West Drop Zone – Preferred Alternative)

Alternative 1 is located in the eastern portion of the Kurthwood Training Area along Kurthwood Fire Tower road (Figure 2-2). The project area is approximately 895 acres and would include the DZ with an imbedded FLS (Figure 2-2).

2.2.2 Alternative 2 (Central Drop Zone)

Alternative 2 is located in the eastern portion of Kurthwood Training Area along Edwards Loop Road (Figure 2-3). The project area is approximately 1,232 acres and would include a DZ with an imbedded FLS (Figure 2-3).

2.2.3 Alternative 3 (Eastern Drop Zone)

Alternative 3 is located in Kurthwood and Simpson Training Areas along Edwards Loop Road (Figure 2-4). The project area is approximately 1,592 acres and would include a DZ with an offset FLS (Figure 2-4). The FLS would be located to the south of the DZ on an approximately 438-acre tract (Figure 2-4).

2.2.4 Alternative 4 (Eastern Drop Zone with Imbedded Forward Landing Strip)

Alternative 4 is located in Kurthwood and Simpson Training Areas along Edwards Loop Road (Figure 2-5). The project area is approximately 1,154 acres and would include a DZ with an imbedded FLS (Figure 2-5).

2.2.5 Alternative 5 (No Action Alternative)

This alternative provides the baseline against which the potential effects of the Proposed Action and other alternatives are evaluated. Under this alternative, the Proposed Action would not be implemented, requiring the continued use of Avellino DZ in the Peason Ridge Training Area. JRTC and Fort Polk would continue to be limited in the use of aerial supply systems due to the location of Avellino DZ in relation to the temporary and permanent impact areas and associated surface danger zones (SDZs).

Figure 2-2. Preferred Alternative - Alternative 1

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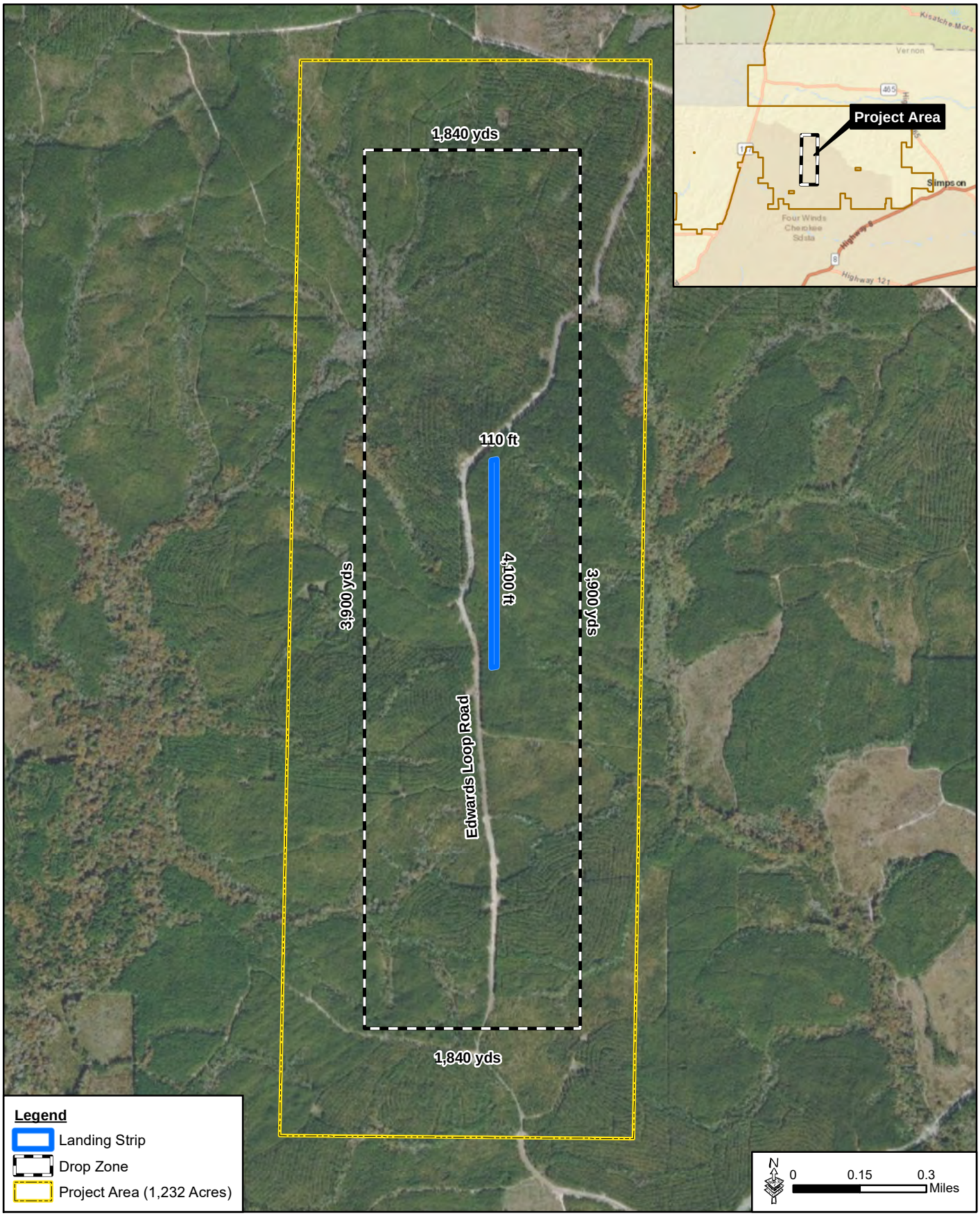

Figure 2-3. Alternative 2

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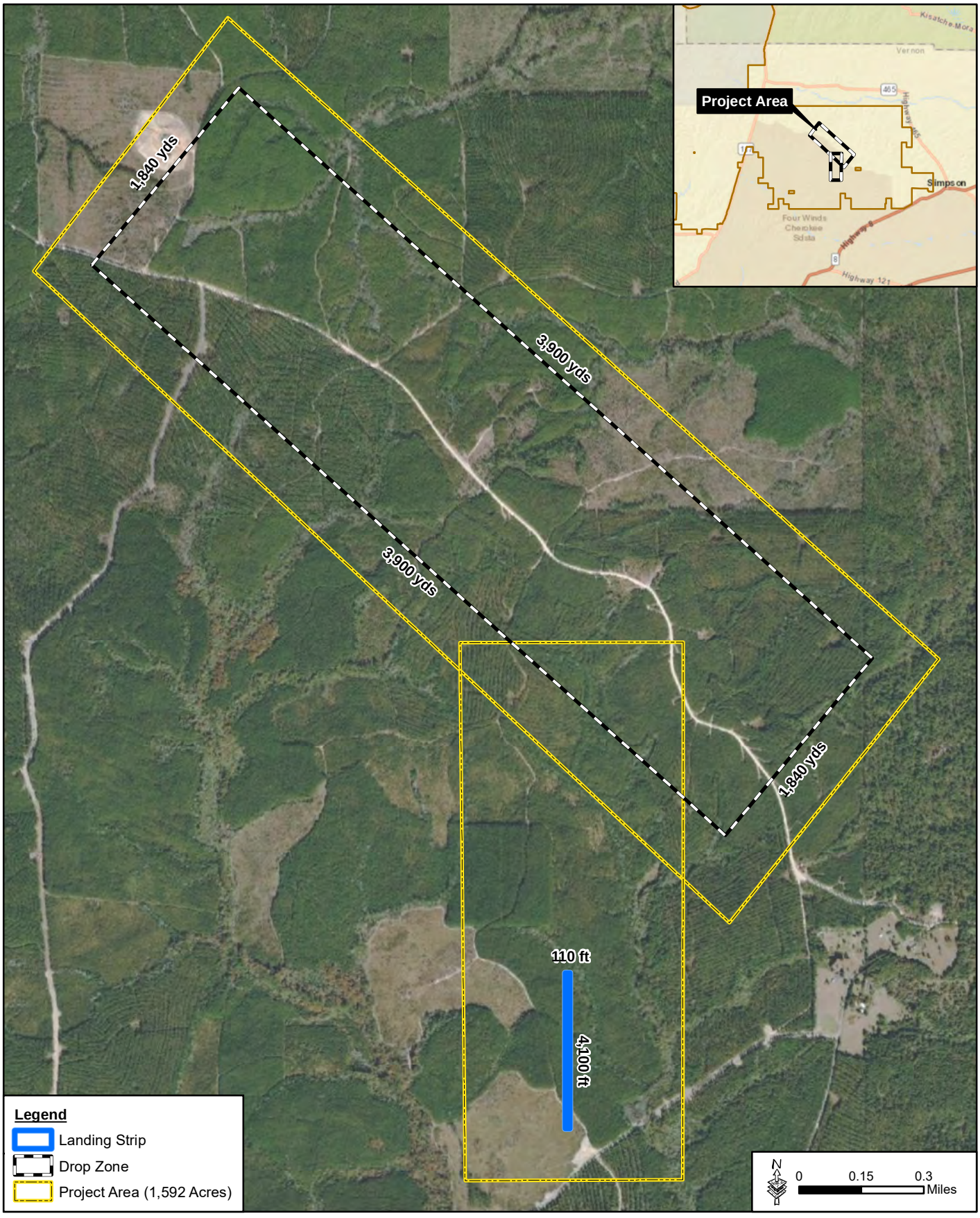

Figure 2-4. Alternative 3

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March 2021

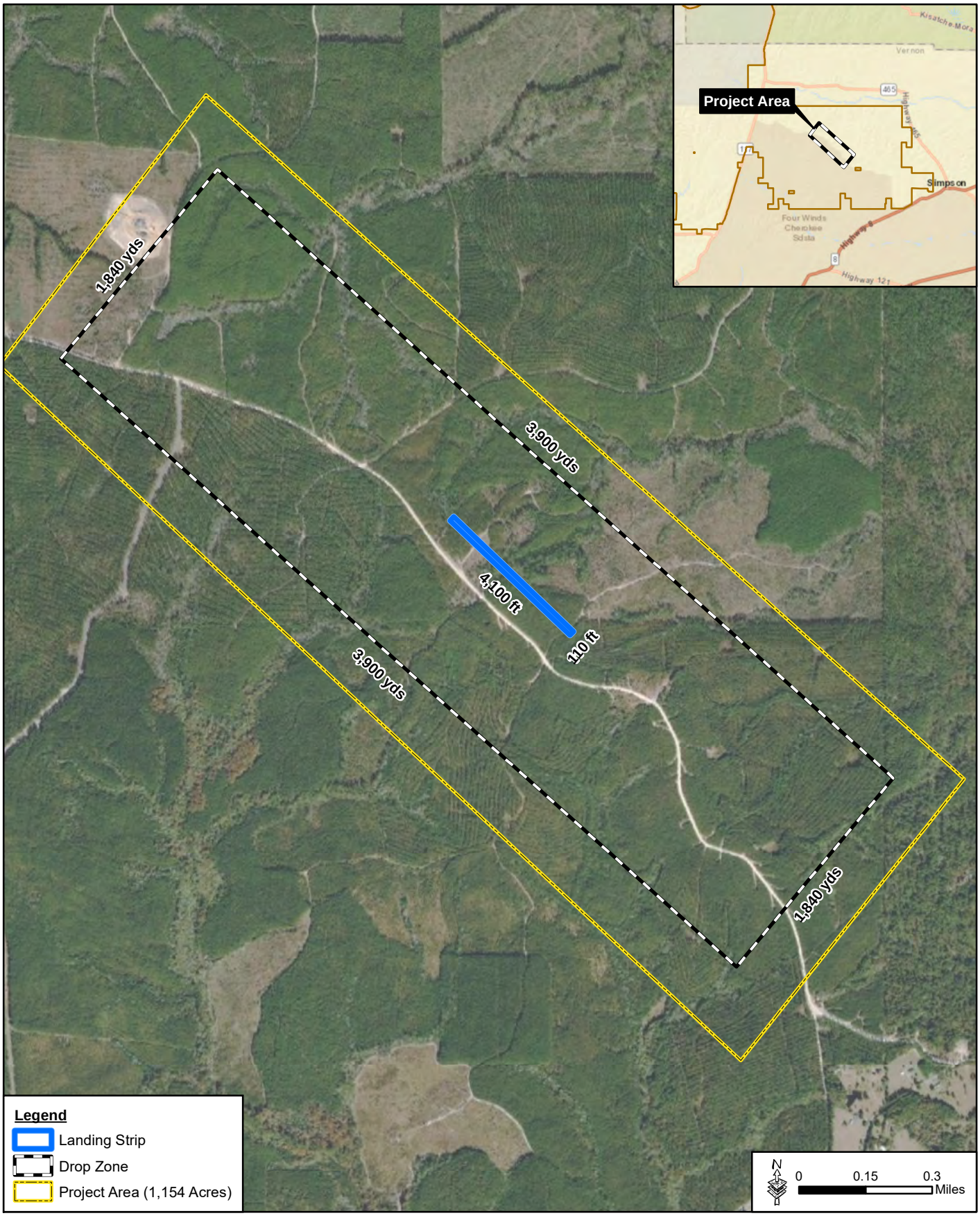

Figure 2-5. Alternative 4

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August 2020

This alternative would not meet the purpose and need of the Proposed Action; however, this alternative (No Action Alternative) will be carried forward for analysis in the EA and provides a baseline for measuring the environmental impacts of the other four alternatives.

2.3 Alternatives Considered but Eliminated from Detailed Study

2.3.1 Cold Springs Training Area Drop Zone

This alternative, located west of LA-117 in the Cold Springs Training Area, is located in the more developed area of the newly acquired land. The road and trail network are developed and usable by units conducting operations at JRTC and Fort Polk, but the size of the Proposed Action would limit JRTC and Fort Polk's ability to conduct live fire operations while simultaneously using the new DZ/FLS. Although this alternative would meet the purpose, the known training restrictions would result in the need not being met. Therefore, this alternative will not be carried forward for analysis in the EA.

2.4 Alternative Summary

The alternatives to be considered in the EA must meet the purpose and need, as stated in Section 1.2. A total of five alternatives, including the No Action Alternative, were identified. These alternatives include Alternative 1, Alternative 2, Alternative 3, Alternative 4, and the No Action Alternative.

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3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL IMPACTS

3.1 Introduction

This section describes the affected environment and methodology used to analyze the potential impacts (environmental impacts) on the affected environment that would result from implementation of the Alternatives for the development and operation of a DZ/FLS in the Kurthwood and/or Simpson Training Areas. The affected environment represents baseline conditions against which environmental impacts can be measured. An environmental impact or consequence is defined as a modification or change in the existing environment brought about by the action taken. Effects can be direct, indirect, or cumulative and can be temporary (short-term) or permanent (long-term). Effects can also vary in degree, ranging from only a slight discernable change to a drastic change in the environment. The terms “effect” and “impact” are synonymously used in this EA.

This EA focuses on resources and issues of concern identified during the internal scoping process (see Section 1.3) and on differences in effects among Alternatives. A tiered approach has been taken in the analysis for each VEC. Resource areas and issues of concern that were identified as having a very low level of concern are not discussed in detail. However, some resource areas that were identified as having a low level of concern are discussed on a limited basis. Those VECs that were identified as potentially having a medium or high level of concern are discussed in detail in this section.

3.2 Valued Environmental Components and Measure of Environmental Impacts

In 1997, CEQ published specific guidelines for Cumulative Effects Analysis (CEA), establishing a new impact assessment approach (or paradigm) that focuses on important regional resources, as opposed to the traditional action-impact approach used for direct and indirect effects. The new assessment approach focuses on VECs or resources that are important in a specific region.

Utilization of this approach early on in the planning and decision-making process can effectively, systematically, and defensively identify the appropriate level of NEPA analysis required for each resource area. However, these VEC levels identified are not correlated with the level of anticipated effects.

To aid in the analysis of the environmental impacts, to supplement guidance found in 32 CFR Part 651 and 40 CFR Parts 1500-1508, and to ensure a consistent and defensible evaluation of environmental impacts, thresholds of concern were developed for each VEC. Resource management professionals and subject matter experts developed these thresholds. The spatial boundary and thresholds of concern for each VEC for the analysis of the alternatives are presented in Table 3-1.

The potential impacts of implementing a Proposed Action and Alternative(s) can be characterized by one of three types of impacts. They are as follows:

- ***Direct impact.*** Those effects caused by an action and that occur at the same time and place as the action.

- ***Indirect impact.*** Those effects caused by an action and that occur later in time or are farther removed in distance from the action.

- ***Cumulative impact.*** Those effects that result from the incremental impact of the action when added to "other past, present, and reasonably foreseeable future actions, regardless of what agency (federal or non-federal) or person undertakes such other actions". Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

Environmental impacts also may be expressed in terms of duration. The duration of short-term impacts is considered to be 1-year or less, and long-term impacts are described as lasting beyond 1-year. Long-term impacts can potentially continue in perpetuity.

Table 3-1. Valued Environmental Components

Valued Environmental Component	Spatial Boundary	Threshold of Concern Proposed Action Would Cause or Result in
Land Use	Installation boundary or region of influence (ROI)	Concern that land use conflicts will occur. Examples include: preclusion of implementation of or conflicts with Fort Polk Integrated Natural Resources Management Plan or JRTC and Fort Polk Real Property Master Plan.
Geology	Geology within sub-watersheds of the installation boundary	Reduction in access to or availability of publicly or privately owned mineral resources.
Soils	Soils within the ROI	Soil loss or compaction to the extent that natural reestablishment of native vegetation within two growing seasons is precluded unless substantial rehabilitation efforts are undertaken.
Groundwater	Aquifer within the ROI	Degradation of aquifer quality; Violation of drinking water standards.
Water Resources: Streams, Wetlands, and Other Surface Water Resources	Sub-watershed, USACE jurisdictional waters of the US, or state-designated stream segment within installation boundary	Sedimentation or discharge into streams, wetlands, waters of the U.S., or state scenic streams within project footprint or adjacent to project within watershed (within a distance to be concerned about sedimentation); Net loss of wetlands (bogs, baygalls, hillside seeps, or riparian zones) within installation boundary due to direct or indirect effects (e.g. sedimentation).
Biological Resources: Forest Ecology, Native Plant Species and Communities, Nonnative and Invasive Plant Species	Installation boundary	Permanent conversion or net loss of forest lands at landscape scale of >5 percent relative to baseline; Permanent net loss of RCW foraging habitat from land base to level below that required for achieving long-term RCW population recovery objectives; Permanent loss or degradation of designated rare/sensitive plant sites; Introduction or increased prevalence of undesirable non-native or invasive species.
Biological Resources: Species of Concern, Threatened and Endangered Species	Home range or protected habitat within the Installation boundary	Reduction of RCW foraging habitat for one or more clusters/groups; Reduction of suitable habitat (e.g., gopher complexes) for LPS; Reduction in RCW or LPS habitat management unit (HMU) acreage; Permanent net loss of RCW foraging habitat from land base to a level below that required for achieving long-term RCW population recovery objectives; Elimination of time for biologists to manage these species; Direct mortality or other unpermitted “take” of threatened or endangered species.

Table 3-1, continued

Valued Environmental Component	Spatial Boundary	Threshold of Concern Proposed Action Would Cause or Result in
Biological Resources: Migratory birds and game species	Species home range, local habitat, or migratory range intersecting the Installation boundary	Long-term loss or impairment of a substantial portion of local habitat (species-dependent); Biologically significant decline in Migratory Bird Treaty Act (MBTA) population; Biologically significant decline in game species population.
Cultural Resources	Specific boundary of archaeological sites.	Irretrievable or irreversible damage to a prehistoric or historic site that is listed or is eligible/potentially eligible for listing on the National Register of Historic Places.
Noise	Land use zones within the ROI and Installation boundary	Exceedance or noise limit guidelines published in AR 200-1, Chapter 7 (1997); Exceedance of existing 65 dBA contour by 17 percent.
Air Quality	Airshed or Installation boundary	Violation of National Ambient Air Quality Standards (NAAQS).
Social Conditions: Public Access and Recreational Use, Public Services, Public Safety and Protection of Children, Environmental Justice	Installation boundary or ROI	Long-term substantial loss or displacement of recreational opportunities/resources relative to baseline; Substantial degradation of recreational value; Exceedance of Rational Threshold Value (RTV) for population and assessment of baseline social services; Need for increase in large-scale facilities (e.g. new school or hospital); Public safety hazard from military operations; Public health hazard from exposure to hazardous waste or hazardous materials; Disproportionate environmental health or safety risk to children; Disproportionate environmental, economic, social, or health impacts on minority or low income populations (EO 12898).
Socioeconomics	ROI	Exceedance of RTV for socioeconomic indicators (i.e., modeled population, personal income, employment, or business activity exceeds the difference between the maximum and average historical level over the past 19 years).

Table 3-1, continued

Valued Environmental Component	Spatial Boundary	Threshold of Concern Proposed Action Would Cause or Result in
Transportation and Infrastructure	Installation boundary or ROI	Decrease in Level-of-Service (LOS) of key installation arteries and collectors below the acceptable LOS; Road failure resulting in rutting, cracking, or other pavement problems that require substantial maintenance or rehabilitation activities; Violation of a Federal Aviation Administration (FAA) regulation that undermines the safety of commercial passengers or personnel at Alexandria International Airport/England Industrial Airpark; Impairment of installation's ability to meet federally mandated or Army objectives for waste minimization and pollution prevention; Accidence of existing facility or system capacity for hazardous waste/hazardous material management, storage, disposal, or emergency response; water supply and sewage treatment; or utility services.
General Compliance	Installation boundary or limits of affected environmental media	Violations of federal or state environmental rules, regulations, or permits held by the installation.

In addition to the type and duration of an impact to a resource area, effects to resource areas are characterized by the relative severity of an environmental effect. Four terms are used throughout this EA to indicate the relative degree of predicted impacts that the Proposed Action and Alternatives would have. They are as follows:

- ***Negligible.*** The term used to indicate the relative degree of severity of an environmental effect that could occur, but might not be detectable.

- ***Minor.*** The term used to indicate the relative degree of severity of an environmental effect that is measurable, but is clearly not significant.

- ***Moderate.*** The term used to indicate the relative degree of severity of an environmental effect that might approach but not exceed a threshold of significance; for example, where a "threshold of concern" as described in Table 3-1, might be approached; where the predicted consequences of implementing an action suggest the need for additional care in following standard procedures, employing Best Management Practices (BMPs), or applying precautionary measures to minimize adverse effects; or where there is some uncertainty inherent in whether the effects forecast by a predictive model would occur.

- ***Significant.*** A measure in terms of the degree of severity of the environmental effect of an action reflecting the context and intensity of the effect, as defined in CEQ regulations (40 CFR 1508.27).

Lastly, environmental impacts can either have beneficial or adverse impacts on a resource area.

The determination of the level of effects of the Proposed Action on threatened and endangered species follows the USFWS guidance, which uses somewhat different terms to describe the level of potential effects. Terms used by the USFWS are as follows:

- ***No Effect.*** The term used to indicate that no long or short-term effects are expected.

- ***Discountable.*** The term used to indicate that effects would be extremely unlikely to occur, or would be insignificant (the size of the impact should never reach the scale where "take" occurs) or completely beneficial. "Take" is defined as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in any such conduct," and includes habitat modification and the impairment of essential behavioral patterns (i.e. breeding, feeding, sheltering; USFWS and National Marine Fisheries Service 1998). It should be noted that "discountable" as used herein is an aggregation of the three effect levels (discountable, insignificant, and completely beneficial) defined by the USFWS upon which a conclusion of "is not likely to affect" is made

- ***Adverse-individual.*** The term used to indicate effects that would be likely to adversely affect individuals, but not significantly affect populations.

- ***Adverse-population.*** The term used to indicate effects that would be likely to adversely affect the population.

3.3 Resource Areas and Effects not Considered

***Land Use*.** The Proposed Action does not include any proposal to change the land use on the Installation. Additionally, there are no changes to secondary uses of Army land. Thus, this resource area was eliminated from further analysis.

***Geology*.** The Proposed Action does not include new activities which would result in the extraction of mineral resources or affect any subsurface geological features. Thus, this resource area was eliminated from further analysis.

Groundwater. The Proposed Action does not include any new activities which would result in the degradation of aquifer quality or propose to remove water from an aquifer. Thus, this resource area was eliminated from further analysis.

Air Quality. The Proposed Action is located within Natchitoches, Sabine, and Vernon Parishes, Louisiana. Air quality in these parishes meets or exceeds the National Ambient Air Quality Standards established by the U.S. Environmental Protection Agency (USEPA 2020a). Therefore, these areas are considered attainment areas according to 40 CFR 81.319. The Proposed Action is not expected to have a discernible impact on Air Quality because the project would not result in any new permanent air emission sources. Thus, this resource area was eliminated from further analysis.

Social Conditions. The Proposed Action does not propose any action which would affect public access, recreational use, and public services. Additionally, the Proposed Action would not affect the level and frequency of public use within the designated areas at JRTC and Fort Polk. There would be no change in the management and maintenance of recreation areas. Thus, this resource area was eliminated from further analysis.

Socioeconomics. The Proposed Action does not propose any action which would affect the regional and local economics surrounding JRTC and Fort Polk land. Thus, this resource area was eliminated from further analysis.

Transportation and Infrastructure. The Proposed Action does not propose any action which would affect the level-of-service provided for and by the Installation. Thus, this resource area was eliminated from further analysis.

General Compliance. The Proposed Action does not propose any action which would cause a violation to federal or state environmental regulations or permits the Installation may hold. Thus, this resource area was eliminated from further analysis.

3.4 Resource Areas Considered on a Detailed Basis

3.4.1 Water Resources: Streams, Wetlands, and Other Surface Water Resources

3.4.1.1 Affected Environment

Surface water systems are typically defined in terms of watersheds. A watershed is an area measured in a horizontal plane and enclosed by a topographic divide that contributes direct surface runoff into a water body (Fort Polk 2009). Watersheds drain, capture, filter, and store water and determine its subsequent release, and a watershed divides the landscape into hydrologically defined areas whose abiotic and biotic components interact. Watersheds are delineated into hydrologic units by the United States Geological Survey (USGS) using a nationwide system based on surface features. Each of the four alternatives is located within the Upper Calcasieu watershed (USGS 2020) (Figures 3-1 through 3-4).

Sedimentation to streams and riverine habitat is a water quality issue of concern. Whenever soils are disturbed, the potential for erosion or transport of sediment to streams, wetlands, and riverine habitat exists. Water quality at Fort Polk is regulated by the Louisiana Department of Environmental Quality (LDEQ) under Louisiana Title 33, Part IX-Water Quality Regulations, Chapter 11. This regulation establishes water quality criteria as well as use designations. Nonpoint sources are the primary pollutant sources of concern for surface water at Fort Polk. Nonpoint water pollution may include runoff from storm water, erosion, groundwater, septic systems, direct deposition of pollutants from wildlife, livestock, or atmospheric fallout, or various training activities. To protect water ways from sedimentation, Fort Polk implements large scale structural sedimentation control measures such as sediment basins. A sediment basin is usually constructed downslope of a hill or at the beginning of a drainage way. These water retention structures are designed to intercept, capture, and filter runoff by reducing water flow velocity and providing retention time adequate to allow soil particles to settle out before the water exits the impoundment. Sediment basins do not lessen soil loss, but decrease the amount of sediments entering and potentially impairing streams.

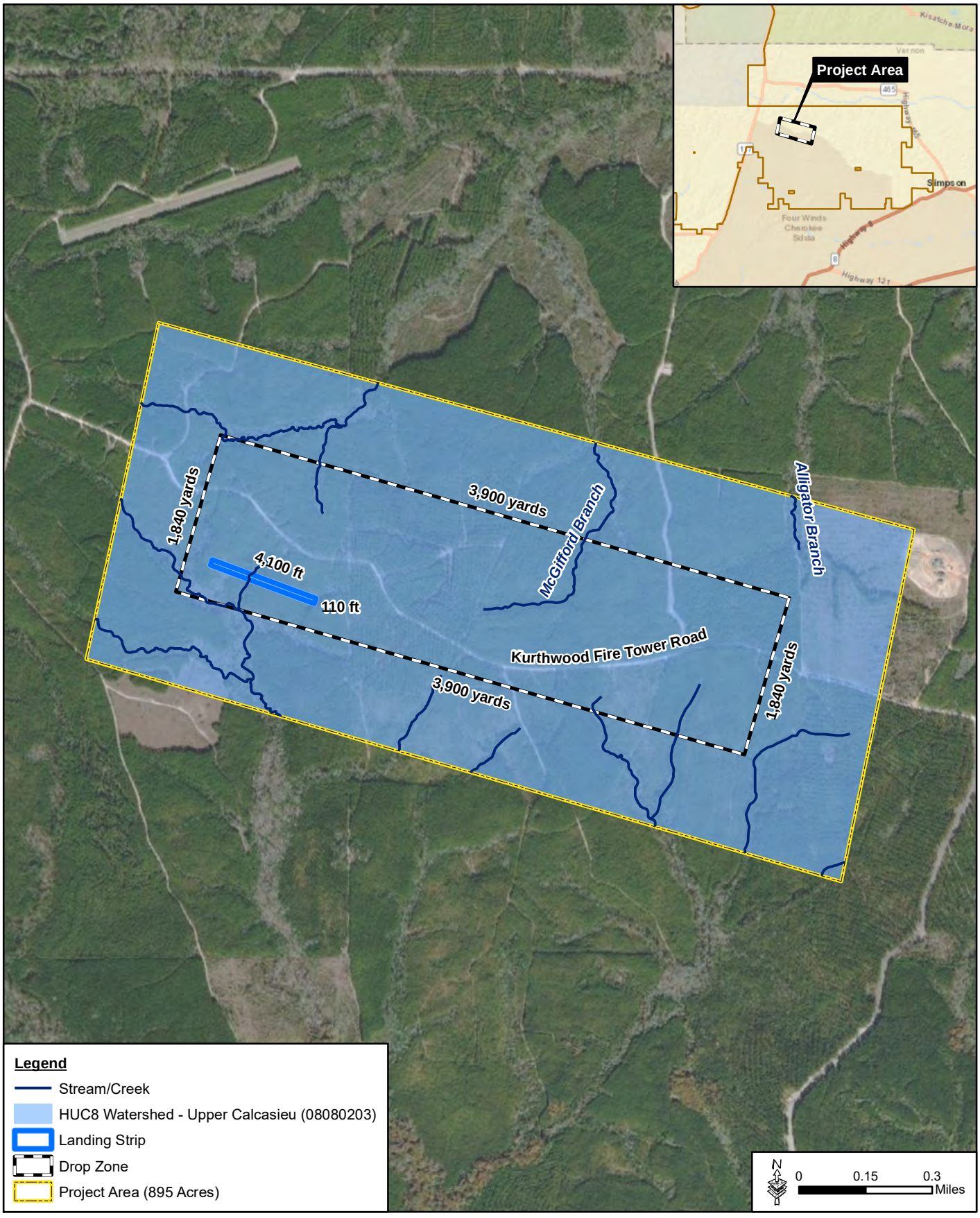

Figure 3-1. Surface Water Features – Alternative 1

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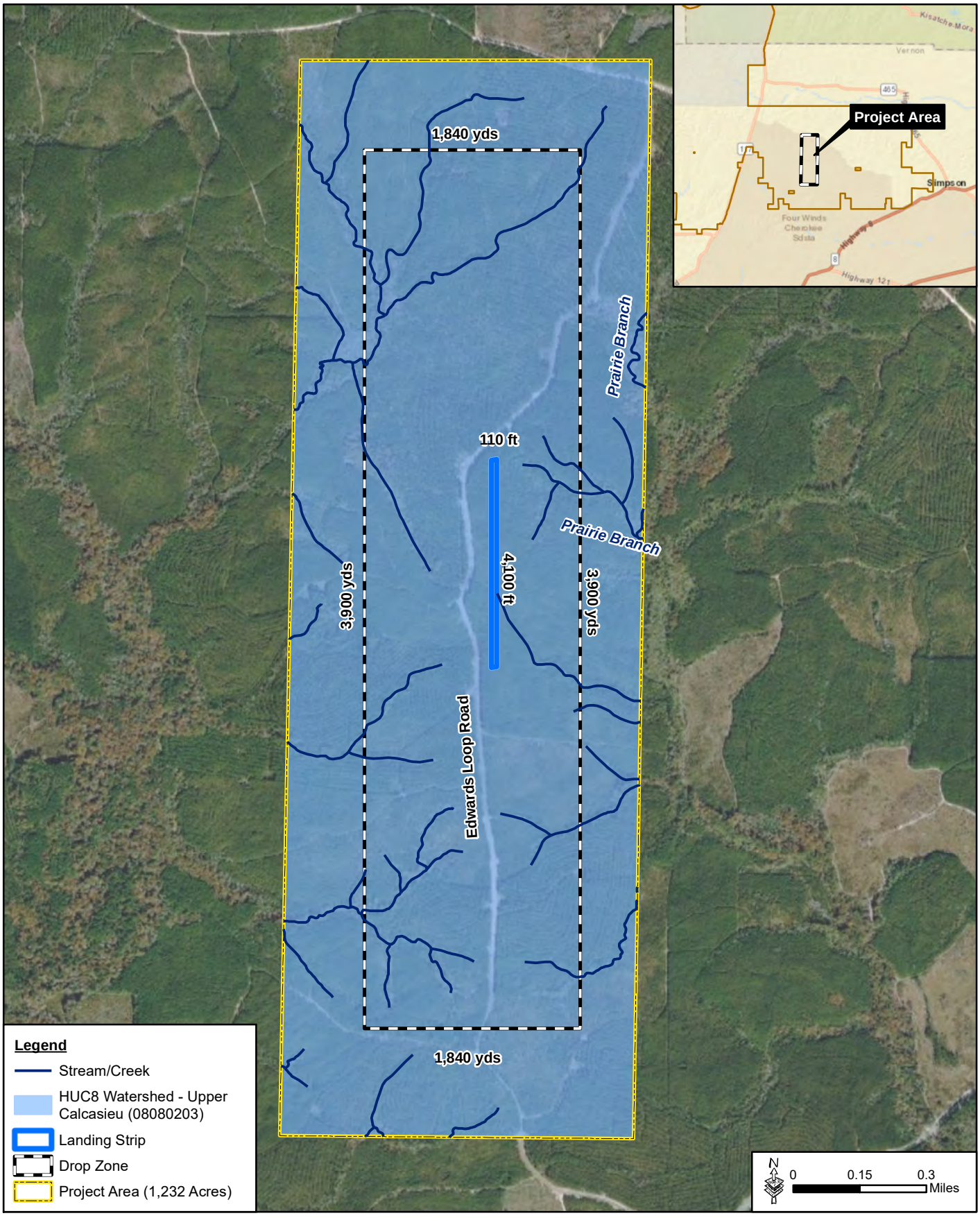

Figure 3-2. Surface Water Features – Alternative 2

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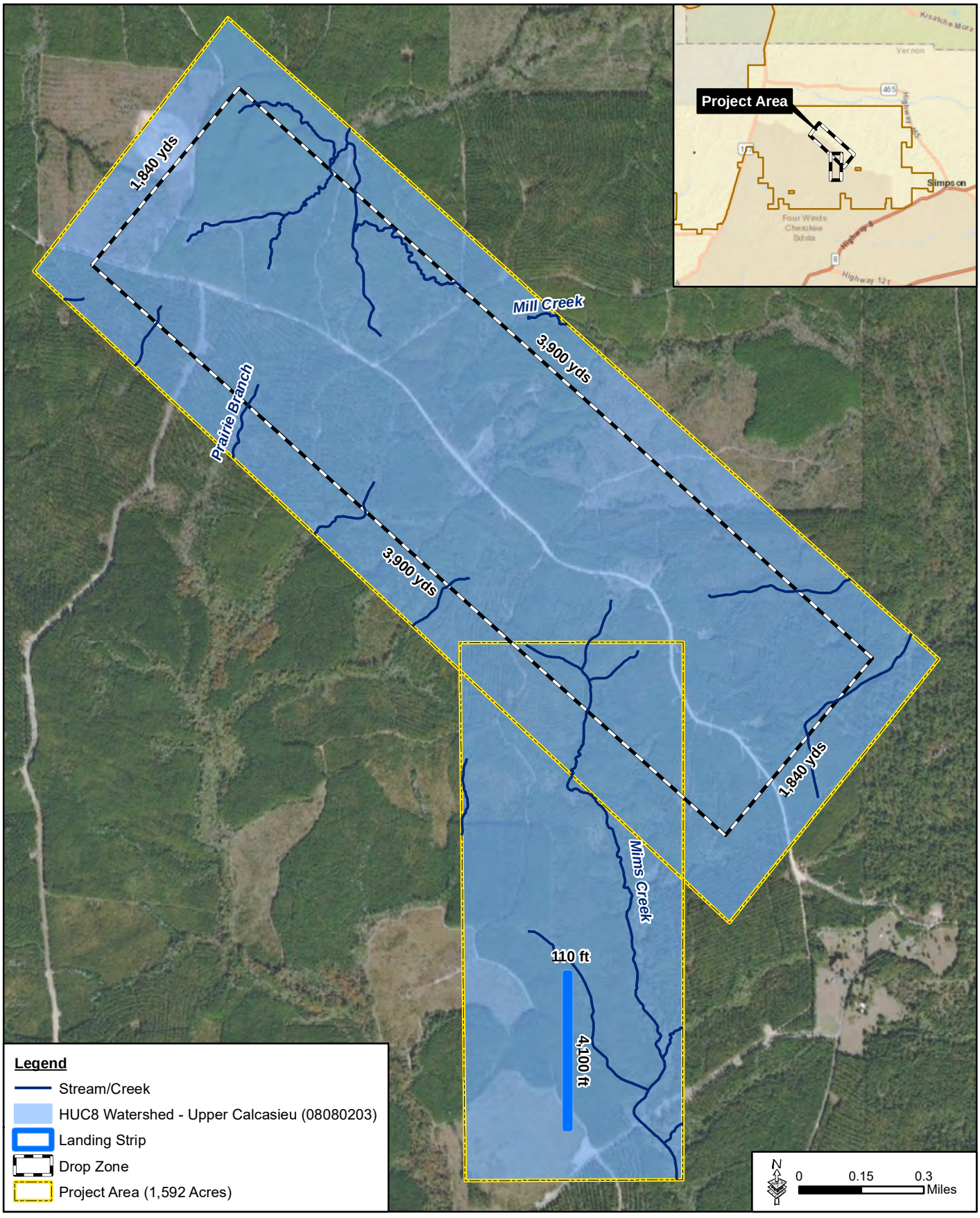

Figure 3-3. Surface Water Features – Alternative 3

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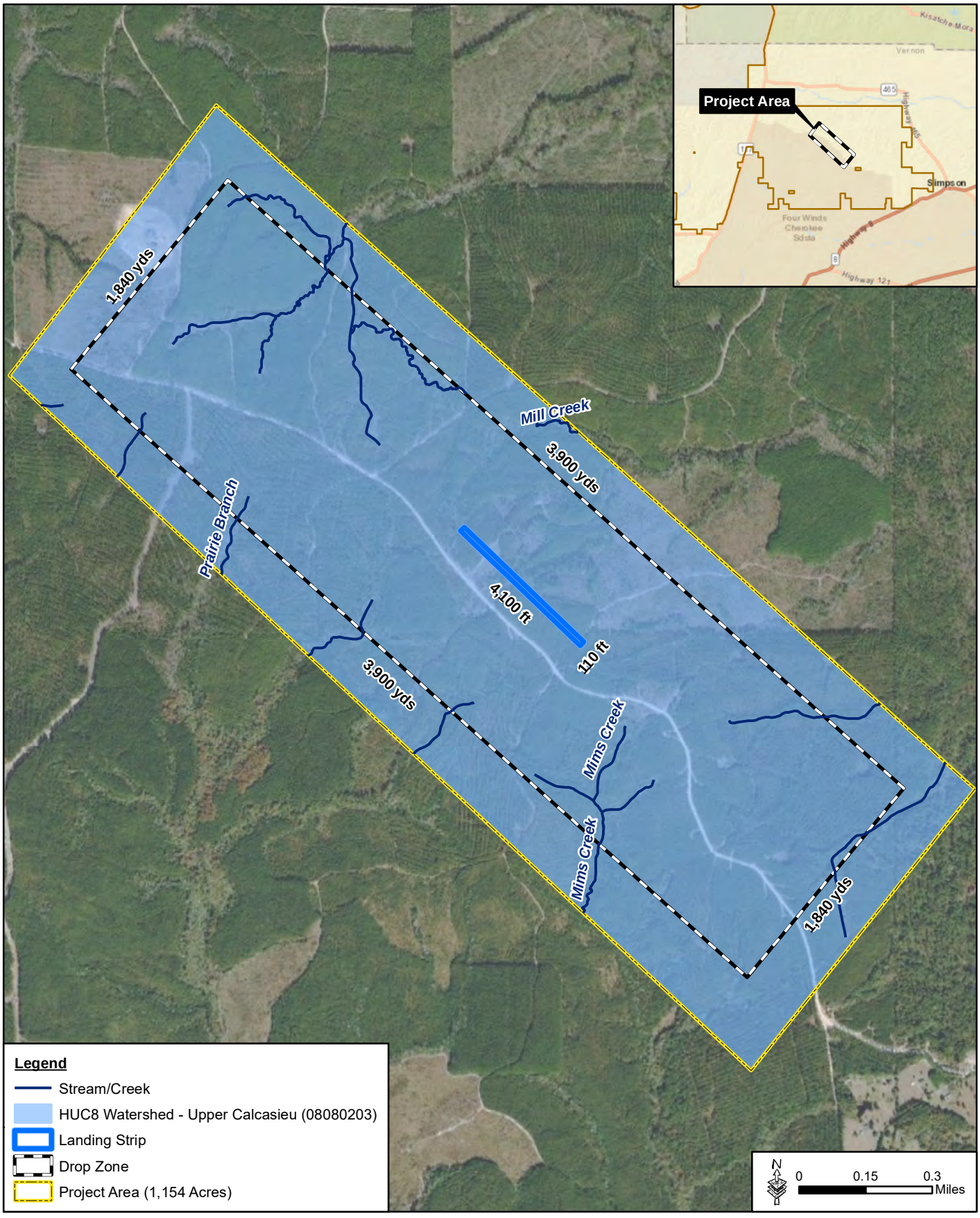

Figure 3-4. Surface Water Features – Alternative 4

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By design, these structures capture displaced soil particles, which can then be gathered from the sediment basin and redistributed as needed for rehabilitation of disturbed lands. The Installation began installing sediment basins during the 1980s. Sediment basins have been installed at numerous sites on the Installation that are subject to intensive military training activities and/or the potential for soil erosion.

There are several small streams as well as unnamed tributaries that cross each of the Proposed Alternatives. McGifford Branch and Alligator Branch are located within Alternative 1; Prairie Branch is located within Alternative 2; and Mims Creek, Prairie Branch, and Mill Creek are located within Alternatives 3 and 4. Alternative 1 and 4 both have 4.7 linear miles of streams, Alternative 2 has 9.5 linear miles, and Alternative 3 has 6.7 linear miles of streams (Figures 3-1 through 3-4).

Under Section 303 (d) of the Clean Water Act (CWA), the EPA maintains a list of impaired or threatened waters (e.g., streams, river segments, lakes) along with the pollutant causing the impairment, if known. None of the streams within the four alternatives are listed on the 303(d) list of impaired waters (USEPA 2020b).

Wetlands are protected as a subset of “Waters of the United States” (waters of the U.S.) under Section 404 of the CWA. Wetlands are defined as “areas that are inundated or flooded by surface or groundwater at a frequency and duration to support and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions” (CFR 33, Part 328.3[b]). Section 404 of the CWA requires permitting for certain activities occurring within jurisdictional wetlands. Wetlands in areas of Fort Polk generally consist of freshwater bogs, baygalls, and swamps. Freshwater bogs are in areas where the water table is near the surface and these bogs are saturated for most of the year (Fort Polk 2010); the hydrology of these bogs is maintained by groundwater seepage or overland flow. Baygalls are maintained either by seepage from upslope locations or high water tables (Fort Polk 2010). Swamps are seasonally saturated and flood infrequently; these are maintained by groundwater seepage, rainfall, perched water tables, or surface water (Fort Polk 2010).

NEPA requires that projects be evaluated for possible impacts on wetland resources. In most cases, the Environmental and Natural Resources Management Division (ENRMD) makes the initial evaluation. A wetland delineation is conducted if the area is considered potential Waters of the U.S., including wetlands and a wetland findings report is prepared. For projects with the potential for impacts, the wetlands findings report is referred to the USACE for a preliminary jurisdictional determination. Coordination with the USACE under the CWA is required for dredging or placement of fill within jurisdictional wetlands, and mitigation is required for any unavoidable impacts on jurisdictional wetlands.

Gulf South Research Corporation (GSRC) conducted a wetland delineation of the Proposed Alternatives between August and October 2018 and January and February 2019. The potentially jurisdictional wetlands and waters of the U.S. that were found in each of the alternatives are given in Table 3-2 and shown in Figures 3-5 through 3-8.

Table 3-2. Wetlands and Waters of the U.S. in each Alternative

Alternative	Potentially jurisdictional wetlands (acres)	Potential waters of the U.S (linear miles)
Alternative 1	0.39	7.43
Alternative 2	18.18	11.27
Alternative 3	62.12	14.89
Alternative 4	40.71	10.76

Source: GSRC 2019

Previous Commitments

Fort Polk has established programs and procedures to protect water resources within its training lands (Appendix A). The following measures are currently implemented Installation-wide and would be used to maintain and sustain the proposed DZ/FLS associated with the Proposed Action. The following describes existing procedures and programs utilized to protect watersheds and thereby protect waterways from sedimentation. Environmental requirements specific to the proposed DZ/FLS are provided in Appendix B.

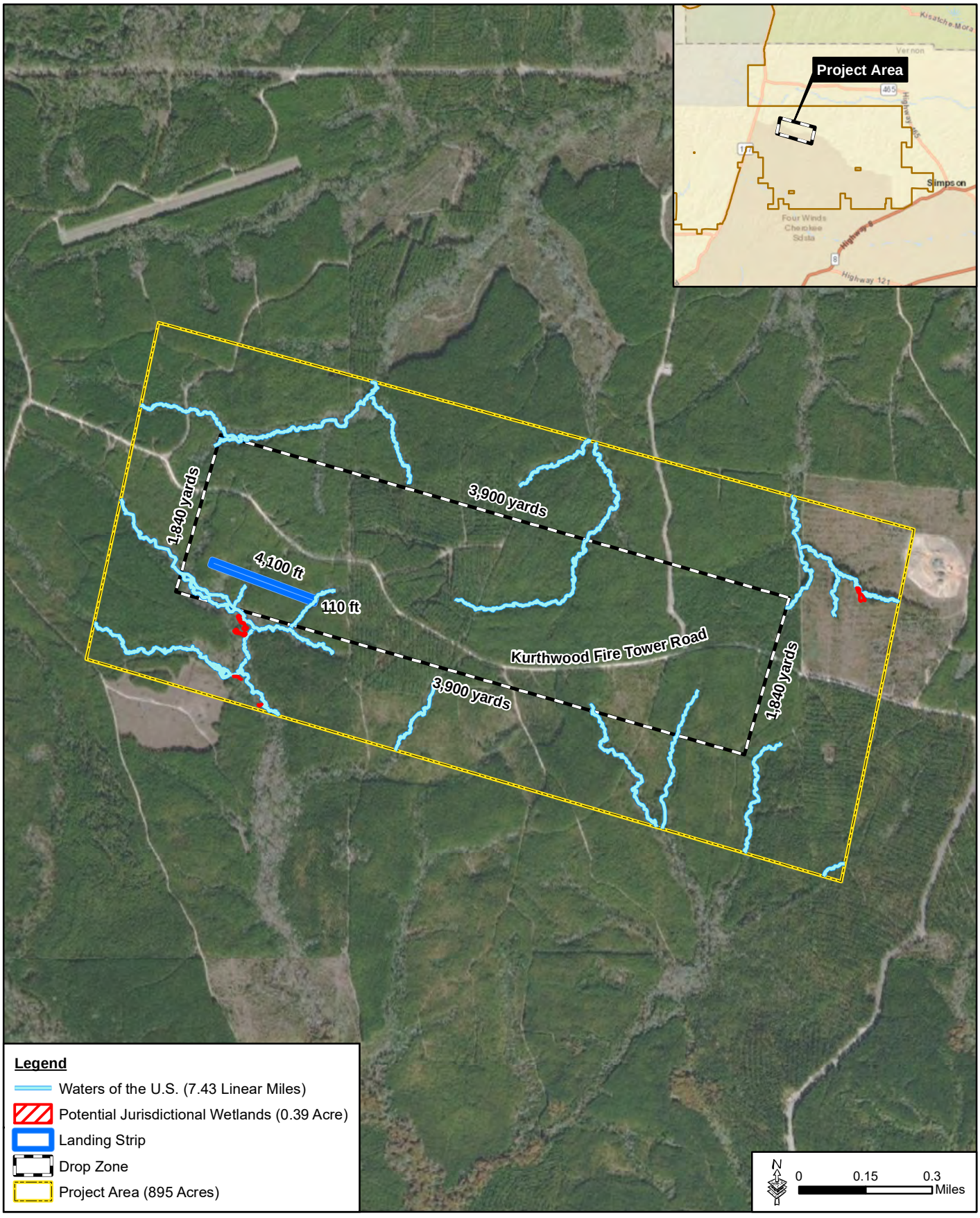

Figure 3-5. Wetlands – Alternative 1

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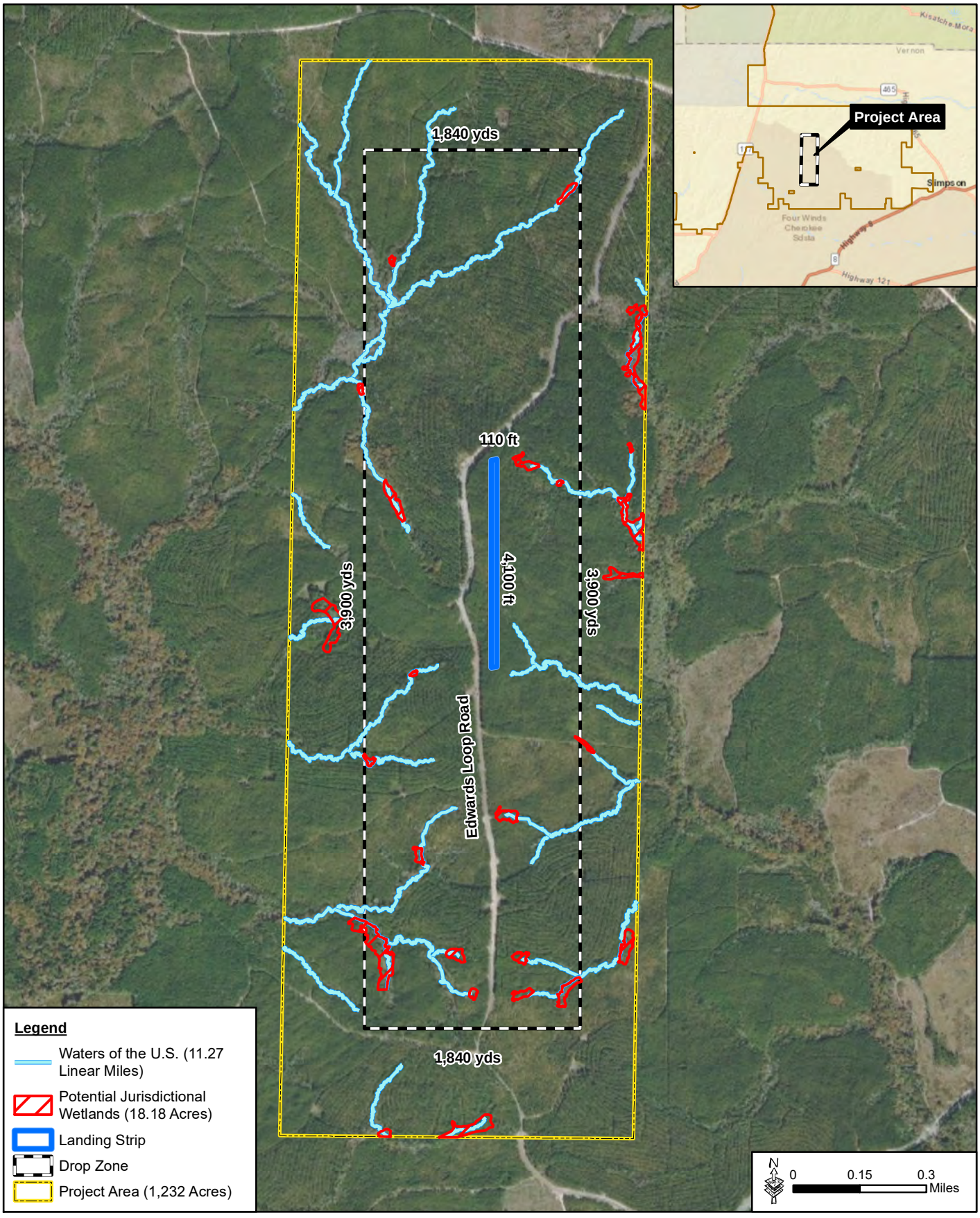

Figure 3-6. Wetlands – Alternative 2

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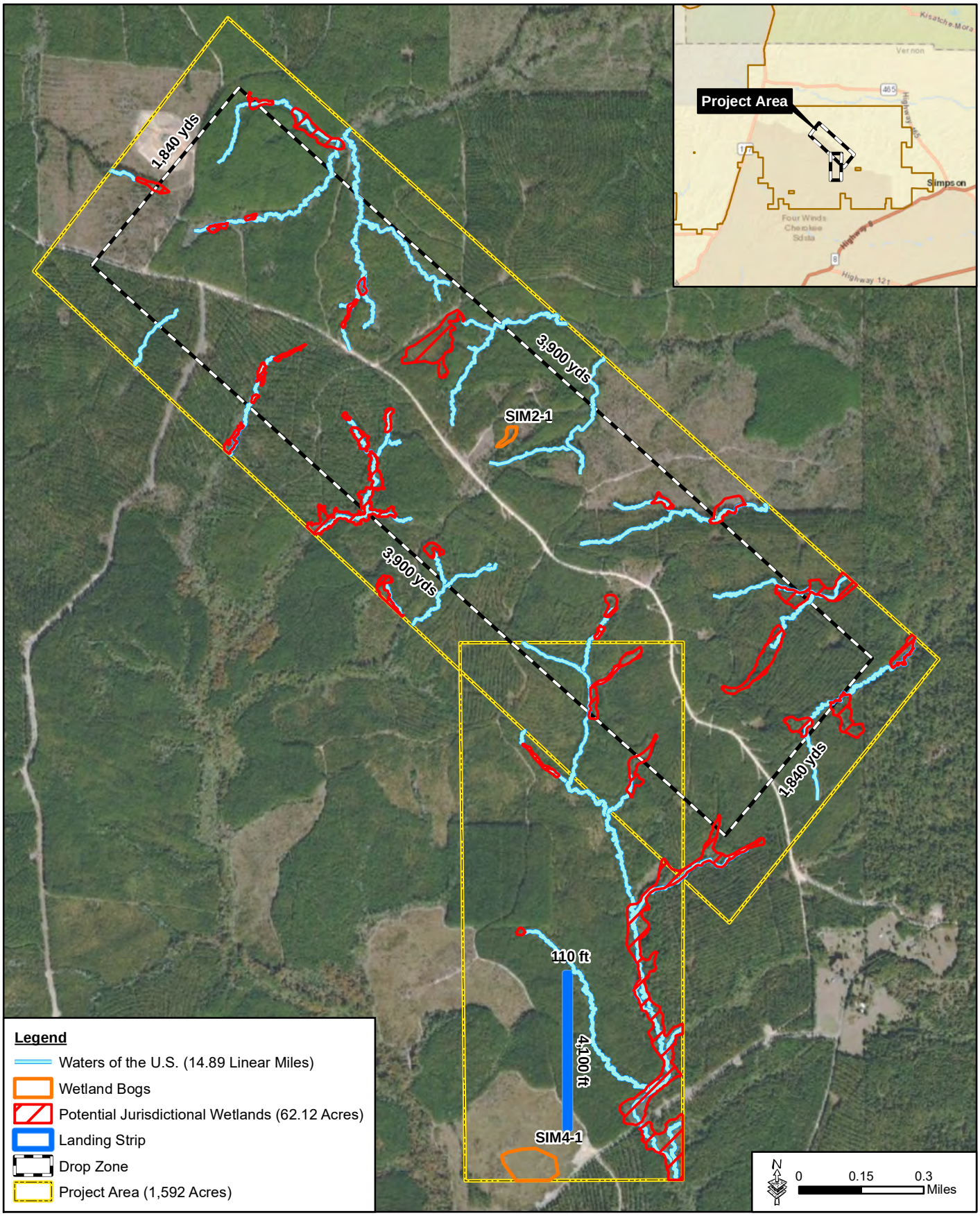

Figure 3-7. Wetlands – Alternative 3

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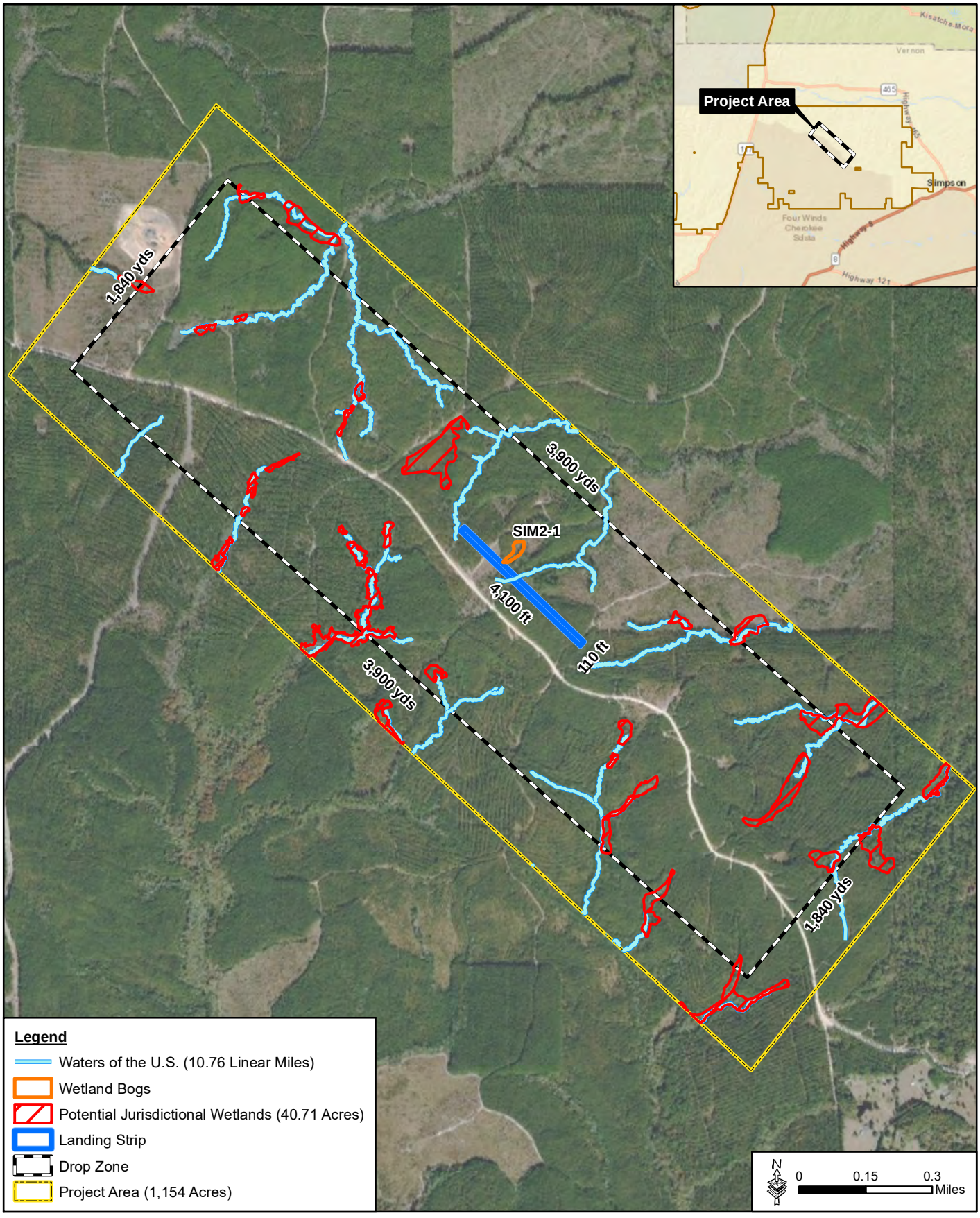

Figure 3-8. Wetlands – Alternative 4

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- ***Development of a Stream Gage Network*.** The USGS and Fort Polk ENRMD have established a network of stream gage stations to monitor stream flow and water quality parameters for the purpose of assessing stream responses to changes in training intensity or land use. Data collected by the gages assists with estimating and mitigating sedimentation rates, a water quality issue of concern due to the highly erodible nature of soils and the potential for construction and training activities to increase soil erosion and sedimentation in streams.

- ***Construction Process Oversight*.** Procedures to ensure that environmental compliance requirements and measures to reduce adverse effects to environmentally sensitive resources are included in contract specifications for military construction projects. The Contracting Office Representative (COR) would ensure compliance with specified limits of construction, construction sequencing, Section 404 permit conditions, a Stormwater Pollution Prevention Plan (SWPPP), and other environmental considerations during construction, as specified in construction specifications, NEPA, and permit documents. The COR would review environmental requirements before construction, coordinate with the ENRMD NEPA document point-of-contact to ensure compliance, and have the authority to halt construction if work is not performed in accordance with environmental requirements.

- ***Annual Maintenance of Sediment Basins*.** All sediment basins are inspected to ensure they are functioning properly. Basin maintenance is prioritized according to need. Excess sediment is removed from basins, applied to upland areas, and stabilized.

3.4.1.2 Environmental Impacts

Alternative 1 (West DZ – Preferred Alternative)

The construction of this Alternative would have direct, permanent, minor, and adverse impacts to streams, wetlands, and potential waters of the U.S. Approximately 4.7 miles

of streams, 0.39 acre of potential jurisdictional wetlands, and 7.43 miles of potential waters of the U.S. would be impacted through the implementation of this Alternative (see Figure 3-5). Fort Polk would obtain a Section 404 permit for unavoidable impacts to wetlands and would purchase mitigation credits to offset potential impacts to wetlands as part of this alternative. Prior to any construction, a SWPPP would be developed for the entire project footprint. The purpose of the SWPPP is to maintain and control soils within the construction site, and it precludes and prevents the movement of soils away from the construction site footprint.

Alternative 2 (Central DZ)

The implementation of Alternative 2 would have direct, permanent, minor, and adverse impacts to streams, wetlands, and potential waters of the U.S. Approximately 9.5 miles of streams, 18.18 acres of wetlands, and 11.27 miles of potential waters of the U.S. would be impacted through the implementation of this Alternative (see Figure 3-6). Fort Polk would obtain a Section 404 permit for unavoidable impacts to wetlands and would purchase mitigation credits to offset potential impacts to wetlands as part of this alternative. Prior to any construction, a SWPPP would be developed for the entire project footprint. The purpose of the SWPPP is to maintain and control soils within the construction site, and it precludes and prevents the movement of soils away from the construction site footprint.

Alternative 3 (Eastern DZ)

Approximately 6.7 miles of streams, 62 acres of potentially jurisdictional wetlands, and 14.89 miles of potential waters of the U.S. would be impacted through the implementation of this Alternative (see Figure 3-7), and these impacts would be direct, permanent, minor, and adverse. Fort Polk would obtain a Section 404 permit for unavoidable impacts to wetlands and would purchase mitigation credits to offset potential impacts to wetlands as part of this alternative. Prior to any construction, a SWPPP would be developed for the entire project footprint. The purpose of the SWPPP is to maintain and control soils within the construction site, and it precludes and prevents the movement of soils away from the construction site footprint.

Alternative 4 (Eastern DZ with Imbedded FLS)

Approximately 4.7 linear miles of streams, 40.71 acres of wetlands, and 10.76 miles of potential waters of the U.S would be impacted through the implementation of this Alternative (see Figure 3-8), and these impacts would be direct, permanent, minor, and adverse. Fort Polk would obtain a Section 404 permit for unavoidable impacts to wetlands and would purchase mitigation credits to offset potential impacts to wetlands as part of this alternative. Prior to any construction, a SWPPP would be developed for the entire project footprint. The purpose of the SWPPP is to maintain and control soils within the construction site, and it precludes and prevents the movement of soils away from the construction site footprint.

Alternative 5 (No Action Alternative)

There would be no impacts to surface water resources under this Alternative, as there would be no changes to the current baseline condition for these resources.

3.4.2 Biological Resources: Forest Ecology, Native Plants, Sensitive Communities, and Invasive Plant Species

3.4.2.1 Affected Environment

The Louisiana Wildlife Action Plan (WAP) divides the state into six different ecoregions. It defines an ecoregion as an area which shares similar ecological attributes such as vegetation, soils, geology, climate, hydrology, and wildlife. Vernon Parish lies in the West Gulf Coastal Plain ecoregion; historically this ecoregion contained upland longleaf pine (*Pinus palustris*) forests in association with hardwood slope forests and mixed hardwood-loblolly forests. Additionally, forested seeps and hillside seepage bogs occurred historically along slopes at lower elevations (Fork Polk 2010). These associations were likely characteristic of the study area prior to timber management (Fort Polk 2010). The WAP also recognizes that longleaf pine restoration is a conservation priority within this ecoregion.

Installation botanists have identified 15 vegetation community types on the Installation. Native vegetation types found on the Installation include artificial prairie, baygall, longleaf pine, loblolly pine, and mixed pine/hardwood. The longleaf pine ecosystem is

the dominant vegetation community on Fort Polk; the understory associated with longleaf pine forests consists of native grasses, legumes, composites, and forbs. The diverse herbaceous ground cover in longleaf pine forests frequently includes bluestem grasses (*Andropogon spp.*), panic grasses (*Dichanthelium spp.*), nutrush (*Juncus spp.*), sunflowers (*Eriophyllum spp.*), golden asters (*Chrysopsis spp.*), partridge pea (*Chamaecrista fasciculata*), and bracken fern (*Pteridium spp.*). The primary vegetation types in the Proposed Action area and acreage of each to be removed as a result of the Proposed Action is provided in Table 3-3.

Table 3-3. Vegetation Types within the Proposed Alternatives

Vegetation Type	Alternative 1 (acres)	Alternative 2 (acres)	Alternative 3 (acres)	Alternative 4 (acres)
Baygall	2.4	16.4	24.2	8.9
Cutover/slash	18.6	9.2	101.5	69.7
Loblolly pine plantation	651.1	998.3	1,002.9	788.2
Mixed pine/hardwood forest	-	-	45.4	45.4
Pine/oak scrub	49.9	0.6	50.7	50.7
Pitcher plant bog	-	-	7.8	2.5
Sandy riparian	80.9	147.5	149.9	130.0
Sandy woodland	5.0	4.8	1.3	1.3
Savannah	-	7.4	-	-
Unknown	77.0	54.1	91.9	64.0
Non-natural areas	0.4	0.1	5.9	5.9
Total	**885.3**	**1,238.4**	**1,481.5**	**1,166.6**

Forest Ecology

Approximately 80 percent of Fort Polk is wooded, and Fort Polk conducts forest management on approximately 192,000 acres (Fort Polk 2014). The majority of the timber and vegetation in the region was removed as a result of a “logging boom” in the 1910s through the 1930s.

Fort Polk manages the current forest ecosystem to support the military mission and manages towards longleaf pine restoration and other major ecosystems (e.g., shortleaf-oak hickory and bottomland hardwoods) on appropriate sites. The amount of timber

(including pine and hardwood basal area) that will need to be removed for each Alternative is provided in Table 3-4.

Table 3-4. Timber Quality within the Proposed Alternatives

	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Understory – bluestem (acres)	176.30	54.09	21.41	19.33
Understory – shrubs/bushes (acres)	698.19	1135.29	1392.98	1070.69
Understory – other (acres)	16.08	34.58	28.09	23.60
Understory – hardwoods (acres)	-	-	40.34	40.34
Understory-absent (acres)	4.28	-	-	-
Pine basal area (per acre)	94.60	73.57	80.30	79.65
Hardwood basal area (per acre)	24.59	17.80	19.86	19.76

Source: Fort Polk GIS data

Native Plants

On Fort Polk, numerous pitcher plant bogs are created by seepage from localized perched water tables, and these bogs tend to be small and isolated and occur on ridge slopes (Gene Stout and Associates 2004). These bogs are generally associated with isolated depressions and near streams with a flat topography (Isherwood 2020). Pitcher plant bogs may be quite small and may not always appear in association with wetland inventories and management schemes. Species common to this type of bog include pipeworts (*Eriocaulon* spp.), sundews (*Drosera* spp.), butterworts (*Pinguicula* spp.), and several orchids (*Platanthera* spp). State rare plant species are also a common feature. On occasion, these bogs are damaged by military training. Certain bogs have natural and scientific value for their pristine condition and are under imminent threat. Protection areas for bogs are off-limits to military and civilian vehicular traffic and digging. Alternatives 1 and 2 do not contain any pitcher plant bogs (Figure 3-9). There were 13 individual bogs that have been identified by Installation botanists located in the footprint of Alternative 3 and 4 (Figure 3-10 and 3-11). However, recent field visits indicate that

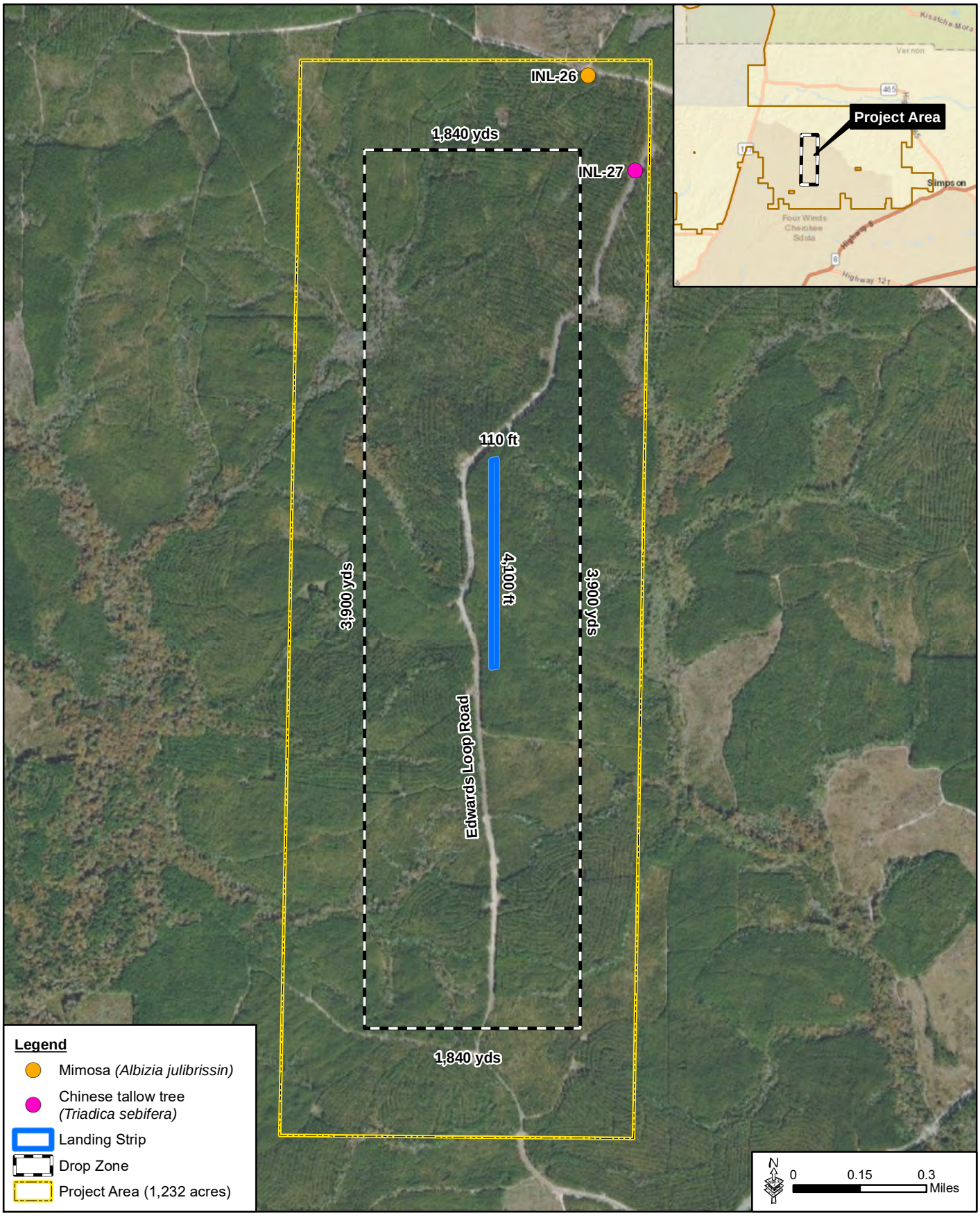

Figure 3-9. Pitcher Plant Bogs and Invasive Species – Alternative 2

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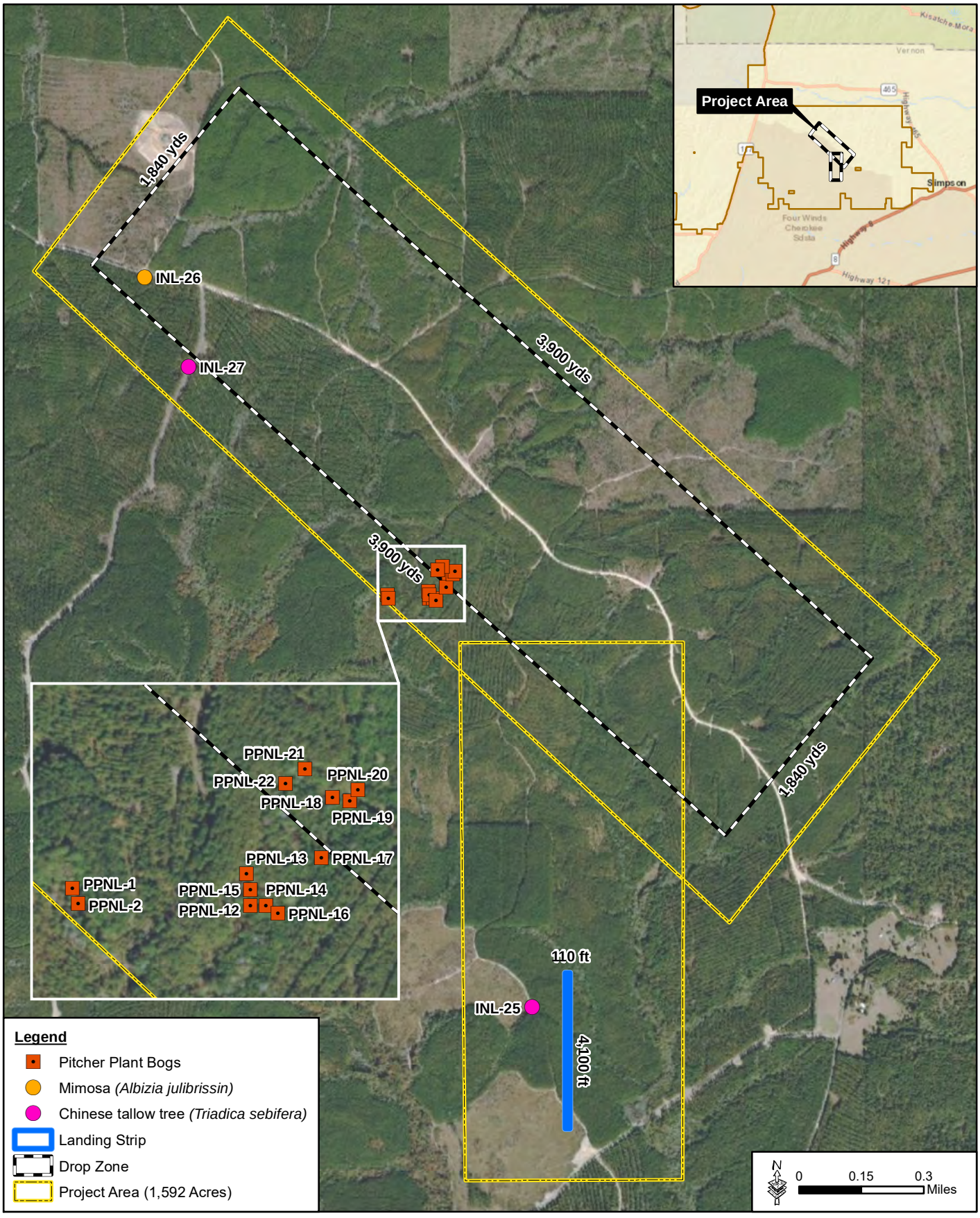

Figure 3-10. Pitcher Plant Bogs and Invasive Species – Alternative 3

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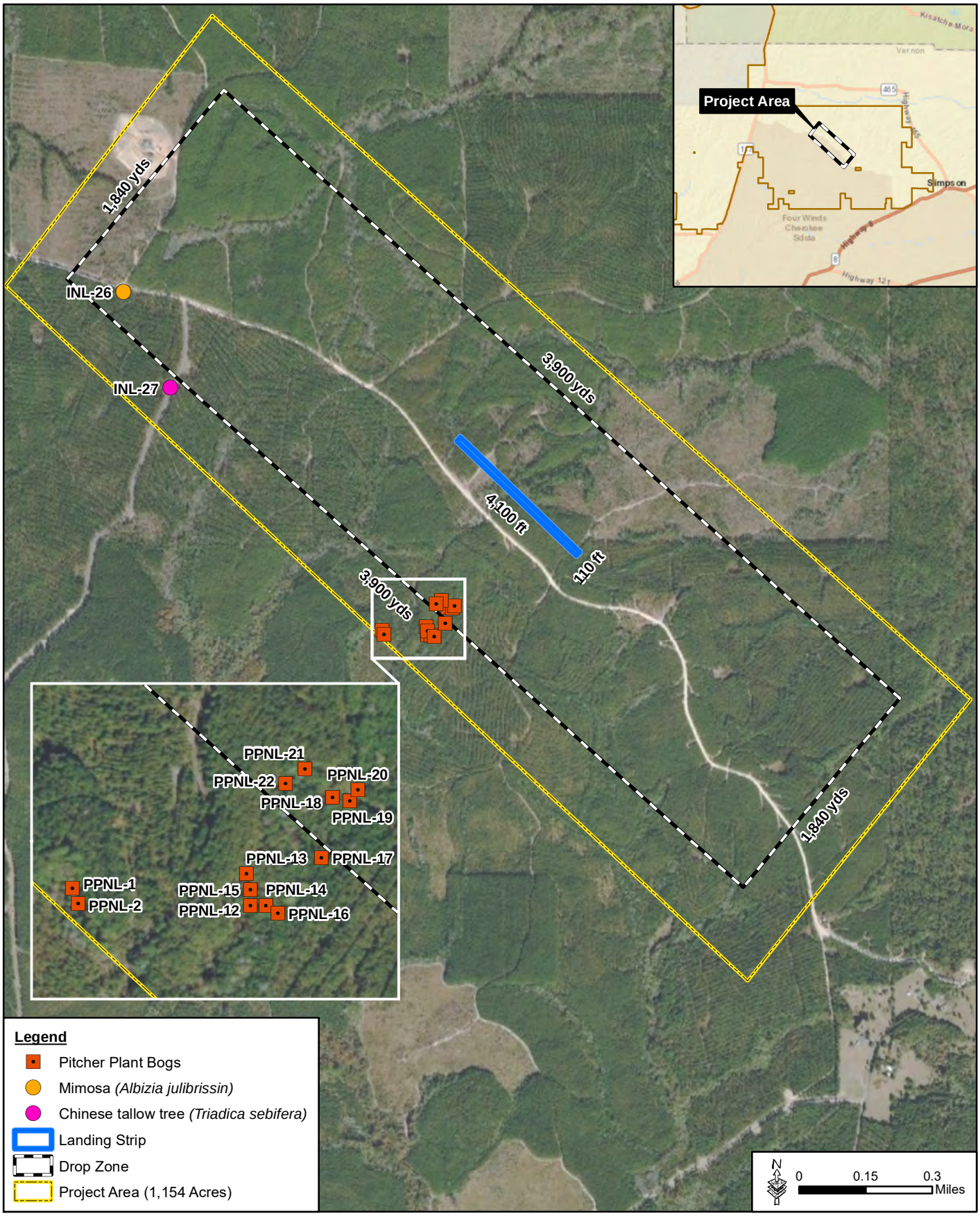

Figure 3-11. Pitcher Plant Bogs and Invasive Species – Alternative 4

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the pitcher plant bogs may have been overtaken by the loblolly pine plantations (Isherwood 2020).

Longleaf pine forests often encompass smaller areas of several community types, including the intertwined riparian forest along smaller streams and drainages. Small sites of hardwood slope forest, shortleaf pine/oak-hickory forest, and mixed hardwood-loblolly pine forest occur on mesic side slopes and stream terraces within the landscape. Hardwood and less fire tolerant pine species occupy drainage landforms and other areas. Bogs and baygalls provide small but unique habitats within the forest landscape and areas with deep, sandy soils support unique sandy woodland communities. The upland areas are frequently dissected by perennial and intermittent streams. Military use has increased wildfire frequency, benefitting the longleaf pine landscape and its embedded plant communities (Fort Polk Conservation Branch ENRMD 2016).

The known flora of Fort Polk and Vernon Parish consists of approximately 1,467 species in 561 genera and 151 families (Fort Polk 2019). Currently, 62 species of special status flora exist in Vernon Parish and have the potential to occur on Fort Polk (LDWF 2020b). There are no known federally listed plant species on Fort Polk (USFWS 2020).

Non-native and invasive plant species

Large infestations of non-native or invasive plant species could affect Fort Polk's ability to use and maintain high quality forest. Non-native or invasive plant species, such as noxious weeds, have the potential to negatively impact projects involving soil erosion control, revegetation, wetland protection, and wildlife management. Several non-native and invasive plant species, such as Chinese tallow tree (*Triadica sebifera*), Japanese privet (*Ligustrum japonicum*), kudzu (*Pueraria montana*), and mimosa tree (*Albizia julibrissin*) have been found on Fort Polk. The majority of the known non-native and invasive plants species found on Fort Polk have not spread aggressively within the project area and are usually restricted to more disturbed sites. Non-native and invasive

species are “pushed” from these sites due to natural succession as disturbed areas recover back to a more natural state (Fort Polk 2019). Several invasive plant species have been recorded within the footprint of the Proposed Action Alternatives; (see Figures 3-9 through 3-11). One mimosa tree and one Chinese tallow tree have been documented in the footprint of Alternative 2 (see Figure 3-9), one mimosa tree and two Chinese tallow trees have been documented within Alternative 3 (see Figure 3-10), and one mimosa tree and one Chinese tallow tree have been documented within Alternative 4 (see Figure 3-11). However, the individual trees located within Alternative 3 are the same as those found in Alternative 4 as these two Alternatives share the same DZ footprint.

Fort Polk typically uses a combination of integrated pest management techniques to control or prevent the spread of noxious plants, which avoids damage and minimizes adverse side effects to non-target species and the environment (Gene Stout and Associates 2004).

Previous Commitments

Fort Polk has established programs and procedures to protect the rare and sensitive plants and communities on its training lands (Appendix A). The following describes existing procedures and programs utilized to protect forested areas, native plant species and communities.

- ***Construction Process Oversight*.** Procedures to ensure that environmental compliance requirements and measures to reduce adverse effects to environmentally sensitive resources are included in contract specifications for military construction projects. The COR would ensure compliance with specified limits of construction, construction sequencing, Section 404 permit conditions, storm water pollution prevention plans, and other environmental considerations during construction, as specified in construction specifications, NEPA, and permit documents. The COR would review environmental requirements before construction, coordinate with the ENRMD NEPA document point-of-contact to

ensure compliance, and have authority to halt construction if work is not performed in accordance with environmental requirements.

- ***Bog mapping and monitoring*.** All bogs on the Installation are being digitally mapped and monitored. Bogs are being inspected for damage following training exercises and during annual training land inspection events, and corrective action to protect wetlands and rare/sensitive plant species are implemented as appropriate. Additionally, bogs are ground-truthed as part of the Compartment Prescription process.

- ***Environmental Screening/Alternatives Analysis for Construction Projects*.** The Installation Master Planner would provide project footprint and alternative sites to the ENRMD before the plans are presented to the Real Property Planning Board (RPPB) for development of a screening analysis of effects and identification of environmentally preferred siting and design options. The environmentally preferred options would be presented to the RPPB, along with other options under consideration, to ensure that environmental factors and concerns are integrated early in the planning process. Potential benefits are reductions in future construction and mitigation costs, reduction or avoidance of adverse cumulative effects to environmental resources, streamlining of design and construction processes, and promotion of sustainability, conservation, and compliance with environmental regulations.

3.4.2.2 Environmental Impacts

Alternative 1 (West DZ – Preferred Alternative)

As a result of this Alternative, the amount and quality of timber needed to be removed would not be expected to significantly change the ratio of open to forested land. Approximately 895 acres of vegetation would be removed; however, this is a small percentage of the land area that comprises Fort Polk and would remove less than one percent of the total land area land area (0.37 percent). While loblolly pine habitat dominates the land area of this Alternative, the landscape is a mosaic of embedded

wetlands, linear drainages and streams, and riparian systems with hardwood-dominated floodplain forests. These features play a vital role in the region's biological diversity. Embedded riparian plant communities frequently dissect pine areas and contain overstories of hardwood and mixed hardwood pine. Hardwood species reflect moisture regimes varying greatly by landform and aspect, and influencing associated ground cover species. Smaller plant communities embedded include baygall, pine/oak scrub, and sandy woodland (see Table 3-3). With the continued implementation of Fort Polk's Integrated Natural Resources Management Plant (INRMP), impacts to forest ecology and native plant species are anticipated to have direct, moderate, long-term, and adverse impacts.

The implementation of this Alternative would not have any direct impacts to invasive species, as there are no known individuals located within the project footprint. However, invasive plant species tend to be found in more disturbed sites and the clearing of vegetation may make this area more susceptible to invasive species. Therefore, the impacts of the Proposed Action on invasive plant species would be negligible.

Alternative 2 (Central DZ)

As a result of this Alternative, the amount and quality of timber needed to be removed would not be expected to significantly change the ratio of open to forested land. Approximately 1,223 acres of vegetation would be removed; however, this is a small percentage of the land area that comprises Fort Polk and would remove less than one percent of its land area (0.51 percent). While loblolly pine habitat dominates the land area of this Alternative, the landscape is a mosaic of embedded wetlands, linear drainages and streams, and riparian systems with hardwood-dominated floodplain forests. These features play a vital role in the region's biological diversity. Embedded riparian plant communities frequently dissect pine areas and contain overstories of hardwood and mixed hardwood pine. Hardwood species reflect moisture regimes varying greatly by landform and aspect, and influencing associated ground cover species. Smaller plant communities embedded include baygall, pine/oak scrub, and

sandy woodland (see Table 3-3). With the continued implementation of Fort Polk's INRMP, impacts to forest ecology and native plant species are anticipated to have direct, moderate, long-term, and adverse impacts.

While this Alternative is dominated by native plant species, the removal of approximately 1,238 acres of vegetation would also remove several invasive species. However, invasive plant species tend to be found in more disturbed sites and the clearing of vegetation may make this area more susceptible to invasive species. Therefore, the impacts on invasive plant species through the implementation of this Alternative would be direct, long-term, and negligible.

Alternative 3 (Eastern DZ)

As a result of the Proposed Action, the amount and quality of timber needed to be removed would not be expected to significantly change the ratio of open to forested land. Approximately 1,592 acres of vegetation will be removed, however, this is a small percentage of the land area that comprises Fort Polk and would remove less than one percent of its land area (0.66 percent). While loblolly pine habitat dominates the area of this Alternative, the landscape is a mosaic of embedded wetlands, linear drainages and streams, and riparian systems with hardwood-dominated floodplain forests. These features play a vital role in the region's biological diversity. Embedded riparian plant communities frequently dissect pine areas and contain overstories of hardwood and mixed hardwood pine. Hardwood species reflect moisture regimes varying greatly by landform and aspect, and influencing associated ground cover species. Smaller plant communities embedded include baygall, pine/oak scrub, sandy woodland, and pitcher plant bogs (see Table 3-3). With the continued implementation of Fort Polk's INRMP, impacts to forest ecology and native plant species are anticipated to have direct, moderate, long-term, and adverse impacts.

While this Alternative is dominated by native plant species, the removal of approximately 1,592 acres of vegetation would also remove several invasive species. However, invasive plant species tend to be found in more disturbed sites and the

clearing of vegetation may make this area more susceptible to invasive species. Therefore, the impacts on invasive plant species through the implementation of this Alternative would be direct, long-term, and negligible.

Alternative 4 (Eastern DZ with Imbedded FLS)

As a result of this Alternative, the amount and quality of timber needed to be removed would not be expected to significantly change the ratio of open to forested land. Approximately 1,154 acres of vegetation would be removed; however, this is a small percentage of the land area that comprises Fort Polk and would remove less than one percent of its land area (0.48 percent). While loblolly pine habitat dominates the land area of this Alternative, the landscape is a mosaic of embedded wetlands, linear drainages and streams, and riparian systems with hardwood-dominated floodplain forests. These features play a vital role in the region's biological diversity. Embedded riparian plant communities frequently dissect pine areas and contain overstories of hardwood and mixed hardwood pine. Hardwood species reflect moisture regimes varying greatly by landform and aspect, and influencing associated ground cover species. Smaller plant communities embedded include baygall, pine/oak scrub, sandy woodland, and pitcher plant bogs (see Table 3-3). With the continued implementation of the Fort Polk's INRMP, impacts to forest ecology and native plant species are anticipated to have direct, moderate, long-term, and adverse impacts.

While the Proposed Action area is dominated by native plant species, the removal of approximately 1,166 acres of vegetation would also remove several invasive species. However, invasive plant species tend to be found in more disturbed sites and the clearing of vegetation may make this area more susceptible to invasive species. Therefore, the impacts on invasive plant species through the implementation of this Alternative would be direct, long-term, and negligible.

Alternative 5 (No Action Alternative)

No trees or vegetation would be removed as a result of the No Action Alternative; therefore, there would be no impacts to forest ecology, native plants and communities, or invasive species.

3.4.3 Biological Resources: Species of Concern, and Threatened and Endangered Species

Fort Polk's wildlife species include most animals indigenous to the southwestern Louisiana pinelands region. Totals of 243 species of native birds and four introduced bird, 50 reptile species, 22 amphibian species, and 46 species of mammals have been recorded on Fort Polk (Fort Polk 2020a).

The Louisiana Department of Wildlife and Fisheries (LDWF) maintains a list of plant and animal species that are considered Species of Greatest Conservation Need. These species may be federally listed as threatened or endangered, or they may be uncommon species that rely on imperiled habitats for their survival (LDWF 2020b). A total of 108 species are considered Species of Greatest Conservation Need (SGCN) in Vernon Parish, Louisiana, with plants being the most numerous taxa with 62 species listed. In addition to these species, there are 13 natural communities included in this list.

Plant and animal species that are federally listed as proposed, threatened, or endangered by the USFWS receive Federal protection under the Endangered Species ACT (ESA) of 1973. The only federally listed species known to occur on Fort Polk are the red-cockaded woodpecker (*Dryobates borealis*; hereafter RCW) and the Louisiana pinesnake (*Pituophis ruthveni*; hereafter LPS) (USFWS 2020 and Fort Polk 2019). The RCW was listed as endangered on August 25, 1970 (35 Federal Register [FR] 13519 13520) and the LPS was listed as threatened on April 6, 2018 (83 FR 14958 14968).

3.4.3.1 Affected Environment

3.4.3.1.1 Species of Concern

In the 2015 WAP, LDWF prioritized the SGCN into three different levels - Tier I, Tier II, and Tier III. These prioritization levels are meant to allow state fish and wildlife agencies to more effectively plan conservation actions and allocate the limited amount of funding available (Holcomb et al. 2015). Details on how these tiers were calculated and prioritized are located in the 2015 WAP (Holcomb et al. 2015). Tier I species should generally be prioritized over others, and likewise Tier II species should be prioritized over Tier III species. Plants are not included in the WAP, and therefore do not have a prioritization level. Of the wildlife species, 10 are considered Tier I species, 23 are Tier II, and 12 are Tier III (Holcomb et al. 2015).

The WAP also outlines Conservation Opportunity Areas (COA), which are priority areas based on SGCN richness and habitat diversity (Holcomb et al. 2015). The Proposed Action area is located within the Calcasieu River COA. SGCN within the Calcasieu River COA that are of particular importance (i.e., species with limited distribution), their habitat associations, and their habitat within the Proposed Action area, if it exists, are shown in Table 3-5.

3.4.3.1.2 Red-cockaded Woodpecker

The RCW, unlike other woodpecker species, excavates their cavities in living rather than dead trees or snags (Jackson 1994). The RCW can be found in a variety of pine forest habitats, including longleaf, loblolly, slash (*P. elliottii*), shortleaf (*P. echinata*), Virginia (*P. virginiana*), pond (*P. serotina*), or pitch pine (*P.rigida*) (Jackson 1994). The species depends on old-growth (80-100 year old) pine forests for both nesting habitat and foraging; and cavity trees are often infected with red heart fungus (*Phellinus pini*) (Fort Polk 2019). RCWs are highly social and live in family groups where they cooperatively breed. RCW forage primarily on insects and arthropods. Male and female RCW have divergent foraging strategies; male RCW will often forage on the upper trunk and branches of pine trees while female RCW will forage on the main trunk below the lowest branches (Jackson 1994).

Table 3-5. Species of Concern Known or Expected to Occur within the Proposed Action Area

Species Common Name	Scientific Name	Habitat Types	Habitat Types within Proposed Action Area
Bachman's sparrow	*Peucaea aestivalis*	Longleaf pine	Loblolly pine plantation
Calcasieu painted crawfish	*Faxonius hathawayi blacki*	Small stream forest	Baygall, sandy riparian
Chuck-will's-widow	*Antrostomus carolinensis*	Calcareous forest, small stream forest, western longleaf pine flatwoods savanna, xeric sandhill woodland, sandstone glade barren	Loblolly pine plantation, sandy riparian
Crawfish frog	*Lithobates areolatus*	Bottomland hardwood forest	Pitcher plant bog, sandy riparian
Grasshopper sparrow	*Ammodramus savannarum*	Shortleaf pine-oak-hickory woodland, western upland longleaf pine woodland, calcareous prairie, western hillside seepage bog	Cutover/slash
Greater roadrunner	*Geococcyx californianus*	Calcareous forest, shortleaf pine-oak-hickory woodland, western longleaf pine flatwoods savanna, western upland longleaf pine woodland, xeric sandhill woodland, calcareous prairie, sandstone glade barren, pine plantation	Cutover/slash, loblolly pine plantation, pine/oak scrub
Gumbo darter	*Etheostoma thompsoni*	Small stream forest	Sandy riparian
Henslow's sparrow	*Ammodramus henslowii*	Shortleaf pine-oak-hickory woodland, western longleaf pine flatwoods savanna, western upland longleaf pine woodland, calcareous prairie, western hillside seepage bog, pine plantation	Loblolly pine plantation, pitcher plant bogs
Hispid pocket mouse	*Chaetodipus hispidus*	Western upland longleaf pine woodland, xeric sandhill woodland,	Loblolly pine plantation
Louisiana pinesnake	*Pituophis ruthveni*	Longleaf pine	Loblolly pine plantation
Louisiana waterthrush	*Parkesia motacilla*	Bottomland hardwood forest, mixed hardwood-loblolly pine slope forest, small stream forest	Baygall, sandy riparian

Table 3-5, continued

Species Common Name	Scientific Name	Habitat Types	Habitat Types within Proposed Action Area
Northern bobwhite	*Colinus virginianus*	Western longleaf pine flatwoods savanna, western upland longleaf pine woodland, xeric sandhill woodland, calcareous prairie, sandstone glade barren	Cutover/slash, loblolly pine plantation
Prairie warbler	*Setophaga discolor*	Mixed hardwood-loblolly pine slope forest, western longleaf pine flatwoods savanna, western upland longleaf pine woodland, xeric sandhill woodland, pine plantation	Cutover/slash, mixed pine/hardwood forest, pine/oak scrub
Red-cockaded woodpecker	*Dryobates borealis*	Shortleaf pine-oak-hickory woodland, western longleaf pine flatwoods savanna, western upland longleaf pine woodland, pine plantation	Loblolly pine plantation
Sandbank pocketbook	*Lampsilis satura*	No data	Unknown
Southern hickorynut	*Obovaria arkansasensis*	Bottomland hardwood forest, small stream forest	Baygall, riparian forest
Western chicken turtle	*Deirochelys reticularia miaria*	Cypress-tupelo-blackgum swamp, western longleaf pine flatwoods savanna, ephemeral ponds, lakes and reservoirs, pine plantation	Baygall
White-breasted nuthatch	*Sitta carolinensis*	Mixed hardwood-loblolly pine slope forest, shortleaf pine-oak-hickory woodland, western longleaf pine flatwoods savanna, western upland longleaf pine woodland	Mixed pine/hardwood forest
Worm-eating warbler	*Helmitheros vermivorum*	Bottomland hardwood forest, mixed hardwood-loblolly pine slope forest, small stream forest, shortleaf pine-oak-hickory woodland	Baygall, sandy riparian, sandy woodland
Yellow brachycercus mayfly	*Sparbarus flavus*	Small stream forest	Baygall, sandy riparian, pitcher plant bog

Source: Holcomb et al. 2015

JRTC and Fort Polk manage two separate RCW populations; the Vernon-Fort Polk population found on Fort Polk Main Post and the Vernon Unit of the Kisatchie National Forest (KNF), and the Peason Ridge population. The old growth forest stands of Fort Polk and Peason Ridge provide foraging, roosting, and nesting habitat that is critical to the survival of these RCW populations. The Vernon-Fort Polk population is designated as a primary core population ideally supporting 350 breeding pairs (Fort Polk 2010 and USFWS 2003). The Peason Ridge population is designated an essential support population which aims to support 10 or more active clusters. Fort Polk's goal is to maintain 92 active RCW clusters on Fort Polk and 70 on Peason Ridge (Fort Polk 2010); currently, the Vernon-Fort Polk population consists of 206 potential breeding groups while the Peason Ridge population has approximately 19 breeding pairs (Fort Polk 2020b).

The collection of cavity trees that harbor or could potentially harbor an RCW family group is known as a cluster. RCW need 125 acres of good quality foraging habitat within a 0.5-mile radius of the cluster center (Fort Polk 2019). Proposed projects within this 0.5-mile buffer must be evaluated to determine if habitat removal would result in a loss of foraging habitat to below 125-acres post-project. Fort Polk maintains a HMU for the RCW; the HMU is all habitats that currently meet the requirements for suitable RCW nesting and foraging habitat (whether or not it is presently occupied), plus all habitats that could meet the requirements for habitat in the future. Currently, the total RCW HMU acreage on Fort Polk is approximately 31,532 acres (Moore 2018). Fort Polk is required to maintain a minimum of 24,228 acres of RCW HMU to support the Installation Regional Recovery Goal (IRRG).

There are no RCW cluster sites or RCW HMU located within the footprint of any of the four Alternatives (Williams 2020).

3.4.3.1.3 Louisiana Pinesnake

The LPS is a fossorial species, living primarily underground, with limited (seasonal and diurnal) above-ground movement. The LPS is generally associated with sandy, well-

drained soils, open pine forests, in particular longleaf pine savannah with a sparse to moderate mid-story and a well-developed understory dominated by grasses (Gene Stout and Associates 2004). Much of Fort Polk contains suitable habitat for the LPS (Fort Polk 2019). Baird's pocket gophers (*Geomys breviceps*) are both an important prey item and they also provide burrows for the LPS. LPS may spend up to 60% of their time underground, and they almost exclusively use Baird's pocket gopher burrows (Gene Stout and Associates 2004). They are also seasonally active, being more active between March and May and also fall, while they are least active between December and February, and in the heat of summer, especially August.

The major threats to LPS include habitat loss, fire suppression, and vehicle mortality (Gene Stout and Associates 2004). A population of LPS is located on JRTC and Fort Polk and is known mostly from trap captures that are part of an extensive, ongoing effort to monitor the species on Fort Polk. Over a 10-year period, only 18 LPS were documented on USFS IUA, making an accurate population estimate very difficult (Gene Stout and Associates 2004). Fort Polk established and maintains a 22,882-acre HMU for the LPS (Fort Polk 2019).

Approximately 214 acres of LPS HMU will be impacted through the implementation of Alternative 1, 225 acres through Alternative 2, 578 acres through Alternative 3, and 516 acres through Alternative 4 (Figures 3-12 through 3-15). However, there are no known pocket gopher mounds or complexes located within any of the Proposed Alternatives (Williams 2020).

Previous Commitments

Fort Polk has established programs and procedures to protect the LPS on its training lands (Appendix A). The following describes existing procedures and programs used to protect the LPS and its habitat and would be used to sustain and maintain LPS and its habitat associated with the Proposed Alternatives.

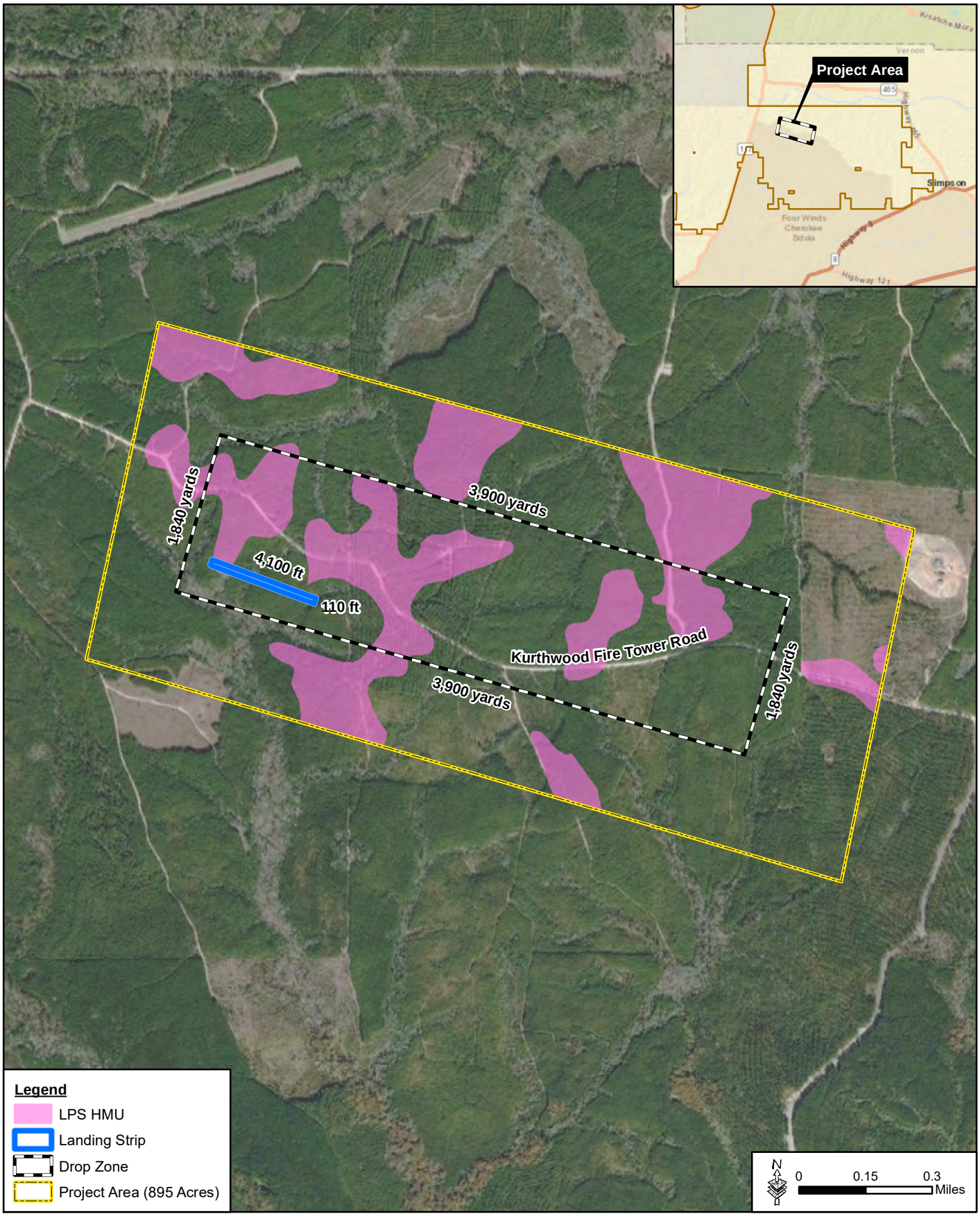

Figure 3-12. LPS HMU within Proposed Action Area – Alternative 1

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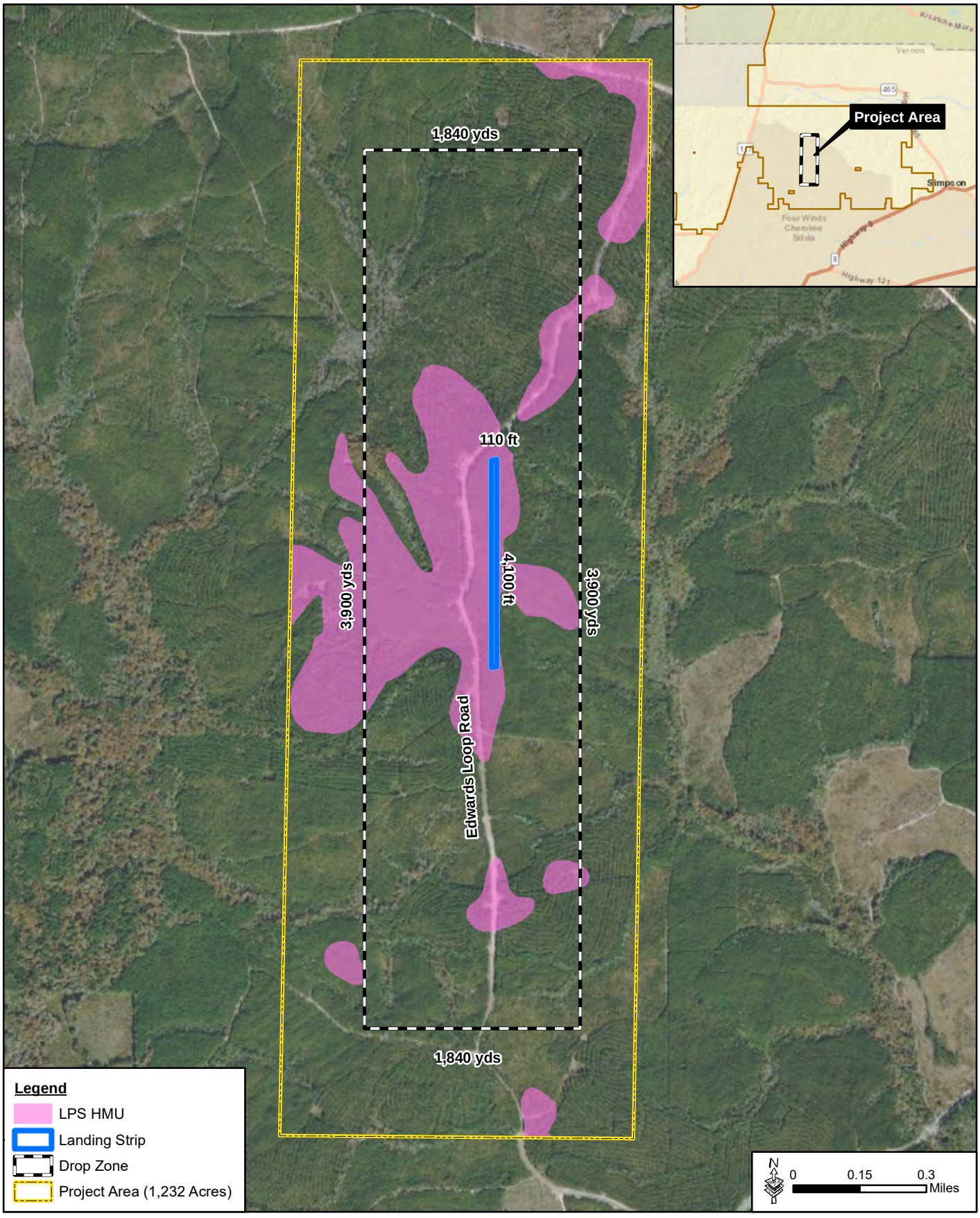

Figure 3-13. LPS HMU within Proposed Action Area – Alternative 2

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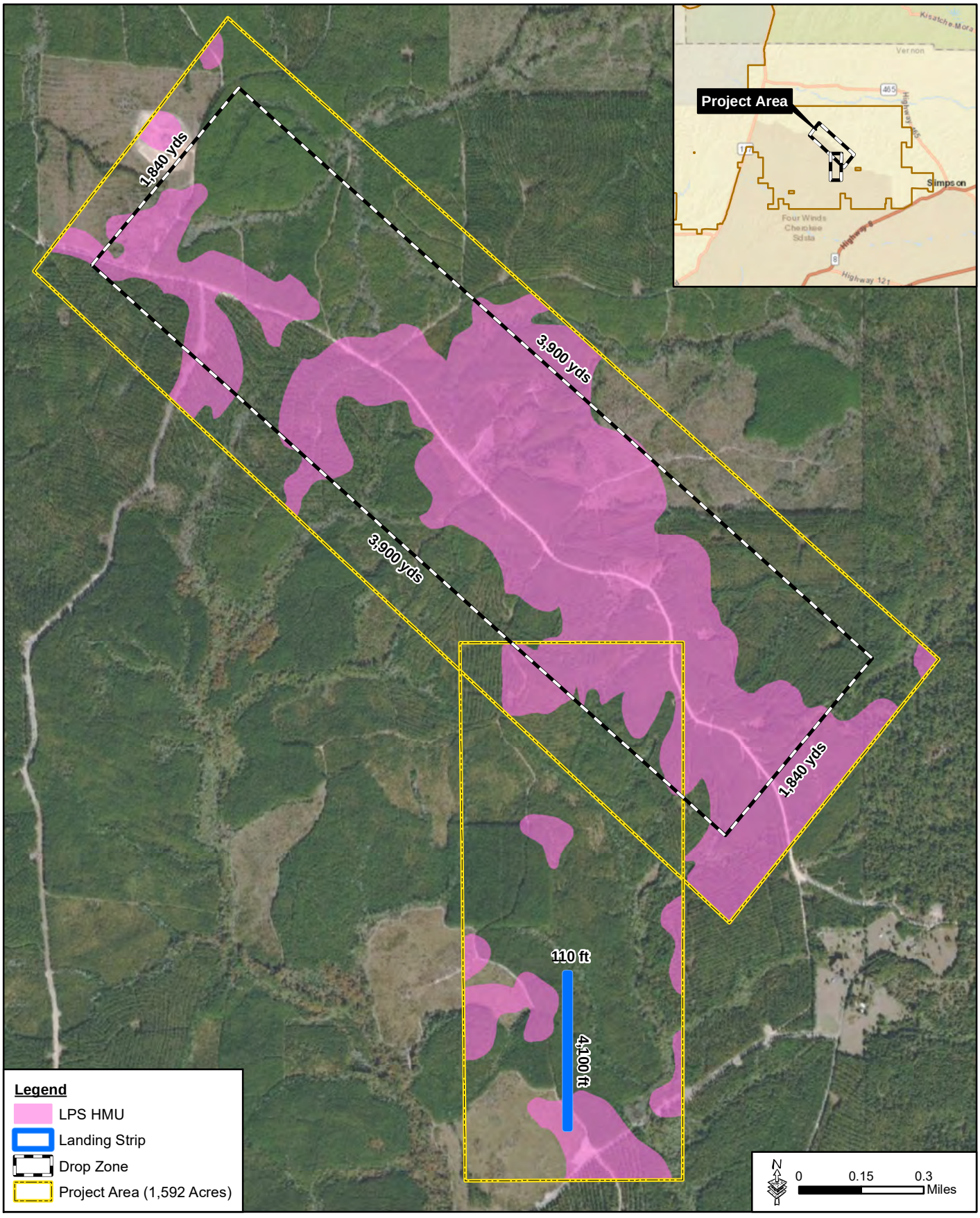

Figure 3-14. LPS HMU within Proposed Action Area – Alternative 3

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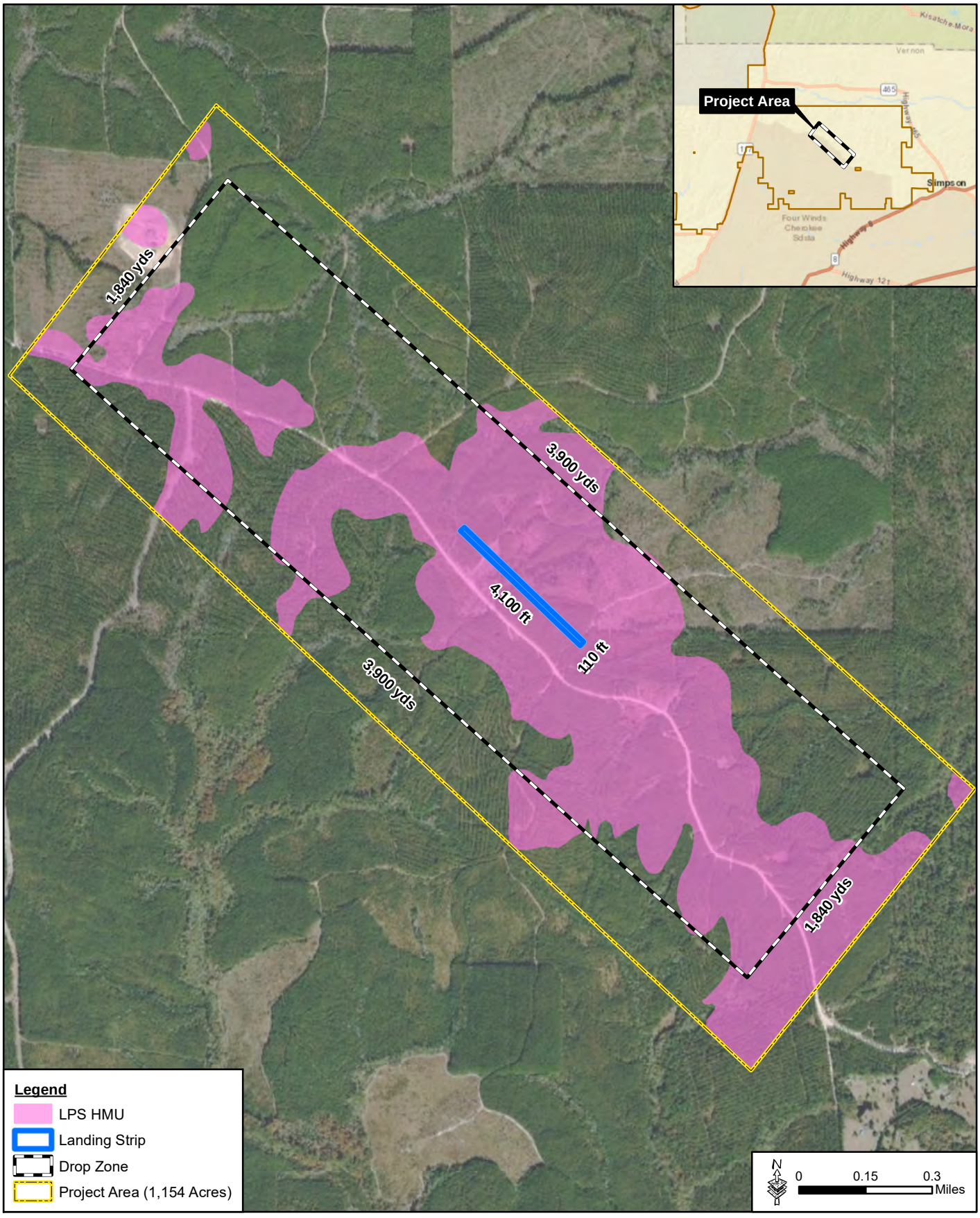

Figure 3-15. LPS HMU within Proposed Action Area – Alternative 4

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- ***Louisiana Pinesnake Conservation.*** To avoid or reduce future construction-related effect on the LPS, Fort Polk conducts LPS and/or Baird's pocket gopher mound surveys within proposed construction footprints for all new construction projects within the range and maneuver training areas.

- ***Pre-Construction Brief.*** Before construction activities commence on a proposed project, biologists will brief the construction workers on LPS and Baird's pocket gopher and construction guidelines related to gopher mound complexes.

3.4.3.2 Environmental Impacts

3.4.3.2.1 Species of Concern

Alternative 1 (West DZ – Preferred Alternative)

The Proposed Action could potentially impact up to 20 SGCN (see Table 3-5). Twelve of these species are highly mobile (i.e., birds or insects) and could potentially move into available habitat adjacent to and outside of the Proposed Action area; these species would experience direct, negligible, short-term, adverse impacts. The remaining eight species are less mobile (i.e., amphibians and reptiles) and would experience direct, moderate, adverse impacts due to the implementation of the Proposed Action.

Alternative 2 (Central DZ)

Impacts to species of concern under this Alternative would be similar to those described for Alternative 1.

Alternative 3 (Eastern DZ)

Impacts to species of concern under this Alternative would be similar to those described for Alternative 1.

Alternative 4 (Eastern DZ with Imbedded FLS)

Impacts to species of concern under this Alternative would be similar to those described for Alternative 1.

Alternative 5 (No Action Alternative)

There would be no impacts to any Species of Concern under this Alternative as no vegetation or wildlife habitat would be removed or altered as a result of the No Action Alternative.

3.4.3.2.2 Red-cockaded Woodpecker

Alternative 1 (West DZ)

The implementation of this Alternative would have no effect on RCW, as there are no RCW partitions or RCW HMU located within the project footprint.

Alternative 2 (Central DZ)

The Proposed Action would have no effect on RCW, as there are no RCW partitions or RCW HMU located within the project footprint.

Alternative 3 (Eastern DZ)

The Proposed Action would have no effect on RCW, as there are no RCW partitions or RCW HMU located within the project footprint.

Alternative 4 (Eastern DZ with Imbedded FLS)

The Proposed Action would have no effect on RCW, as there are no RCW partitions or RCW HMU located within the project footprint.

Alternative 5 (No Action Alternative)

No trees or vegetation would be removed as a result of the No Action Alternative. Therefore, there would be no impacts to RCW or RCW habitat or HMU.

3.4.3.2.3 Louisiana Pinesnake

Alternative 1 (West DZ – Preferred Alternative)

Approximately 214 acres would be lost from the LPS HMU (see Figure 3-12) under the implementation of this Alternative. Recent studies indicate that it is highly unlikely that LPS will inhabit areas that are grubbed to remove stumps and roots. Preliminary results

from Fort Polk's telemetry study indicates that LPS spend approximately 70 percent of their time in or near gopher mound complexes, which is where an encounter with a LPS would most likely occur. Additionally, results indicate that LPS were located approximately 15 feet away from the closest overstory tree (less than 30 feet tall) in 116 of 158 plots. Based on these studies and preliminary results, it is highly unlikely that stump removal will result in LPS mortality. The implementation of this Alternative is anticipated to have short-term, negligible, adverse impacts on LPS during construction.

There are no known Baird's pocket gopher mounds or complexes located within this Alternative, and due to the LPS's strong association with these complexes, there would likely be no direct impacts on LPS due to the implementation of Alternative 1. It is possible that construction of this Alternative and removing timber could increase the quality of the habitat for Baird's pocket gopher, thereby increasing the possibility of impacts during training exercises.

Alternative 2 (Central DZ)

Approximately 225 acres would be lost from the LPS HMU (see Figure 3-13) under the implementation of this Alternative. Impacts to LPS through this Alternative would be similar to those described for Alterative 1.

There are no known Baird's pocket gopher mounds or complexes located within this Alternative, and due to the LPS's strong association with these complexes, there would likely be no direct impacts on LPS due to the implementation of Alternative 2. It is possible that construction of this Alternative and removing timber could increase the quality of the habitat for Baird's pocket gopher, thereby increasing the possibility of impacts during training exercises.

Alternative 3 (Eastern DZ)

Approximately 578 acres would be lost from the LPS HMU (see Figure 3-14) under the implementation of this Alternative. Impacts to LPS through this Alternative would be similar to those described for Alternative 1.

There are no known Baird's pocket gopher mounds or complexes located within this Alternative, and due to the LPS's strong association with these complexes, there would likely be no direct impacts on LPS due to the implementation of Alternative 3. It is possible that construction of this Alternative and removing timber could increase the quality of the habitat for Baird's pocket gopher, thereby increasing the possibility of impacts during training exercises.

Alternative 4 (Eastern DZ with Imbedded FLS)

Approximately 516 acres would be lost from the LPS HMU (see Figure 3-15) under the implementation of this Alternative. Impacts to LPS through this Alternative would be similar to those described for Alternative 1.

There are no known Baird's pocket gopher mounds or complexes located within this Alternative, and due to the LPS's strong association with these complexes, there would likely be no direct impacts on LPS due to the implementation of Alternative 4. It is possible that construction of this Alternative and removing timber could increase the quality of the habitat for Baird's pocket gopher, thereby increasing the possibility of impacts during training exercises.

Alternative 5 (No Action Alternative)

No trees or vegetation would be removed as a result of the No Action Alternative. Therefore, there would be no impacts on the LPS or LPS HMU. However, potential habitat improvements for Baird's pocket gopher associated with tree removal would not be realized under the No Action Alternative.

3.4.4 Biological Resources: Migratory Birds

3.4.4.1 Affected Environment

Several different avian surveys have been conducted on Fort Polk; including annual Christmas Bird Counts (CBC), annual monitoring avian productivity and survivorship (MAPS) surveys, and point counts. These surveys are conducted at different times of the year, and together detect bird species on Fort Polk throughout the year.

A total of 243 bird species have been recorded on Fort Polk (Fort Polk 2020a). The MBTA was enacted in 1918 which made it unlawful to pursue, hunt, take, capture, kill, or sell any migratory bird or part, nest, or egg of any such bird (16 U.S.C §§ 703-712), unless permitted by regulations. The Conservation Branch ENRMD has compiled a list of birds protected by the MBTA that occur on Fort Polk. A total of 237 bird species protected under the MBTA have been found on Fort Polk (Fort Polk 2020b).

Common bird species that occur on Fort Polk include: pine warbler (*Setophaga pinus*), yellow-rumped warbler (*Setophaga coronata*), American robin (*Turdus migratorius*), American goldfinch (*Spinus tristis*), white-throated sparrow (*Zonotrichia albicollis*), eastern bluebird (*Sialia sialis*), eastern phoebe (*Sayornis phoebe*), chipping sparrow (*Spizella passerina*), red-winged blackbird (*Agelaius phoeniceus*), red-tailed hawk (*Buteo jamaicensis*), and barred owl (*Strix varia*). Several bird species detected during annual MAPS surveys include northern cardinal (*Cardinalis cardinalis*), Carolina wren (*Thryothorus ludovicianus*), hooded warbler (*Setophaga citrina*), acadian flycatcher (*Empidonax virescens*), yellow-billed cuckoo (*Coccyzus americanus*), summer tanager (*Piranga rubra*), tufted titmouse (*Baeolophus bicolor*), ruby-throated hummingbird (*Archilochus colubris*), red-bellied woodpecker (*Melanerpes carolinus*), red-eyed vireo (*Vireo olivaceus*), and prairie warbler (*Setophaga discolor*) (Fort Polk Conservation Branch ENRMD 2019).

3.4.4.2 Environmental Impacts

Alternative 1 (West DZ – Preferred Alternative)

Approximately 885 acres would be disturbed by clearing and grubbing the project area under Alternative 1. The habitat types found within this Alternative such as loblolly pine plantation, sandy riparian, and mixed pine-hardwood forest, are all common on Fort Polk. Further, it is recognized that there is adequate suitable habitat in the surrounding areas to absorb any species and individuals that disperse from the implementation of the Proposed Action. Therefore, impacts to migratory birds are anticipated to be direct, short-term, minor, and adverse.

Alternative 2 (Central DZ)

Approximately 1,238 acres would be disturbed by clearing and grubbing the project area under Alternative 2. The habitat types found within this Alternative such as loblolly pine plantation, sandy riparian, and mixed pine-hardwood forest, are all common on Fort Polk. Further, it is recognized that there is adequate suitable habitat in the surrounding areas to absorb any species and individuals that disperse from the implementation of the Proposed Action. Therefore, impacts to migratory birds are anticipated to be direct, short-term, minor, and adverse.

Alternative 3 (Eastern DZ)

Approximately 1,480 acres would be disturbed by clearing and grubbing the project area under the Proposed Action Alternative. The habitat types found in the Proposed Action area such as loblolly pine plantation, sandy riparian, and mixed pine-hardwood forest, are all common on Fort Polk. Further, it is recognized that there is adequate suitable habitat in the surrounding areas to absorb any species and individuals that disperse from the implementation of the Proposed Action. Therefore, impacts to migratory birds are anticipated to be direct, short-term, minor, and adverse.

Alternative 4 (Eastern DZ with Imbedded FLS)

Approximately 1,166 acres would be disturbed by clearing and grubbing the project area under Alternative 4. The habitat types found within this Alternative such as loblolly pine plantation, sandy riparian, and mixed pine-hardwood forest, are all common on Fort Polk. Further, it is recognized that there is adequate suitable habitat in the surrounding areas to absorb any species and individuals that disperse from the implementation of the Proposed Action. Therefore, impacts to migratory birds are anticipated to be direct, short-term, minor, and adverse.

Alternative 5 (No Action Alternative)

No trees or vegetation would be removed as a result of the No Action Alternative. Therefore, there would be no impact to migratory bird species on Fort Polk.

3.4.5 Biological Resources: Game Species

3.4.5.1 Affected Environment

Approximately 140,000 acres on Fort Polk and Peason Ridge are wildlife management areas (Gene Stout and Associates 2004). During times of JRTC training, as much as 90% of these lands may be closed to the public. Additionally, all areas containing unexploded ordnance or sensitive equipment are permanently closed for any outdoor recreation (e.g., hunting and fishing).

Several game species are managed through Fort Polk and the LDWF. A memorandum of agreement between Fort Polk, JRTC, and the LDWF was signed in February 2013 to reestablish an understanding of policies, procedures, and responsibilities of enforcing game and conservation laws and for the management and conservation efforts on JRTC and Fort Polk military installation (Fort Polk Conservation Branch ENRMD 2019). Fort Polk has over 10,000 man-days of hunting each year (Gene Stout and Associates 2004). The most popular game species on Fort Polk include white-tailed deer (*Odocoileus virginianus*), wild turkey (*Meleagris gallopavo*), and squirrels (gray squirrel [*Sciurus carolinensis*], and fox squirrel [*S. niger*]). Other hunted species include bobwhite quail (*Colinus virginianus*), mourning dove (*Zenaida macroaura*), feral pig (*Sus scrofa*), eastern cottontail (*Sylvilagus floridanus*), woodcock (*Philohela minor*), and waterfowl, most commonly wood duck (*Aix sponsa*) (Gene Stout and Associates 2004).

The most intensively managed of these game species is white-tailed deer. Permit and hunting data are compiled by Fort Polk's Game Enforcement and LDWF; data collected include all hunting efforts (for all game species) and location of harvests, as well as deer sex, age, and weight (Fort Polk Conservation Branch ENRMD 2019). This enables Fort Polk to monitor hunting activities as well as deer herd health. Data has been collected over an approximately 40-year period (1980 - 2019). In the last year available (2017-2018), 895 deer, 31 turkey, 124 feral pigs, 623 squirrels, 38 bobwhite quail, 296 mourning dove, 30 wood duck, and 36 woodcock were harvested on both Fort Polk and Peason Ridge WMAs (Fort Polk Conservation Branch ENRMD 2019). No eastern cottontails were harvested.

3.4.5.2 Environmental Impacts

Alternative 1 (West DZ – Preferred Alternative)

There are no WMAs located within the footprint of this Alternative. Although 885 acres would be disturbed by clearing and grubbing, the implementation of this Alternative would not have any direct impacts to WMAs or hunting opportunities. Further, it is recognized that there is adequate suitable habitat in the surrounding area to absorb any dispersed species from the implementation of this Alternative. Therefore, impacts to game species are anticipated to be negligible.

Alternative 2 (Central DZ)

There are no WMAs located within the footprint of this Alternative; therefore the impacts would be the same as those described for Alternative 1.

Alternative 3 (Eastern DZ)

There are no WMAs located within the footprint of this Alternative; therefore the impacts would be the same as those described for Alternative 1.

Alternative 4 (Eastern DZ with Imbedded FLS)

There are no WMAs located within the footprint of this Alternative; therefore the impacts would be the same as those described for Alternative 1.

Alternative 5 (No Action Alternative)

No trees, vegetation, or WMA habitat would be removed as a result of the No Action Alternative. Therefore, there would be no impacts to game species on Fort Polk through the No Action Alternative.

3.4.6 Soils

3.4.6.1 Affected Environment

There are 18 soil types that are located within the proposed alternatives. The United States Department of Agriculture (USDA) defines prime farmland as those soils that are best suited for food, feed, forage, fiber, or oilseed crops. Five soil types located within

the proposed alternatives are considered prime farmland (USDA NRCS 2002). Additionally, the USDA categorizes soils according to their erosion potential. Soil types that have an increased potential for erosion are correlated with positive land slope, frequency and duration of rainfall, and the amount of vegetative cover. The soil erosion hazard categories are slight, moderate, severe, or very severe. Erosion control measures are recommended for soils within the moderate, severe, or very severe categories. Approximately 72 percent of the soils within the Proposed Alternatives are categorized as moderate, severe, or very severe and 28 percent are considered slight erosion hazard.

In addition to the categorical soil erosion hazard, the t-factor represents the approximate maximum average annual rate of soil erosion that can occur without causing a long-term decline in crop productivity. Soils located in the Proposed Alternatives are described below and shown in Figures 3-16 through 3-19. Their acreages and t-factors are given in Table 3-6. Certain management practices such as the rehabilitation and establishment of vegetative cover on denuded areas is an effective means by which land managers can decrease erosion. The terrain in the proposed alternative sites is well suited for actions associated with the Proposed Action, but erosion poses an environmental issue if proper maintenance of the area is not implemented.

Beauregard fine sandy loam, 1 to 3 percent slopes (BaB), are moderately well drained with slow to medium runoff. These soils have slow permeability and are gently sloping. They are considered prime farmland and have a slight erosion hazard.

Briley loamy fine sand, 1 to 5 percent slopes (BrC), are well drained soils with slow to very slow runoff. These soils have moderate permeability and are gently to moderately sloping. These are not categorized as prime farmland and have a slight erosion hazard.

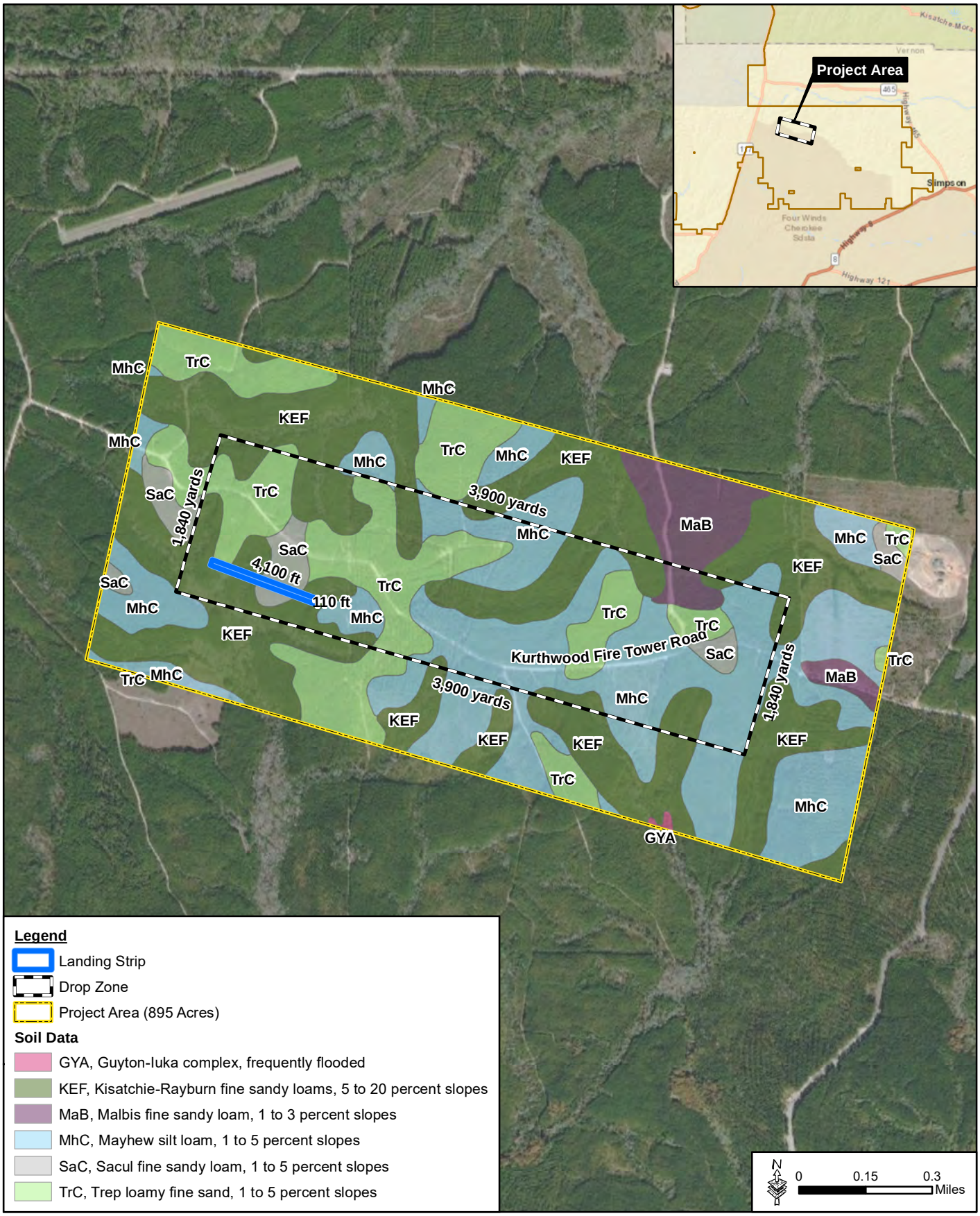

Figure 3-16. Soils – Alternative 1

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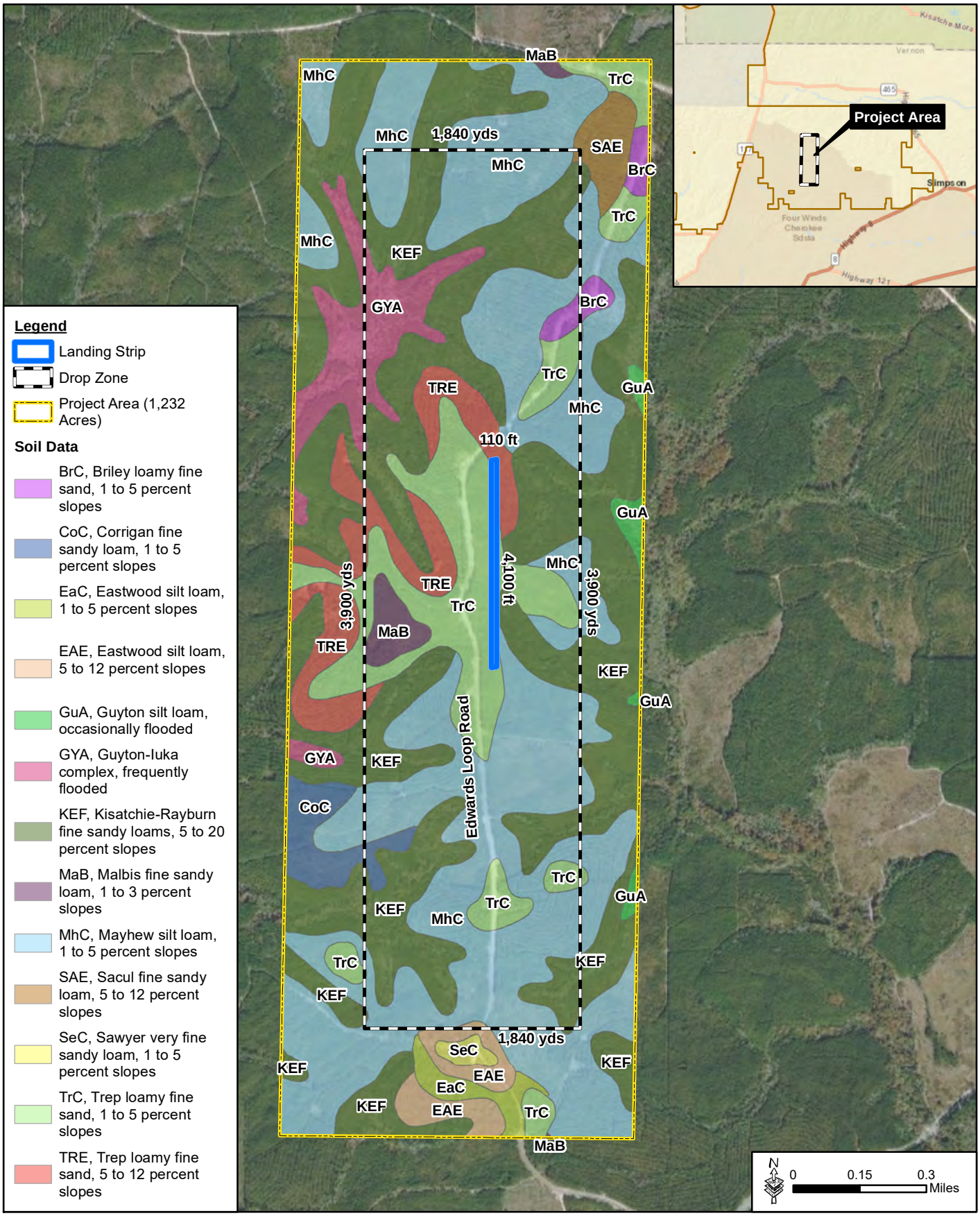

Figure 3-17. Soils – Alternative 2

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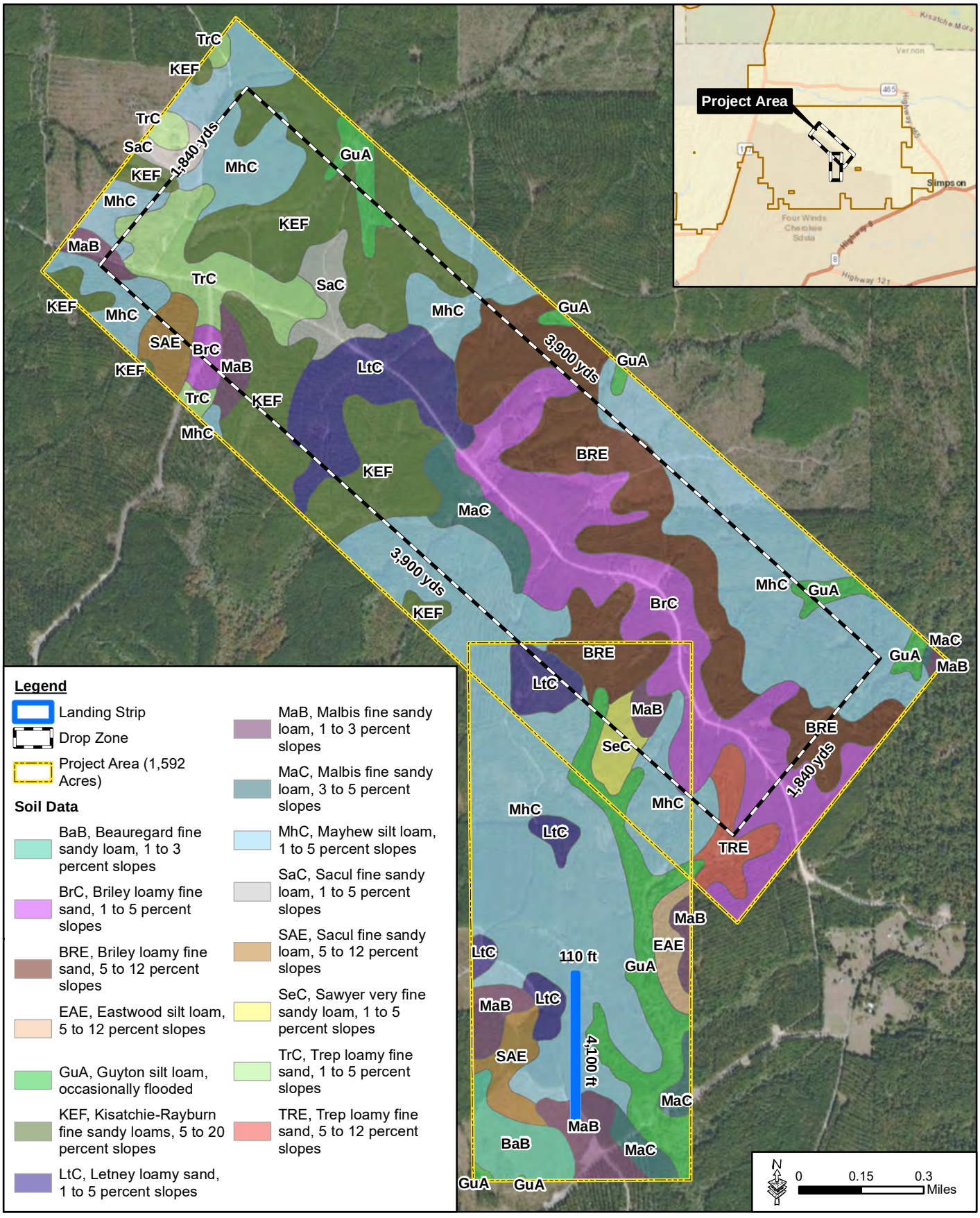

Figure 3-18. Soils – Alternative 3

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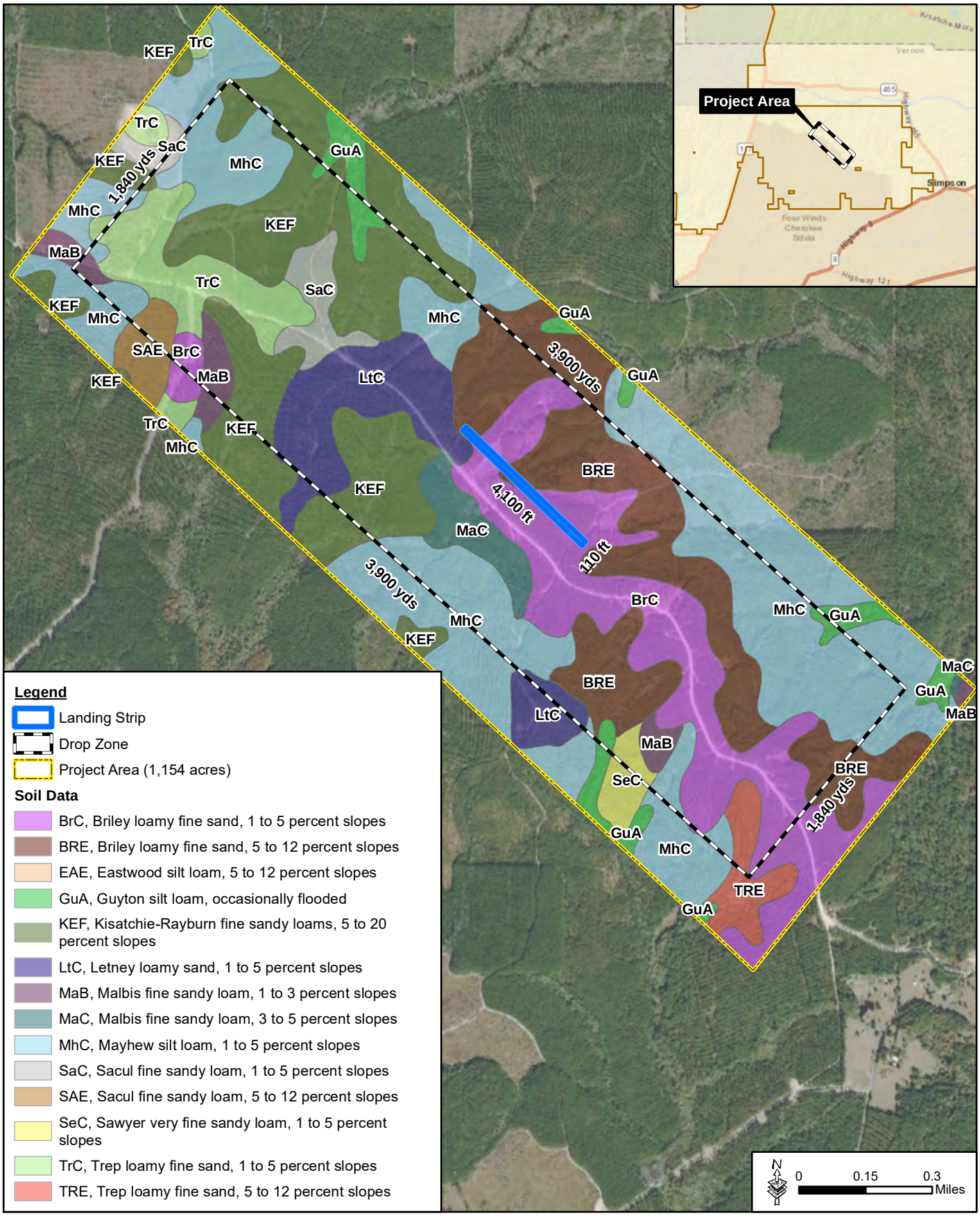

Figure 3-19. Soils - Alternative 4

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Table 3-6. Soil Types within the Proposed Alternatives

Soil Series	t-factor (tons/acre/year)	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Beauregard fine sandy loam (BaB)	5	-	-	23.08	-
Briley loamy fine sand (BrC)	5	-	11.38	164.81	164.81
Briley loamy fine sand (BRE)	5	-	-	162.82	162.82
Corrigan fine sandy loam (CoC)	3	-	22.49	-	-
Eastwood silt loam (EaC)	4	-	11.35	-	-
Eastwood silt loam (EAE)	4	-	20.88	10.72	0.06
Guyton silt loam (GuA)	5	-	9.83	83.74	34.81
Guyton-Iuka complex (GYA)	5	0.82	56.15	-	-
Kisatchie-Rayburn fine sandy loams (KEF)	3	354.23	426.63	199.34	199.34
Letney loamy sand (LtC)	5	-	-	87.54	72.15
Malbis fine sandy loam (MaB)	5	44.98	12.30	55.19	21.07
Malbis fine sandy loam (MaC)	5	-	-	34.40	21.61
Mayhew silt loam (MhC)	5	297.41	439.26	522.19	353.28
Sacul fine sandy loam (SaC)	5	28.03	-	23.66	23.66
Sacul fine sandy loam (SAE)	5	-	15.21	29.41	14.45
Sawyer very fine sandy loam (SeC)	5	-	4.22	11.88	11.88
Trep loamy fine sand (TrC)	5	169.39	137.34	53.89	53.89
Trep loamy fine sand (TRE)	5	-	64.81	20.15	20.15

Briley loamy fine sand, 5 to 12 percent slopes (BRE), are very deep well drained soils with slow or very slow runoff. These soils have moderate permeability and are sloping to strongly sloping. These are not categorized as prime farmland and they have a moderate erosion hazard.

Corrigan fine sandy loam, 1 to 5 percent slopes (CoC), are moderately well drained soils with medium runoff. These soils have very slow permeability and are gently to moderately sloping. These are not considered prime farmland and they have a moderate erosion hazard.

Eastwood silt loam, 1 to 5 percent slopes (EaC), are moderately well drained soils with medium runoff. These soils have very slow permeability, and slopes are gentle to moderate. These are not categorized as prime farmland and have a severe erosion hazard.

Eastwood silt loam, 5 to 12 percent slopes (EAE), are moderately well drained soils with rapid runoff. These soils have very slow permeability, and they are sloping to strongly sloping. These are not categorized as prime farmland and they have a very severe erosion hazard.

Guyton silt loam, occasionally flooded (GuA), are level to nearly level soils, are poorly drained, with slow runoff and permeability. These are not categorized as prime farmland and have a slight erosion hazard.

Guyton-Iuka complex, frequently flooded (GYA), are level to nearly level soils, moderately to poorly drained, and have slow runoff and moderate permeability. These soils are found in areas that are inundated by fast flowing floodwater up to six feet deep from several hours to several days. These are not categorized as prime farmland and have a slight erosion hazard.

Kisatchie-Raybum fine sandy loams, 5 to 20 percent slopes (KEF), are sloping to moderately steep soils in areas of gullies with rock outcroppings scattered throughout. These soils are moderately well drained to well drained, have medium to very rapid runoff, and very slow permeability. These soils are not categorized as prime farmland and have a severe erosion hazard.

Letney loamy sand, 1 to 5 percent slopes (LtC), are generally in areas with slopes that are smooth and convex. These soils are well drained, have slow runoff, and moderately rapid permeability. These are not categorized as prime farmland and have a moderate erosion hazard.

Malbis fine sandy loam, 1 to 3 percent slopes (MaB), are generally in areas with slopes that are long and smooth. These soils are moderately well drained, with medium runoff, and moderately slow permeability. They are considered prime farmland and have a slight erosion hazard.

Malbis fine sandy loam, 3 to 5 percent slopes (MaC), are generally in areas with slopes that are long and smooth. These soils are moderately well drained, with medium runoff, and moderately slow permeability. These are considered prime farmland and have a moderate erosion hazard.

Mayhew silt loam, 1 to 5 percent slopes (MhC), are gently to moderately sloping soils that are poorly drained. These soils have medium runoff and very slow permeability. These are not categorized as prime farmland and have a severe erosion hazard.

Sacul fine sandy loam, 1 to 5 percent slopes (SaC), are moderately well drained soils. They have slow permeability, medium runoff, and are gently to moderately sloping. These are considered prime farmland and have a moderate erosion hazard.

Sacul fine sandy loam, 5 to 12 percent slopes (SAE), are moderately well drained soils with rapid runoff and slow permeability. These soils are sloping to strongly sloping and have a severe erosion hazard. These are not categorized as prime farmland.

Sawyer very fine sandy loam, 1 to 5 percent slopes (SeC), are moderately well drained soils with medium runoff and slow permeability. These soils are gently to moderately sloping and have a moderate erosion hazard. They are categorized as prime farmland.

Trep loamy fine sand, 1 to 5 percent slopes (TrC), are moderately well drained soils with slow runoff and moderately slow permeability. These soils are gently to moderately sloping and have a moderate erosion hazard. These are not categorized as prime farmland.

Trep loamy fine sand, 5 to 12 percent slopes (TRE), are moderately well drained soils with slow runoff and moderately slow permeability. These soils are sloping and have a severe erosion hazard. These are not categorized as prime farmland.

Previous Commitments

Fort Polk has established programs and procedures to minimize soil erosion on its training lands (Appendix A). The following measures are currently implemented installation wide and would be used to maintain and sustain the training lands associated with the Proposed Action. Specific mitigation measures are provided in Appendix B. The following describes existing procedures and programs utilized to decrease soil displacement and thereby protect waterways from sedimentation.

- ***Maneuver Damage Inspection and Monitoring.*** JRTC and Fort Polk maneuver damage inspection and repair program is being expanded to include identification, repair, and monitoring for damages from routine home station and rotational training events. All training lands are inspected for damage to soils, vegetation, streams, and wetlands, and sensitive environmental resources

following each training exercise and corrective actions are initiated to minimize soil displacement.

- ***Development and Implementation of Watershed Management Plans.*** Watershed management plans are implemented on the Installation where ground disturbing military activities are permitted. Watershed sites requiring rehabilitation or maintenance would be prioritized by identification of severity of erosion problem areas. Implementation of the plans would involve design and installation of BMPs such as a sediment basin network or individual sediment basins in specific watersheds, silt fences, check dams, riprap in drainage pathways, erosion mats, reseeding, gabions, or enhancement/preservation of wider vegetated buffers adjacent to streams.

- ***Annual Maintenance of Sediment Basins.*** All sediment basins are inspected to ensure they are functioning properly. Basin maintenance will be prioritized according to need. Excess sediment will be removed from basins, applied to upland areas, and stabilized.

- ***Temporary Closure of Sites.*** The maneuver damage inspection and repair program identifies sites on the Installation needing protection to facilitate recovery from maneuver damage to soils, vegetation, streams and wetlands, and sensitive environmental resources. Sites will be marked as temporarily off-limits to digging and driving until the sites are recovered. Closed areas will be added quarterly or as needed to the “No Dig/No Drive” map used by military trainers for planning purposes.

- ***Integrated Training Area Management (ITAM) and Land Rehabilitation and Maintenance (LRAM).*** The ITAM and LRAM programs are used to identify and repair land that requires rehabilitation. Training areas are inspected following each training exercise, by implementation of the maneuver damage inspection and repair program, to identify sites needing repair. All range repair and

sustainment programs utilize contouring, grading, seeding, and fertilization, on a site-specific, as needed basis to maintain an adequate ground cover.

3.4.6.2 Environmental Impacts

Alternative 1 (West DZ – Preferred Alternative)

Under this Alternative, approximately 895 acres of soils would be disturbed as a result of implementing the DZ/FLS. The majority of the soils located within the footprint of Alternative 1 are considered to have a severe erosion potential (73 percent), followed by moderate (22 percent) and slight (5 percent) erosion potential.

The programs described above in Section 3.4.6.1 will continue to be implemented at the Installation. These programs would adequately preclude potential soil displacement due to erosion during operations of the DZ. Additionally, the SWPPP, which would be implemented during construction, would ensure that any soil displacement during construction would be contained on-site. Upon completion of construction, the project site would be reseeded/revegetated with native vegetation at the landscape level and would be maintained by DPTMS. The area would also be inspected by the maneuver damage inspection and monitoring and annual maintenance of sediment basins programs. Therefore, impacts on soils from Alternative 1 are anticipated to be direct, short-term, moderate, and adverse.

Alternative 2 (Central DZ)

Under this Alternative, approximately 1,232 acres of soils would be disturbed as a result of implementing the DZ/FLS. The majority of the soils located within the footprint of Alternative 2 are considered to have a severe erosion potential (78 percent), followed by moderate (13 percent) and slight (7 percent) erosion potential. Approximately two percent of the soils in this Alternative have a very severe erosion potential.

The programs described above in Section 3.4.6.1 will continue to be implemented at the Installation. These programs would adequately preclude potential soil displacement due to erosion during operations of the DZ. Additionally, the SWPPP, which would be

implemented during construction, would ensure that any soil displacement during construction would be contained on-site. Upon completion of construction, the project site would be reseeded/revegetated with native vegetation at the landscape level and would be maintained by DPTMS. The area would also be inspected by the maneuver damage inspection and monitoring and annual maintenance of sediment basins programs. Therefore, impacts on soils from Alternative 2 are anticipated to be direct, short-term, moderate, and adverse.

Alternative 3 (Eastern DZ)

Under this Alternative, approximately 1,592 acres of soils would be disturbed as a result of implementing the DZ/FLS. The majority of the soils located within the footprint of Alternative 3 are considered to have a severe erosion potential (52 percent), followed by moderate (25 percent) and slight (22 percent) erosion potential. Less than one percent of the soils in this Alternative have a very severe erosion potential.

The programs described above in Section 3.4.6.1 will continue to be implemented at the Installation. These programs would adequately preclude potential soil displacement due to erosion during operations of the DZ. Additionally, the SWPPP, which would be implemented during construction, would ensure that any soil displacement during construction would be contained on-site. Upon completion of construction, the project site would be reseeded/revegetated with native vegetation at the landscape level and would be maintained by DPTMS. The area would also be inspected by the maneuver damage inspection and monitoring and annual maintenance of sediment basins programs. Therefore, impacts on soils from Alternative 3 are anticipated to be direct, short-term, moderate, and adverse.

Alternative 4 (Eastern DZ with Imbedded FLS)

Under this Alternative, approximately 1,154 acres of soils would be disturbed as a result of implementing the DZ/FLS. The majority of the soils located within the footprint of Alternative 4 are considered to have a severe erosion potential (51 percent), followed by

moderate (30 percent) and slight (19 percent) erosion potential. Less than one percent of the soils in this Alternative have a very severe erosion potential.

The programs described above in Section 3.4.6.1 will continue to be implemented at the Installation. These programs would adequately preclude potential soil displacement due to erosion during operations of the DZ. Additionally, the SWPPP, which would be implemented during construction, would ensure that any soil displacement during construction would be contained on-site. Upon completion of construction, the project site would be reseeded/revegetated with native vegetation at the landscape level and would be maintained by Directorate of Plans, Training, Mobilization, and Security (DPTMS). The area would also be inspected by the maneuver damage inspection and monitoring and annual maintenance of sediment basins programs. Therefore, impacts on soils from Alternative 4 are anticipated to be direct, short-term, moderate, and adverse.

Alternative 5 (No Action Alternative)

There would be no impacts to soil resources under this Alternative, as there would be no changes to the current baseline condition for these resources.

3.4.7 Cultural Resources

3.4.7.1 Affected Environment

Lands comprising Fort Polk have been used by humans for at least 12,000 years. The cultural sequence of western Louisiana has been developed and modified over the years. The prehistoric cultural sequence is based on the sequence which is outlined in Anderson and Smith (2003) and the cultural sequence developed for the Fort Polk area of western Louisiana as of 2002 (Morehead et al. 2002; Thomas et al. 1997). The sequence is broken into 11 broad periods: Early, Middle, and Late Paleoindian; Early, Middle, and Late Archaic; Early, Middle, and late Woodland; the Caddo Foci or Mississippian; and Protohistoric. Each of these broad periods is further divided into proposed cultures and phases based on distinctive artifact assemblages and

adaptations to the natural environment. This sequence roughly matches the broader overview of prehistoric cultural history for Louisiana as presented by Rees (2010).

Historically longleaf pine forests blanketed the region when Europeans first explored and settled the area. Only a few farmers and settlers established themselves in the region because of the labor required in clearing the large trees and the especially thin and poor soils that were unsuitable for extensive agricultural pursuits. By the late nineteenth century, thanks to improvements in transportation primarily due to railroad construction, the pines became economically valuable for timber and naval stores. Reforestation efforts during the 1930s allowed for continued natural resources extraction. Historic settlement, farming, the timber industry, and the military have left indelible marks. This allows the historic context to be divided into broad thematic periods, which include: early European exploration and settlement, the period when the region became a neutral territory, American exploration and settlement, lumber and naval stores industries, and the military development of Fort Polk and Peason Ridge training areas. Cultural artifacts in association with the historical record can be used to reconstruct the history of the area within a regional, state, and national context.

The four alternative project areas were surveyed for cultural resources through multiple projects as part of the JRTC and Fort Polk Land Acquisition program (Gregory et al. 2015; Gregory and Vasquez 2016a, 2016b; Handly et al. 2014; Lindemuth et al. 2015; Morehead et al. 2016). Nine cultural resources sites are located within the four proposed alternatives (Figures 3-20 through 3-23). All of the cultural resources represent archaeological sites that were recorded during the survey of priority areas for the JRTC and Fort Polk Land Acquisition program. All sites have been tested to determine if they are eligible for the National Register of Historic Places (NRHP). Six sites were determined eligible for the NRHP and three sites were determined ineligible.

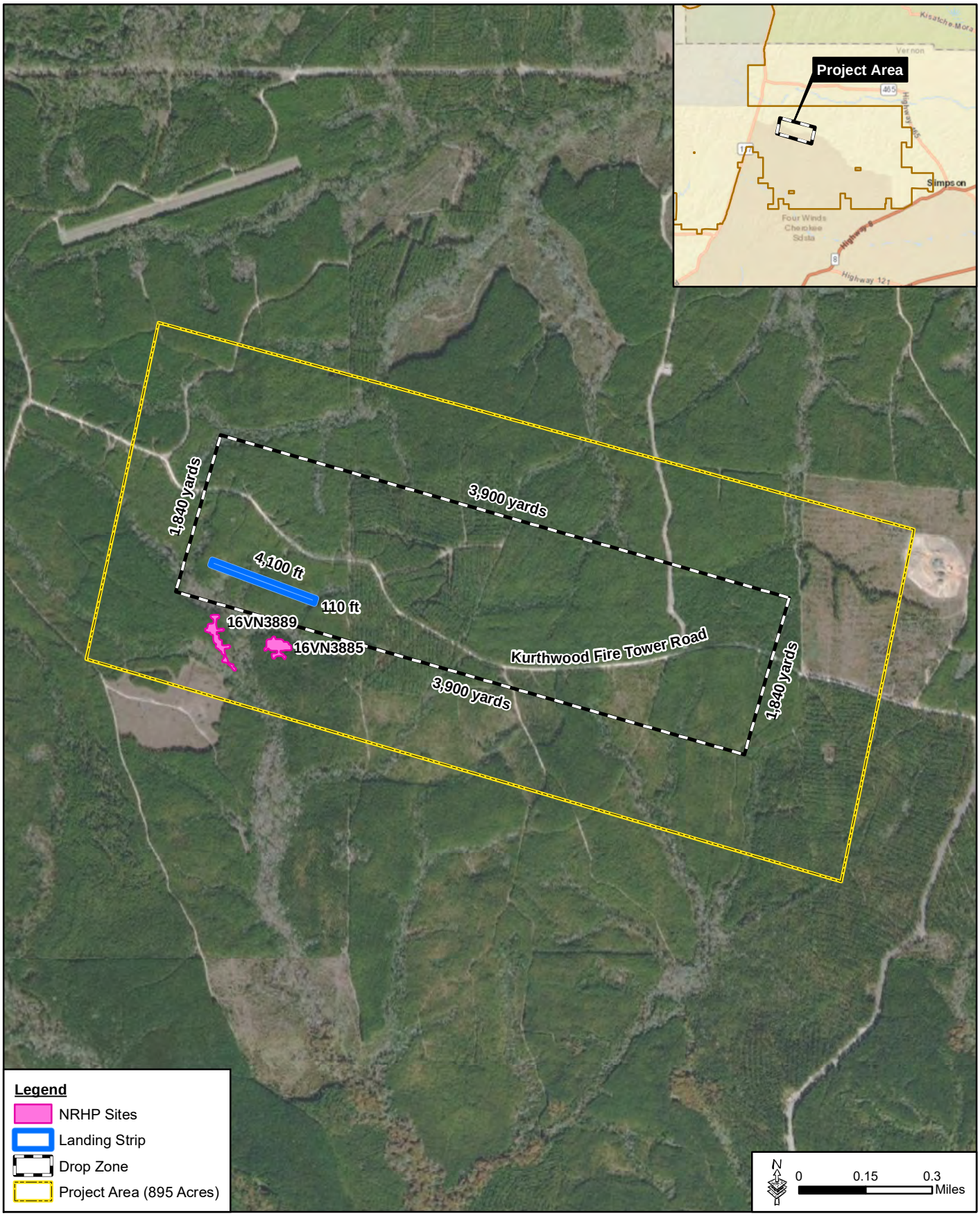

Figure 3-20. Cultural Resources – Alternative 1

GSRC

August 2020

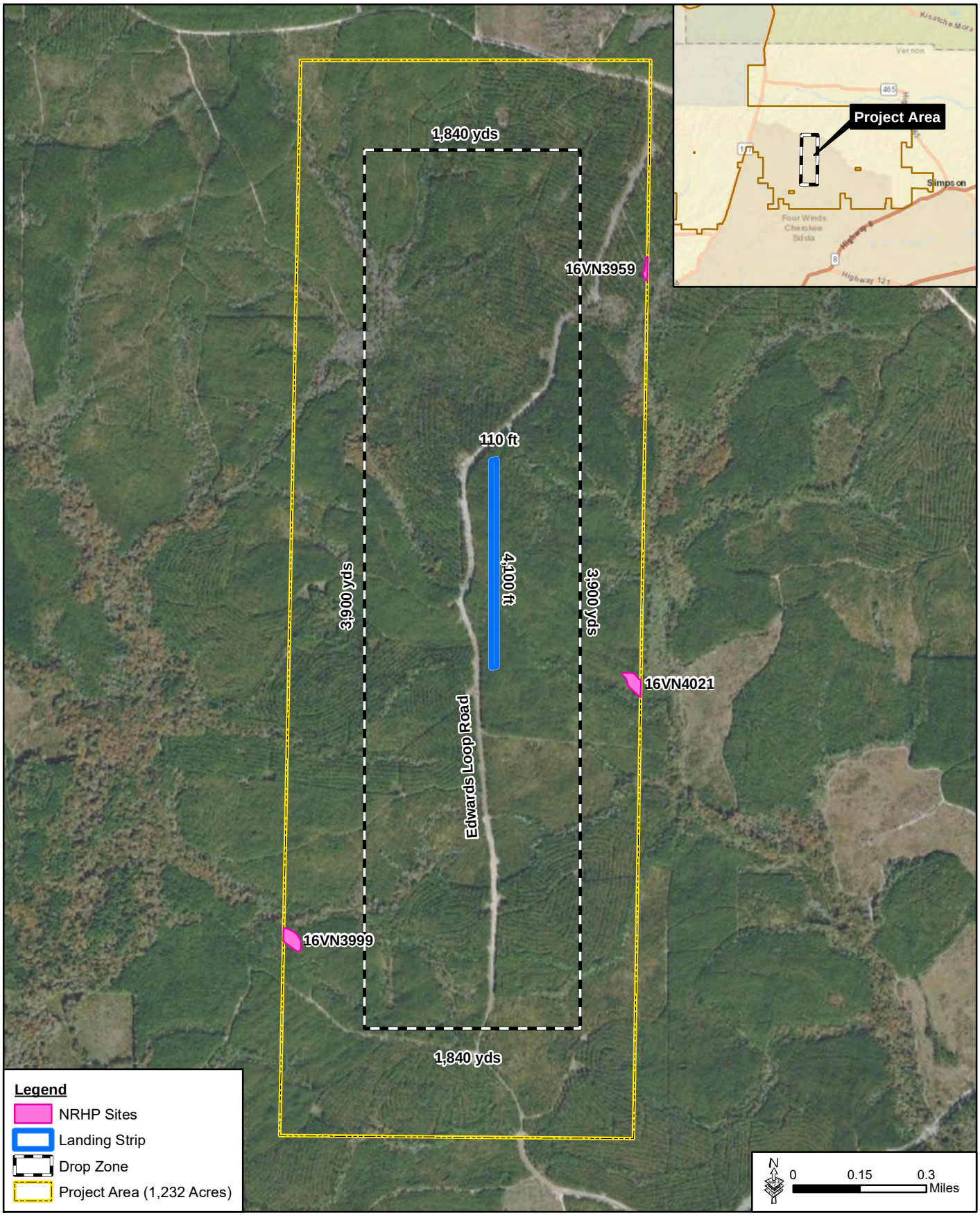

Figure 3-21. Cultural Resources – Alternative 2

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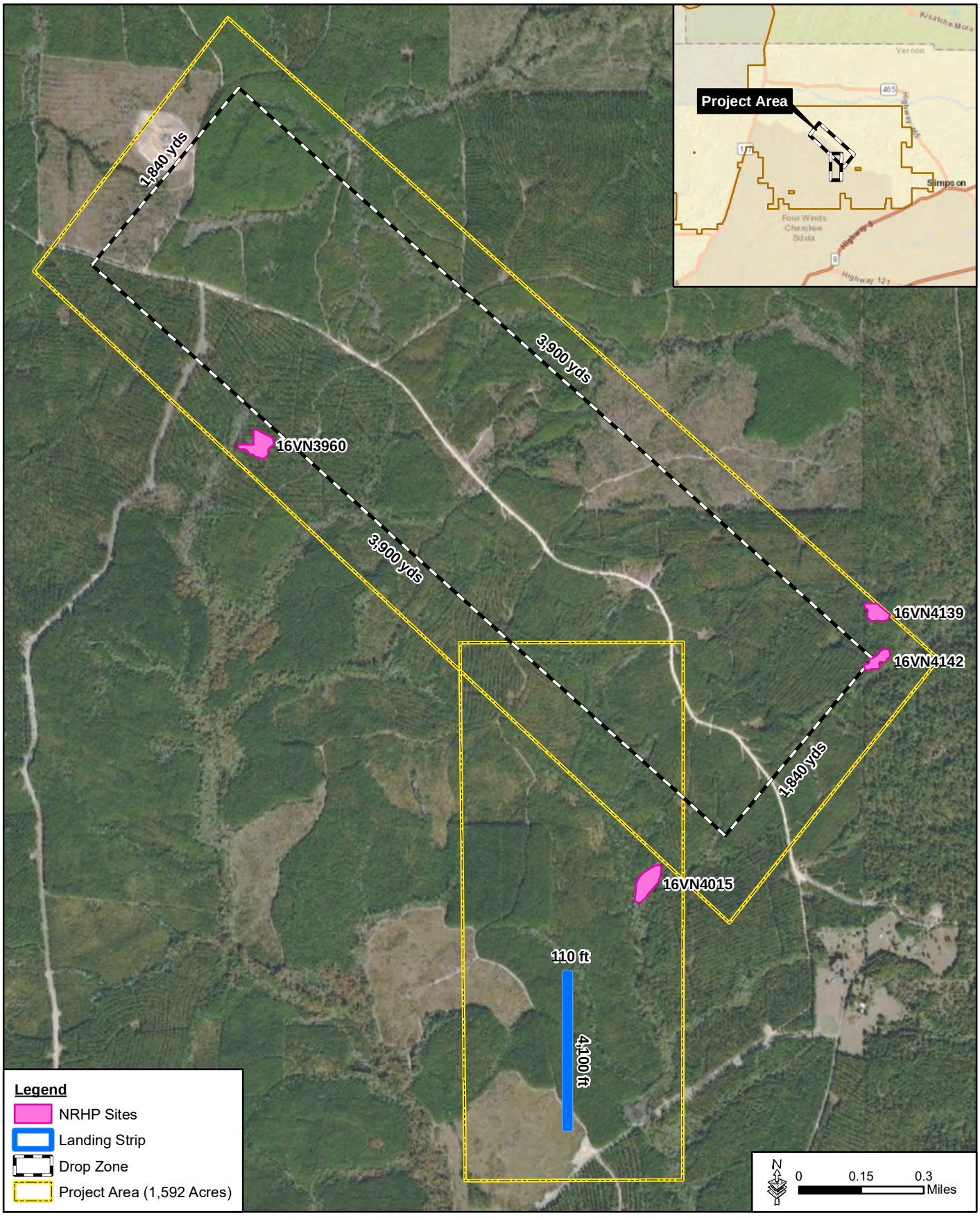

Figure 3-22. Cultural Resources – Alternative 3

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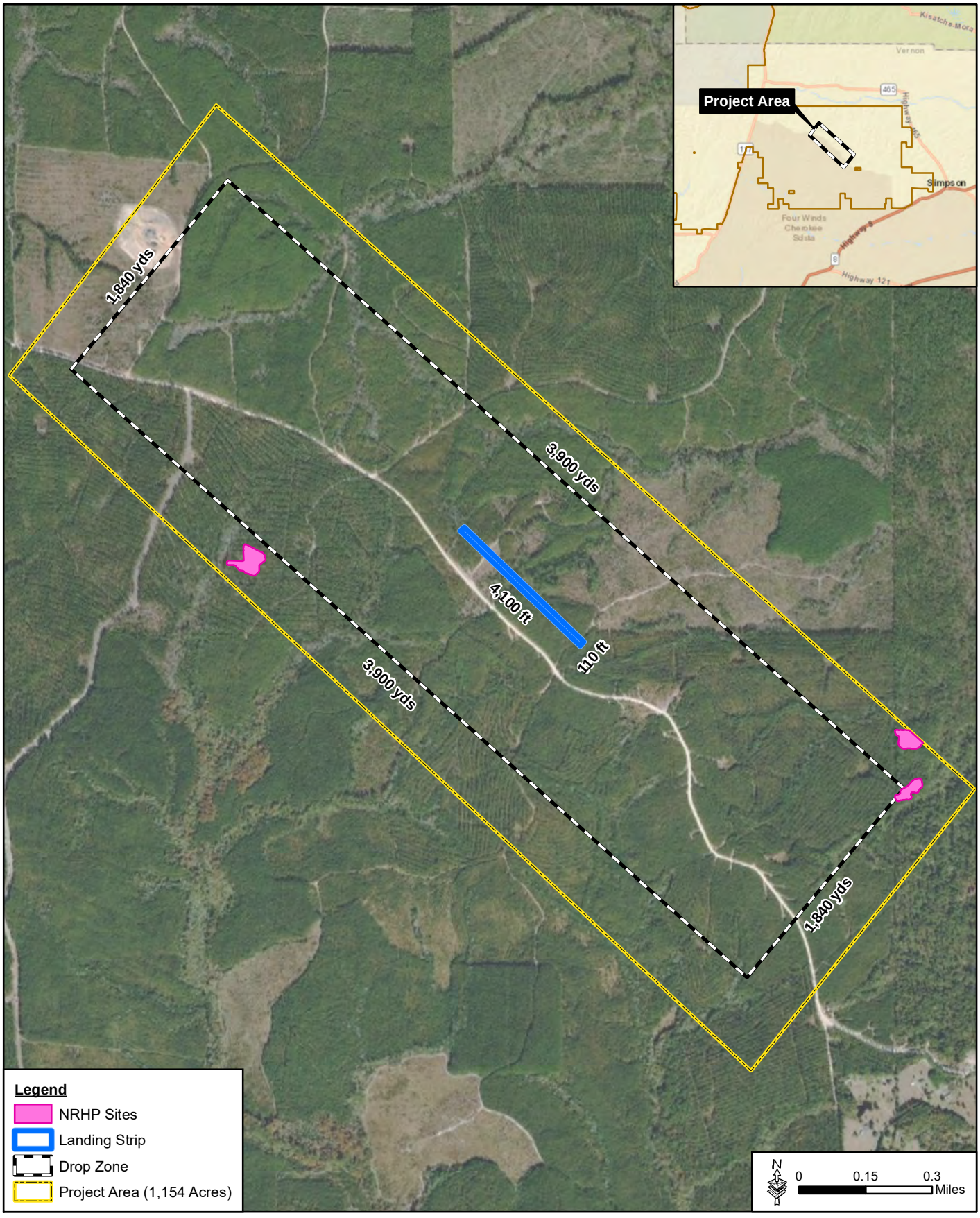

Figure 3-23. Cultural Resources – Alternative 4

GSRC

August 2020

Table 3-7 and the following paragraphs summarize the resources by Alternative.

Table 3-7. Summary of Cultural Resources located within the Proposed Alternatives

Resource Name	Resource Type	Size (square meters [m^2])	Cultural Affiliation	NRHP Eligibility
Alternative 1				
16VN3885	Archaeological site	4,211 m^2	Prehistoric: Woodland and Caddoan	Not Eligible
16VN3889	Archaeological site	4,864 m^2	Historic: Naval Stores/Timber; Prehistoric: Unknown	Not Eligible
Alternative 2				
16VN3959	Archaeological site	2,526 m^2	Prehistoric: Middle to Late Archaic	Eligible
16VN3999	Archaeological site	5,186 m^2	Prehistoric: Early Archaic, Woodland or later	Eligible
16VN4021	Archaeological site	4,382 m^2	Prehistoric: Coles Creek	Eligible
Alternative 3				
16VN3960	Archaeological site	7,709 m^2	Late Prehistoric: Caddoan	Eligible
16VN4015	Archaeological site	8,318 m^2	Prehistoric: Marksvile, post-Tchefuncte	Eligible
16VN4139	Archaeological site	9,707 m^2	Prehistoric: Woodland	Not Eligible
16VN4142	Archaeological site	3,183 m^2	Prehistoric: Woodland to Late Prehistoric	Eligible
Alternative 4				
16VN3960	Archaeological site	7,709 m^2	Prehistoric: Woodland or later	Eligible
16VN4139	Archaeological site	9,707 m^2	Prehistoric: Woodland	Not Eligible
16VN4142	Archaeological site	3,183 m^2	Prehistoric: Woodland to Late Prehistoric	Eligible

16VN3885

Material recorded at this site included lithic debitage, stone tools (hafted bifaces, multidirectional core tools, and two scrapers), and prehistoric pottery (Lindemuth et al. 2015). Cultural material was recovered at the site in depths ranging from 0 to 90 centimeters (cm) below ground surface (cmbgs). The hafted bifaces included an Alba and an Ellis type point which have a Late Prehistoric Caddo and Woodland cultural affiliation. The prehistoric ceramics were plain sand-tempered and sand- and grog-tempered sherds. A sub-surface charcoal stain feature was also noted in one shovel

test pit. GSRC (investigator) concluded that the site has the potential to provide additional information regarding Woodland and Caddo adaptations in the area and further refine the cultural history of the region (Lindemuth et al. 2015:233-239). As a result of recent Phase II investigations, this site is considered ineligible for the NRHP per the Fort Polk Archaeologist (Brad Lafitte).

16VN3889

Artifacts recovered from this site included lithic debitage, stone tools (unhafted biface and bifacial flake tool), prehistoric ceramics (including plain and decorated [incised] sherds), and two baked clay objects. The stone tools and prehistoric ceramics were undiagnostic and could not be assigned to a known type of the region though presence of prehistoric ceramic sherds suggests the site dates to the Woodland period or later. Artifacts at the site were recovered from depths ranging from 0 to 70 cmbgs. The historic component was limited to an earthen feature that cut through the site which represented an old tram line and was associated with the historic Naval Stores/Timber industry. GSRC concluded that despite the lack of temporally diagnostic prehistoric material, the site has the potential to provide additional information regarding prehistoric adaptations and further refine the cultural history of the region (Lindemuth et al. 2015:255-263). As a result of recent Phase II investigations, this site is considered ineligible for the NRHP per the Fort Polk Archaeologist (Brad Lafitte).

16VN3959

Artifacts recorded at this site included lithic debitage and a single stone tool which consisted of a Yarbrough dart point made of Willis gravel chert. The Yarbrough type is considered to be an Archaic type, often dating to the Late Archaic period. Cultural material was recovered from 0 to 60 cmbgs and suggests two occupational episodes at the site. The site is considered to have the potential to provide data regarding the temporal and cultural relationships of Yarborough assemblages and was recommended for additional testing in order to determine its eligibility for the NRHP (Morehead et al. 2016:244-248). As a result of recent Phase II investigations, this site is considered eligible for the NRHP per the Fort Polk Archaeologist (Brad Lafitte).

16VN3999

Artifacts recovered from this site included lithic debitage, stone tools, and prehistoric ceramics. Lithic tools recorded include one dart point (identified as a San Patrice *var. Keithville*.), one bifacial drill, one bifacial endscraper, three flakes with distal retouch, one flake with lateral retouch, and one flake with lateral use. All the prehistoric sherds were plain with sand/grog temper and could not be assigned to a known ceramic type of the region. The presence of the dart point suggests an Early Archaic cultural affiliation for the site, and the prehistoric sherds suggest a Woodland or later cultural affiliation. The site was recommended for additional testing to determine its eligibility for the NRHP (Morehead et al. 2016:371-375), and was found to be eligible.

16VN4021

Artifacts recorded at the site include lithic debitage, two stone tools, and prehistoric ceramics (one incised sherd, three plain sherds, and 29 fired clay fragments). Lithic tools recorded at the site included one perforator and one bifacial trimming flake exhibiting bilateral use. All of the sherds had sand and grog temper and could not be assigned to a known ceramic type of the region. In addition to the artifacts recovered at the site, one feature was noted in a shovel test. The feature consisted of fired clay with an associated concentration of black sand recorded at 32 centimeters below the ground surface. Given the artifact assemblage and feature, the site was interpreted as a single component campsite of Woodland or later age. The site was recommended for additional testing to determine its eligibility for the NRHP (Morehead et al. 2016:446-449).

This site was revisited in 2013 by Prentice Thomas and Associates, Inc. who conducted test excavations to determine the site's eligibility for the NRHP. The testing program included the excavation of one test unit that measured 50 cm by 50 cm and six test units that measured 1 meter (m) by 1m in size. Artifacts recovered during the test excavations included lithic debitage, stone tools (two dart points and five biface fragments), and prehistoric ceramics (12 pieces of fired clay, 15 sherds, and one crumb).

One of the dart points was classified as an unusual example of a Dooley Branch type. The prehistoric sherds included one Coles Creek Incised *var. Unspecified* sherd, two Evans Punctate *var. Rhinehart* sherds, one Mazique Incised *var. Unspecified*, one smoothed and red-filmed sherd that could not be assigned to a known ceramic type of the region, and 10 unspecified plain sherds that could not be assigned to a known ceramic type of region. One of the test units recorded a feature which appeared to represent a hearth measuring 54 cm by 66 cm and was recorded 37 cmbgs. From these artifacts, a Coles Creek Holly Springs phase component has been identified for the site. The site was recommended eligible for the NRHP as it may provide additional information about the late Woodland settlement and use of the area, prehistoric utilization of the uplands, culture history, and further refinement of the variations within the Coles Creek cultural affiliation (Mountjoy et al. 2019:275-297). As a result of recent Phase II investigations, this site is considered eligible for the NRHP per the Fort Polk Archaeologist (Brad Lafitte).

16VN3960

Artifacts recorded at this site included both prehistoric and historic material. Prehistoric material included lithic debitage, stone tools (two ground stone tools, a hammerstone, a pitted stone, and three flake tools), and prehistoric ceramics (one decorated sherd and two plain sherds). The incised sherd is similar to the Bossier type Pease Brushed Incised or ancestral Alto type Dunkin Incised, both of which represent Caddoan ceramics. Historic artifacts recorded at the site were limited to colorless curved glass shards. In addition, two historic tramlines were also noted within the site boundaries. The site was considered to have potential to address various research themes including prehistoric utilization of the uplands, Caddoan cultural tradition, and prehistoric mining and extraction. As a result, the site was recommended for additional testing to determine its eligibility for the NRHP (Morehead et al. 2016:248-254). As a result of recent Phase II investigations, this site is considered eligible for the NRHP per the Fort Polk Archaeologist (Brad Lafitte).

16VN4015

Artifacts recovered at the site include lithic debitage, stone tools, and prehistoric ceramics. Stone tools recorded at the site included two dart points (including a San Patrice. *var.* Keithville and a Kent type), a preform dart point, a truncation, and a denticulate flake. Prehistoric ceramics included one incised sherd, one brushed sherd, two plain sherds, and a fired clay fragment; all of which were sand/grog tempered, and none could be assigned to a known ceramic type of the region. Given the artifact assemblage, the site is interpreted to be a Middle to Late Woodland site with possible Marksville cultural affiliation. The San Patrice dart point may possibly represent a "pickup" of the latter ceramic bearing group given its association with ceramic sherds within the same stratum. The site was recommended for additional testing to determine its eligibility for the NRHP for its potential for providing information on the settlement and subsistence practices of post-Tchefuncte population in the region (Morehead et al. 2016:424-430). As a result of recent Phase II investigations, this site is considered ineligible for the NRHP per the Fort Polk Archaeologist (Brad Lafitte).

16VN4139

Artifacts recorded at this site include lithic debitage and stone tools (an unhafted biface, a scraper, and hafted biface). The hafted biface was identified as a Marcos type point which indicates that the site has a Woodland cultural affiliation. Artifacts were recorded at the site from depths ranging from 0 to 80 cmbgs. Given the sites integrity and potential for discrete prehistoric components, the site is considered to have potential to provided further information regarding Woodland lithic procurement and settlement patterns in the area (Gregory and Vasquez 2016b). As a result of recent Phase II investigations, this site is considered ineligible for the NRHP per the Fort Polk Archaeologist (Brad Lafitte).

16VN4142

Artifacts recorded at this site included lithic debitage, stone tools, and prehistoric ceramics. Stone tools recorded at the sites included an unhafted biface and a hafted biface fragment which could not be assigned to a known type. The prehistoric ceramics

consisted of plain sherds which could not be assigned to a known pottery type. Artifacts at the site were recorded in depths ranging from 0 to 60 cmbgs. Given the sites integrity and potential for discrete prehistoric components, the site is considered to have potential to provided further information regarding Woodland lithic procurement and settlement patterns in the area (Gregory and Vasquez 2016b), and the site was found to be eligible for the NRHP.

Previous Commitments

Nearly 100 percent of the accessible terrain on the Installation has been intensively surveyed for archeological sites. The 1999 Historic Preservation Plan summarizes work conducted on Fort Polk lands and established the guidelines for determining the significance of cultural resources at the Installation. Further detail on the Installation's planned management of cultural resources is found in the Integrated Cultural Resources Management Plan (ICRMP) (Lafitte and Dengel 2019). The ICRMP is Fort Polk's management plan for cultural resources and provides guidelines by which all archaeological sites are maintained, protected, and managed. Environmental requirements for cultural resources are provided in Appendix B.

3.4.7.2 Environmental Impacts

Alternative 1 (West DZ – Preferred Alternative)

Under Alternative 1, the entire footprint of the project area would undergo clearing, grubbing, stumping and shaping. Two archaeological sites 16VN3885 and 16VN3889 are located within the project area boundary but outside of the DZ and landing strip boundaries (see Figure 3-20). Both archaeological sites are considered ineligible for the NRHP. This alternative would result in no impact on historic properties per Section 106.

Alternative 2 (Central DZ)

Three archaeological sites (16VN3959, 16VN3999, and 16VN4021) are partially located within the project area of Alternative 2 (see Figure 3-21). All three of the archaeological sites have been determined to be eligible for the NRHP. All three sites are located near

the edge of the project area and with a portion of their boundaries being located within the project area. Under Alternative 2, the entire footprint of the project area would undergo clearing, grubbing, stumping and shaping. There is a potential for all three sites to be disturbed by ground disturbing activities associated with clearing, grubbing, stumping, and shaping the proposed drop zone or from foreseeable future ground disturbance associated with drop zone activities. These potential impacts could impact the integrity of the cultural deposits of portions of all three archaeological sites resulting in irreversible damage to the eligible sites. To avoid impacts on the three sites, it is recommended to delineate the archaeological sites and leave a cluster of trees around the sites (Appendix B). Fort Polk would continue to monitor the archaeological sites and post them off-limits. If this is not possible due to drop zone safety or other concerns, Fort Polk would consult with SHPO and the Tribes to come up with viable solutions for all parties. Mitigation measures would be developed to minimize long-term, adverse impacts on the sites to less than significant and could include the following (Appendix B):

1) Traditional mitigation (data recovery) which includes excavating a large portion of the sites. Cost would be determined based on the sites to be impacted and consultation on how much to excavate per site.

2) Alternative mitigation which could include creative solutions to protect the site or lessen the impact of losing the site. This may include cutting trees in a way that doesn't heavily disturb the ground and capping the site(s). Or, if could include offsetting the loss of archaeological data by conducting additional excavation at a different site(s) later. The mitigation process selected depends on communication between the installation and the regulators, but unique solutions may be possible.

Alternative 3 (Eastern DZ)

Four archaeological sites (16VN3960, 16VN4015, 16VN4139, and 16VN4142) are either fully or partially located within the project areas for Alternative 3 (see Figure 3-

22). In addition, site 16VN4142 is also partially with the DZ for the alternative. Three of the archaeological sites (16VN3960, 16VN4015, and 16VN4142) have been determined to be eligible for the NRHP and site 16VN4139 has been determined to be ineligible for the NRHP. Under this alternative, both the project areas for the drop zone and separate airstrip would undergo clearing, grubbing, stumping and shaping. This would impact the integrity of the cultural deposits of portions of the three archaeological sites determined eligible for the NRHP. To avoid or minimize significant, long-term, adverse impacts on the three eligible sites the same measure discussed for Alternative 2 would be used for Alterative 3.

Alternative 4 (Eastern DZ with Imbedded FLS)

Three archaeological sites (16VN3960, 16VN4139, and 16VN4142) are either fully or partially located within the project area for Alternative 4 (see Figure 3-23). In addition, site 16VN4142 is also partially with the DZ for the alternative. Two of the archaeological sites (16VN3960 and 16VN4142) have been determined to be eligible for the NRHP, and the archaeological site 16VN4139 has been determined ineligible for the NRHP. Under this alternative, the project area for the DZ and embedded landing strip would undergo clearing, grubbing, stumping and shaping. This would impact the integrity of the cultural deposits of portions of the two eligible archaeological sites resulting in irreversible damage to the two sites eligible for the NRHP. To avoid or minimize significant, long-term, adverse impacts on the two eligible sites the same measure discussed for Alternative 2 would be used for Alternative 4.

Alternative 5 (No Action Alternative)

There would be no impacts to cultural resources under this Alternative, as there is no ground disturbance planned that would impact the integrity of the cultural deposits at any of the sites.

3.4.8 Noise Impacts

3.4.8.1 Affected Environment

The U.S. Army Public Health Center conducted a noise analysis for the proposed DZ/FLS (USAPHC2020). The findings of the noise analysis are provided in this section of the EA. The complete noise analysis is provided in Appendix C.

Noise is generally described as unwanted sound, which can be based either on objective effects (i.e., hearing loss, damage to structures) or subjective judgments (e.g., community annoyance). Noise may be intermittent or continuous, steady or impulsive, and may be generated by stationary or mobile sources. The individual response to similar noise events can vary widely and is influenced by the type and characteristics of the noise source, distance between source and receptor, receptor sensitivity, and time of day.

Sound, expressed in decibels (dB), is created by vibrations through a medium such as air or water. Sound on the decibel scale is referred to as sound level. The threshold of human hearing is approximately 0 dB, and the threshold of discomfort or pain is around 120 dB. Normal speech has a sound level of approximately 60 dB. The A-weighted decibel (dBA) is a measurement of sound pressure adjusted to conform to the frequency response of the human ear. The dBA metric is most commonly used for the measurement of environmental and industrial noise.

Noise levels occurring at night generally produce a greater annoyance than the same levels occurring during the day. It is generally agreed that people perceive intrusive noise at night as being 10 dBA louder than the same level of intrusive noise during the day, at least in terms of its potential for causing community annoyance. This perception is largely because background environmental sound levels at night in most areas are also about 10 dBA lower than those during the day.

Long-term noise levels are computed over a 24-hour period and adjusted for nighttime annoyances to produce the Day/Night Average Noise Level (DNL). DNL is the

community noise metric recommended by the USEPA and has been adopted by most federal agencies. A DNL of 65 dBA is the level most commonly used for noise planning purposes and represents a compromise between community impact and the need for activities like construction.

Land Use Compatibility

Four noise zones are defined in Army Regulation (AR) 2001 (Department of the Army 2007). Both the LUPZ and Noise Zone I have a limit of 65 dB for aviation noise (Table 3-8). Noise-sensitive land uses include housing, schools, and medical facilities. These noise-sensitive land uses are acceptable within the LUPZ and Noise Zone I, generally not compatible in Noise Zone II, and not compatible in Noise Zone III (Department of the Army 2007).

Table 3-8. Noise Zones and Noise Limits

Noise Zone	Noise Limits (dB)			Noise Sensitive Land Use
	Aviation ADNL	Impulsive CDNL	Small Arms Peak	
LUPZ	60 - 65	57 - 62	N/A	Generally Compatible
I	< 65	< 62	< 87	Generally Compatible
II	65 - 75	62-70	87 - 104	Generally Not Compatible
III	> 75	> 70	> 104	Not Compatible

ADNL = A-weighted day-night levels
CDNL = C-weighted day-night levels

The computer program Noise Map was used to predict the noise exposure near an airfield or runway due to aircraft flight, maintenance, and ground run-up operations under each of the four Proposed Action Alternatives (USAPHC 2020). The Noise Zones were quantified using the A-weighted Day-Night average sound level (ADNL) metric.

Average noise levels are an accepted tool for long-term land use planning, but they may not adequately assess the probability of community annoyance. Additional metrics may need to be used to identify where noise from overflight activity reaches levels high enough to generate annoyance (Department of the Army 2007).

The Proposed Action would provide an DZ/FLS to support airborne operations for heavy equipment drops and paratroopers. The projected mix of DZ/FLS activity is shown in Table 3-9. The training exercises may include a single pass or multiple passes (i.e., closed route) with circling maneuvers between each pass. The release altitudes will vary depending upon mission and airframe, ranging from 300 to 13,000 feet Above Ground Level (AGL). Training exercises may occur during the day or night, depending on the training needs of the unit.

Table 3-9. Estimated Aircraft Activity under the Proposed Action

Aircraft Type	FLS	DZ
C-130	50%	50%
UH-60	30%	30%
C-17	5%	10%
C-27	5%	5%
CH-47	5%	5%
AH-64	5%	-

USAPHC 2020

The number of passes and landing/take-offs occurring at the DZ/FLS could vary each month depending upon several factors including the point in the training rotation. Based on current projections, there would be approximately 88 training days per year. Each training day, there would be an average of 21 passes over the DZ/FLS per training exercise resulting in approximately 1,860 individual passes occurring in a given year (Table 3-10).

Table 3-10. Projected Annual Use of FLS/DZ under the Proposed Action

	FLS		DZ	
	In Rotation	Out of Rotation	In Rotation	Out of Rotation
Number of Months Used per Year	2	7	6	9
Number of Days Used per Month	7	2	7	2
Number of Passes per Training Exercise	50	10	20	10
Total Annual Movements per Category	700	140	840	180
Projected Annual FLS/DZ Movements	1,860			

USAPHC 2020

Potential Annoyance from Singular Overflights

Although ADNL Noise Zones address annual noise exposure, individual aircraft overflights beyond the airfield, transitioning to or training within the local flying area, generate noise levels that some individuals might find disruptive and/or annoying. This can be particularly true for military aircraft, which tend to perform repetitive and low altitude training activities. Singular aircraft overflight is often the culprit of noise complaints received by an installation.

A good predictor of annoyance in areas around airports with 50 or more overflights per day is the maximum level of the noisiest aircraft type that occurs at least three times within 24-hours (Rylander et al. 1974, 1980, and 1988). Few individuals (5%) considered themselves “highly annoyed” in areas exposed to maximum levels of 70 decibels A-weighted (dBA) or less; however, progressive increases were evident for those same areas exposed to 80 dBA (20%) and 90 dBA (35%).

Anecdotal evidence shows noise complaints are frequently lodged from aircraft activities occurring along less frequented aviation routes and flight corridors in and around Army installations. Thus, these study results may serve as an indicator for annoyance potential from intermittent overflights. Table 3-11 lists the maximum sound levels from the most common aircraft and the loudest aircraft that may be used at the DZ/FLS. These levels can then be compared against the levels of annoyance by dBA listed above to determine the percent of the population that may consider itself highly annoyed.

Table 3-11. Maximum A-Weighted Sound Levels by Aircraft Type under Varying Conditions

Slant Distance (feet)	Maximum Sound Level by Aircraft Type (dBA)				
	C-130 970 C TIT[1] 170 kts[6]	C-17 90% NC[2] 250 kts	CH-47 Light[3] 130 KIAS	CH-47 Heavy[4] 120 KIAS	UH-60 70 KIAS[5]
500	92	97	93	89	77
1,000	85	89	87	83	71
1,500	80	84	83	79	67
2,000	77	79	80	76	64
2,500	75	76	78	74	61
5,000	66	73	N/A	N/A	N/A

USAPHC 2020
[1] TIT = Turbine Inlet Temperature [2] NC = [3] Light indicates no sling load
[4] Heavy indicates a sling load [5] KIAS = Knots Indicated Air Speed [6] kts = knots

The noise model was used to calculate the distance in ground track from zero (aircraft directly overhead) to where the maximum A-weighted noise level would decay to 70 dBA or below (threshold for annoyance). As an example, Figure 3-24 illustrates the overflight annoyance potential for the C-130 at 1,000 feet AGL. This takes into account not only those directly under a flight path but also those to the side of a passing aircraft, where noise levels may remain high enough to cause annoyance.

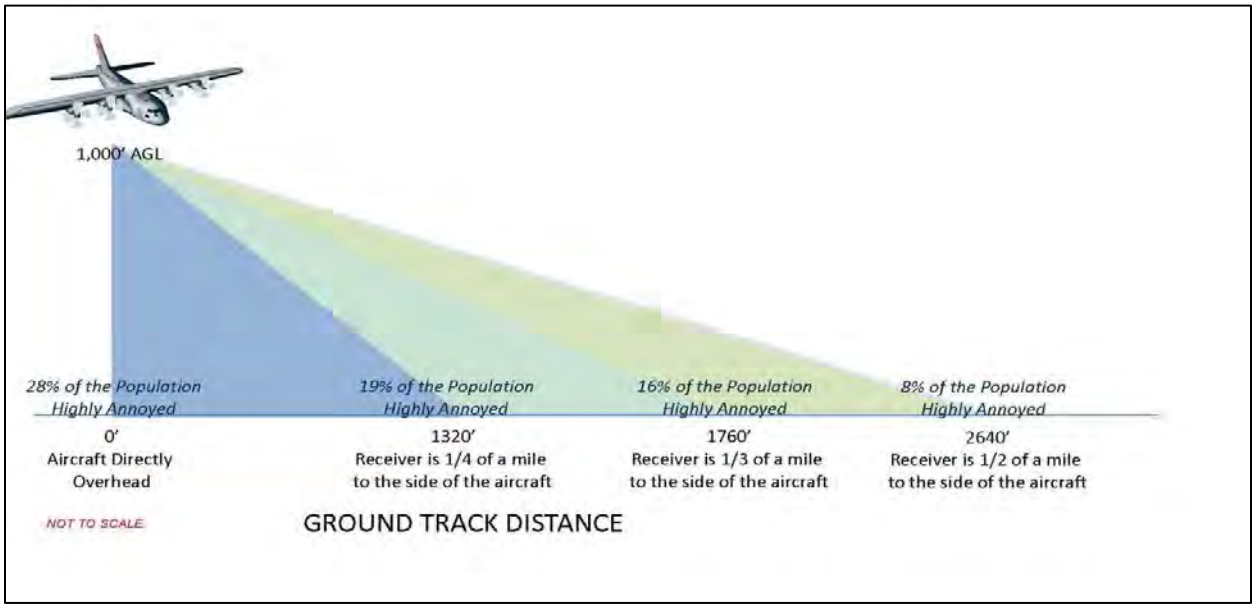

Figure 3-24. C-130 Overflight Annoyance Potential

Table 3-12 is based on typical AGL altitudes and lists the ground track distance, maximum sound level, and subsequent annoyance potential, and represents the best strategy for predicting areas that may be impacted based on annoyance potential from a single overflight. Current and future flight adjustments can be based on the distances in Table 3-12 to help avoid the overflight of noise-sensitive areas.

Table 3-12. Overflight Annoyance Potential

Source	Ground Track Distance (feet)	dBA Maximum	Population Highly Annoyed (%)
C-130 – 500' AGL 970 C TIT 170 kts	0	92	35
	1320 (1/4 mile)	80	20
	1760 (1/3 mile)	77	16
	2640 (1/2 mile)	72	8
	5280 (1 mile)	62	<1
C-130 – 1000' AGL 970 C TIT 170 kts	0	85	28
	1320 (1/4 mile)	79	19
	1760 (1/3 mile)	77	16
	2640 (1/2 mile)	72	8
	5280 (1 mile)	64	<1
C-130 – 2000' AGL 970 C TIT 170 kts	0	77	16
	1320 (1/4 mile)	75	13
	1760 (1/3 mile)	74	11
	2640 (1/2 mile)	71	7
	5280 (1 mile)	64	<1
C-17 – 500' AGL 90% NC 250 kts	0	97	35
	1320 (1/4 mile)	84	26
	1760 (1/3 mile)	80	20
	2640 (1/2 mile)	73	10
	5280 (1 mile)	62	<1
C-17 – 1000' AGL 90% NC 250 kts	0	89	34
	1320 (1/4 mile)	82	23
	1760 (1/3 mile)	79	19
	2640 (1/2 mile)	74	11
	5280 (1 mile)	63	<1
C-17 – 2000' AGL 90% NC 250 kts	0	79	19
	1320 (1/4 mile)	77	16
	1760 (1/3 mile)	75	13
	2640 (1/2 mile)	72	8
	5280 (1 mile)	64	<1

Table 3-12, continued

Source	Ground Track Distance (feet)	dBA Maximum	Population Highly Annoyed (%)
CH-47 Light– 500' AGL 130 KIAS	0	93	35
	1320 (1/4 mile)	94	35
	1760 (1/3 mile)	93	35
	2640 (1/2 mile)	90	35
	5280 (1 mile)	70	5
CH-47 Light – 1000' AGL 130 KIAS	0	87	31
	1320 (1/4 mile)	85	28
	1760 (1/3 mile)	84	26
	2640 (1/2 mile)	83	25
	5280 (1 mile)	81	22
CH-47 Heavy – 500' AGL 120 KIAS	0	89	34
	1320 (1/4 mile)	77	16
	1760 (1/3 mile)	74	11
	2640 (1/2 mile)	70	5
	5280 (1 mile)	63	<1
CH-47 Heavy – 1000' AGL 120 KIAS	0	83	25
	1320 (1/4 mile)	77	16
	1760 (1/3 mile)	75	13
	2640 (1/2 mile)	70	5
	5280 (1 mile)	63	<1
UH-60–500' AGL 70 KIAS	0	77	16
	1320 (1/4 mile)	68	2
	1760 (1/3 mile)	64	<1
UH-60–1000' AGL 70 KIAS	0	71	7
	1320 (1/4 mile)	67	1
	1760 (1/3 mile)	65	<1

USAPHC 2020

3.4.8.2 Environmental Impacts

Alternative 1 (West DZ – Preferred Alternative)

Under this alternative, the number of aircraft movements required within the DZ/FLS does not generate noise levels above 65 dBA, and the LUPZ is located primarily within the DZ (Figure 3-25). Noise impacts under this Alternative would be negligible due to training activities but could have potential impacts during individual overflights arriving or departing the DZ/FLS (USAPHC 2020). Noise impacts under this Alternative could be direct, long-term, and minor.

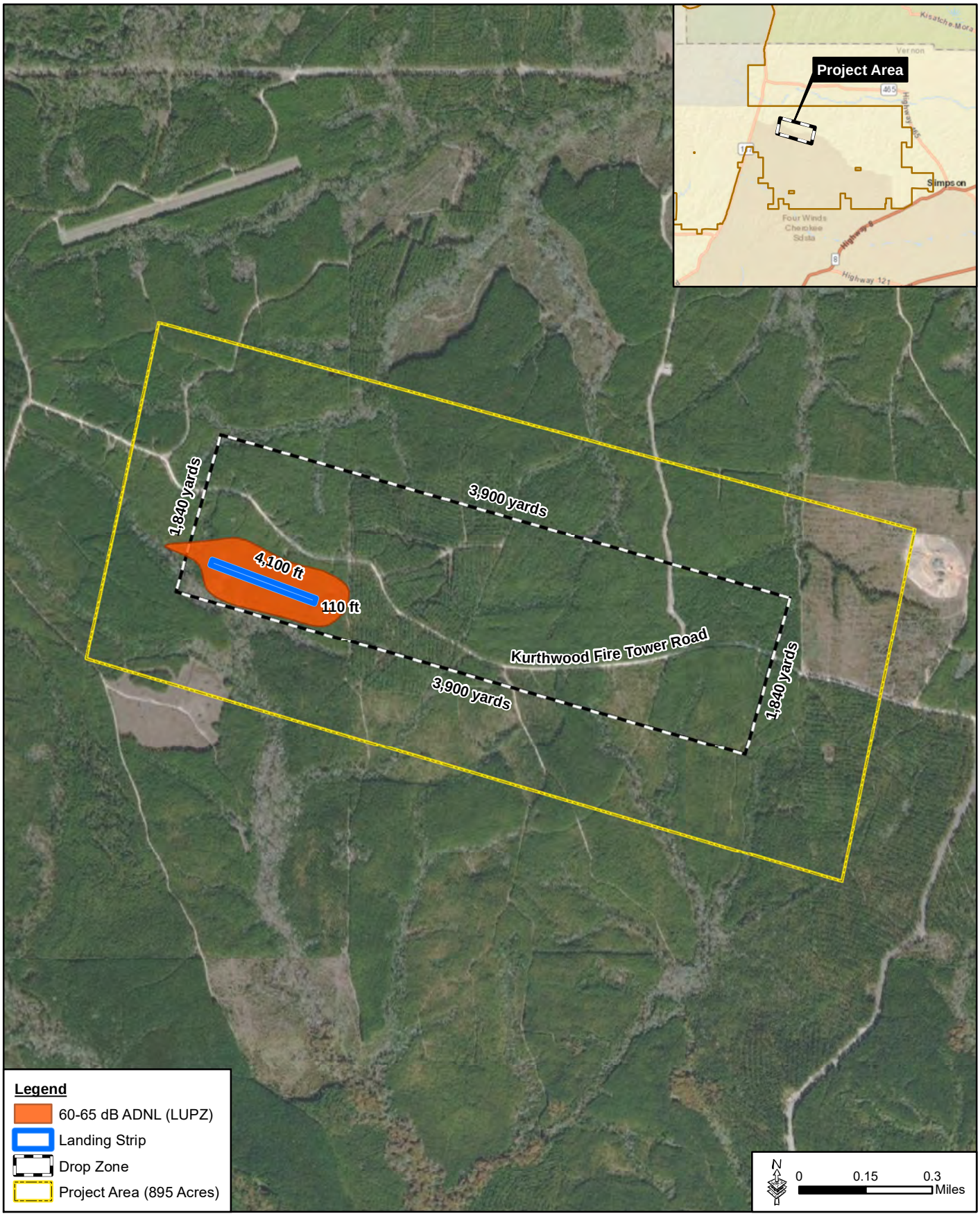

Figure 3-25. Noise Impacts – Alternative 1

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Alternative 2 (Central DZ)

The LUPZ is located entirely within the DZ (Figure 3-26) under Alternative 2. Noise impacts under this Alternative would be similar to those described for Alternative 1.

Alternative 3 (Eastern DZ)

The LUPZ under Alternative 3 is primarily surrounding the FLS (Figure 3-27). Noise impacts under Alternative 3 would be similar to those described for Alternative 1.

Alternative 4 (Eastern DZ with Imbedded FLS)

The LUPZ is located entirely within the DZ (Figure 3-28) under Alternative 4. Noise impacts under this Alternative would be similar to those described for Alternative 1.

Alternative 5 (No Action Alternative)

There would be no noise impacts under this Alternative, as there would be no additional flights or training passes.

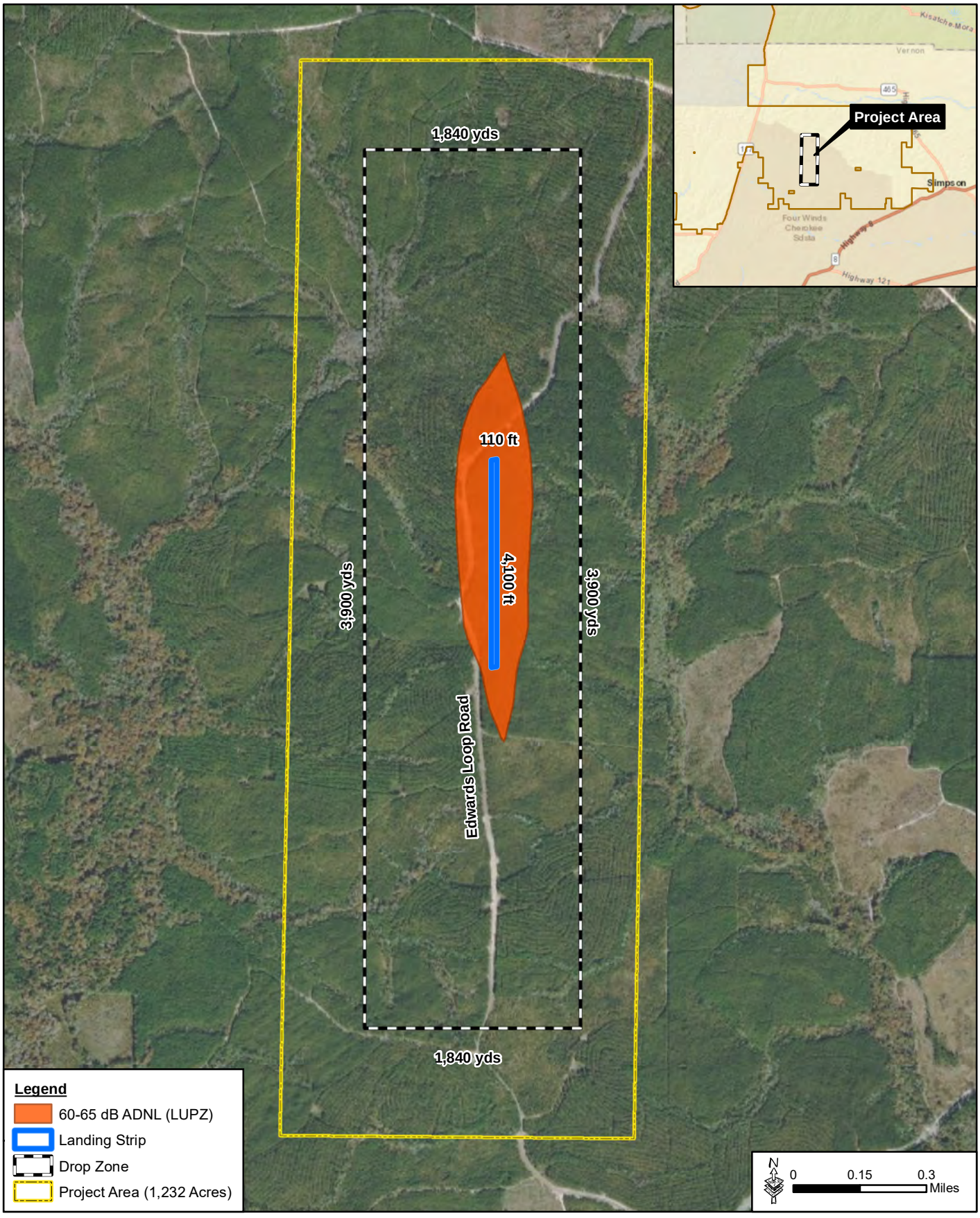

Figure 3-26. Noise Impacts – Alternative 2

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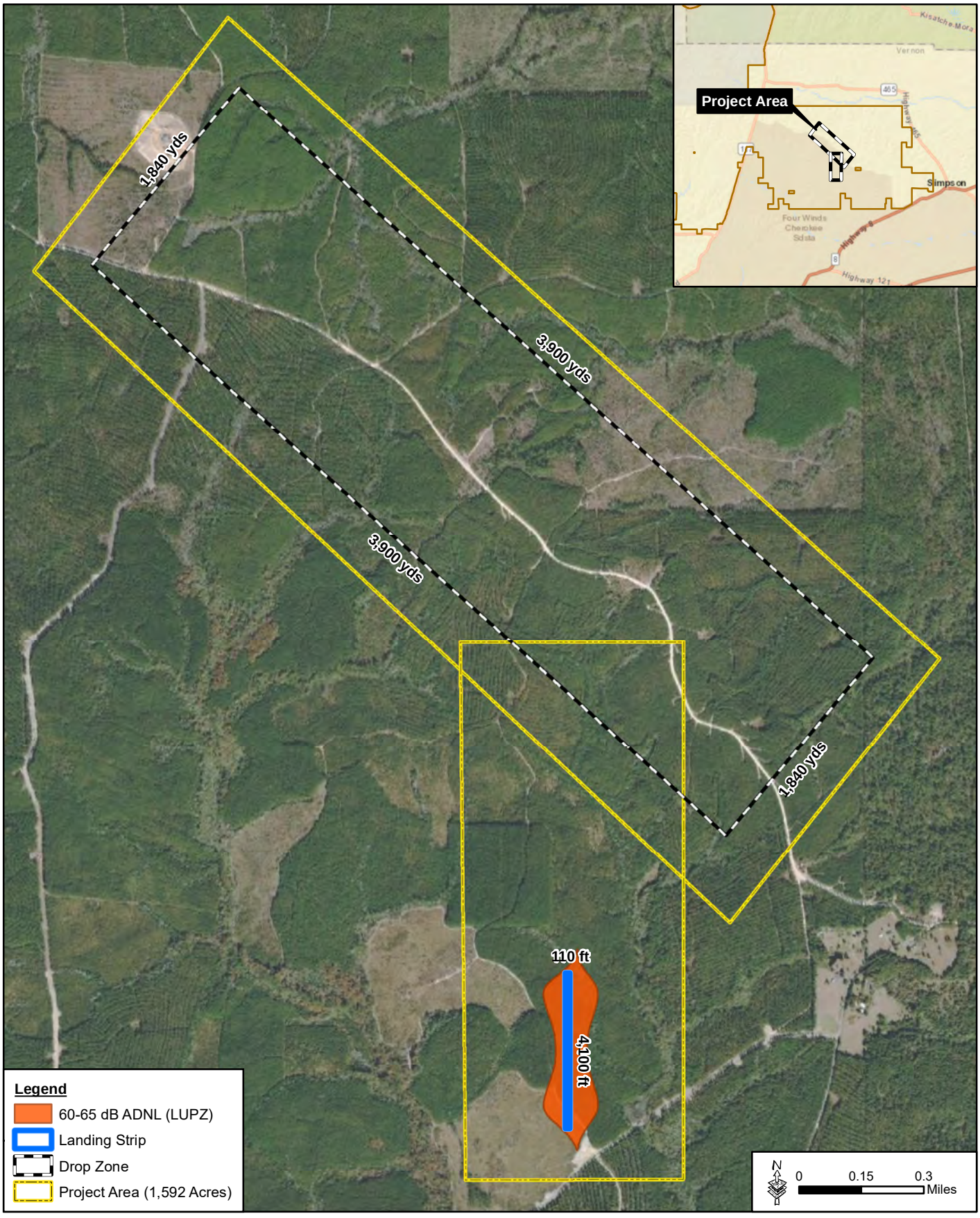

Figure 3-27. Noise Impacts – Alternative 3

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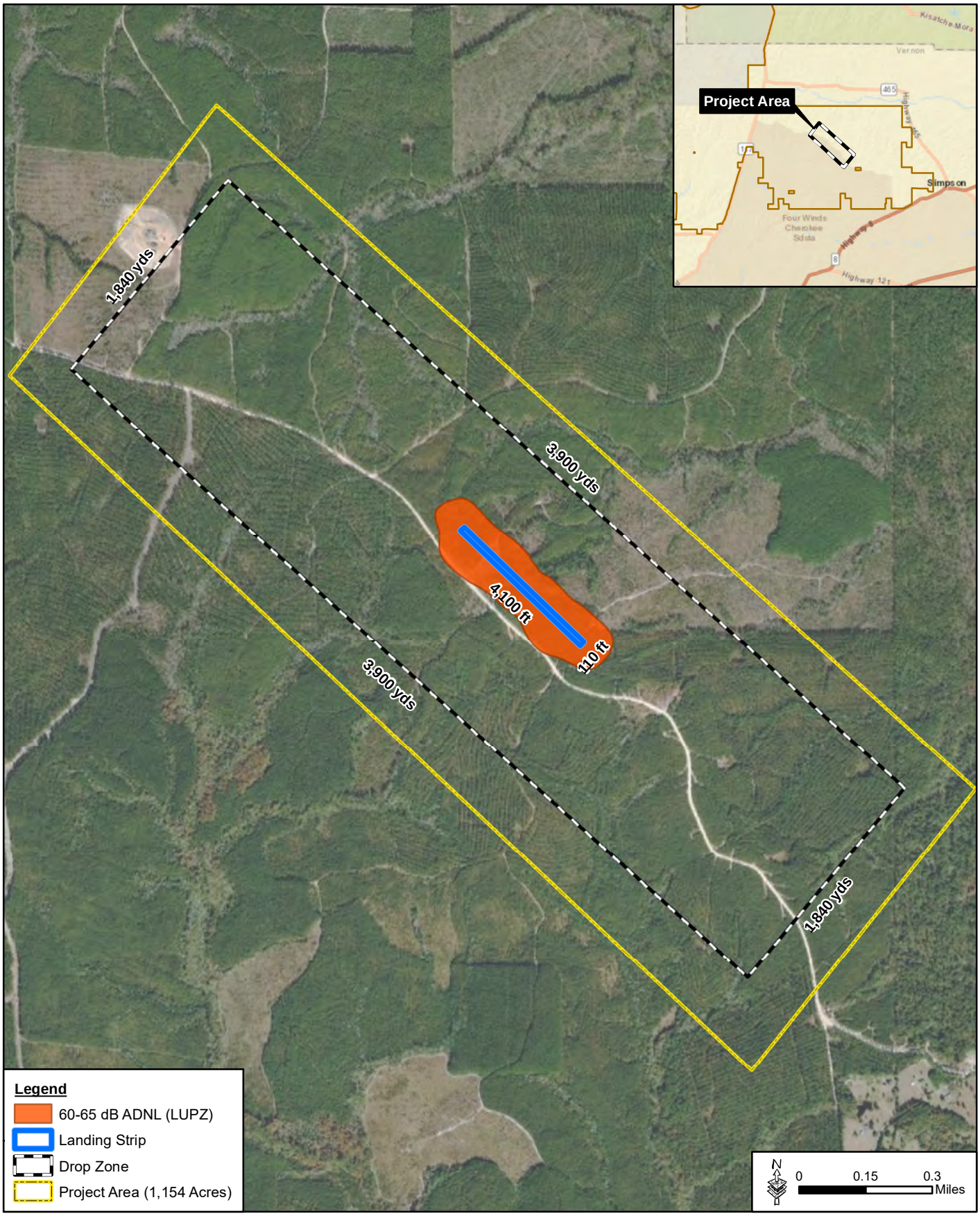

Figure 3-28. Noise Impacts – Alternative 4

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4.0 CUMULATIVE EFFECTS

Cumulative effects are defined by the CEQ in 40 CFR 1508.7 as the "*impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions.*" The consideration of cumulative effects looks at effects on the resource from two perspectives: (1) the incremental effect on each condition of the resource from the Proposed Action and (2) how other past and present actions within the region might interact with the effects of the Proposed Action. Table 4-1 lists other major actions and activities that could contribute cumulatively to the effects of the Proposed Action. Note that the table includes present or foreseeable effects of other military actions that have been recently implemented or are yet to be fully implemented, such as the removal of trespass horses from training lands. Additionally, it is anticipated that all construction projects and environmental stewardship measures will occur as scheduled and those activities were considered in the cumulative effects determinations. The specific direct and indirect effects of these past and ongoing actions and activities have been previously addressed.

Some degree of cumulative effect could be identified for virtually any resource. However, only those resources that were identified as requiring detailed analysis are included in this section. Overall and cumulative effects are addressed by resource below. The analysis offers a more complete understanding of resource conditions that implementation of the Proposed Action might magnify, amplify, or otherwise exacerbate or ameliorate, and identifies the overall cumulative effects on the resource within the spatial boundary (or ROI).

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Table 4-1. Actions and Activities Contributing to Cumulative Effects

Contributing Activity	Description of Activity and Nature of Effects	Time Frame
Construction of Sediment Basins for GDZ	Removal of vegetation, soil erosion, and sedimentation	2005
Timber removal at Integrated Training Area Management (ITAM, Carnins Village)	Removal of timber on approximately 10 acres; removal of vegetation, erosion, and sedimentation	2006
Construction of seven buildings at Geronimo Airfield Complex	Removal of vegetation, soil erosion, sedimentation, stormwater, and biological resources	2006
Refurbish offset Geronimo FLS	Removed a strip of grass 900 meters by 50 meters and filled in washouts; removal of vegetation, soil erosion, and sedimentation	2006
Resurface existing Geronimo Tank Trail Road	Stormwater and sedimentation	2006
Repair and clean sediment basins	Repaired and cleaned sediment basins at Self Airfield and GDZ; soil erosion, sedimentation, and stormwater	2006
Resurface Fullerton FLS and correct erosion	Soil erosion, sedimentation, and stormwater	2006
Installation of a new power line	Installed a new power line at North Fort. Provided Phase 3 electrical power to Forward Operating Base (FOB) SPIRIT, SWORD, and RANCHO 45. Included 75 foot right of way and removed two acres of HMU; removal of vegetation, temporary soil erosion, increased sedimentation, biological resources, and wildlife habitat loss	2006
Silt basin maintenance	Maintained four silt basins at Fullerton, east of GDZ, approximately 10 acres. Removal of vegetation, temporary soil erosion, sedimentation, water resources	2007
Repair/rehabilitate TA Fullerton 4 adjacent to GDZ, south of Junk Hill	Approximately 25 acres; removal of vegetation, temporary soil erosion, and sedimentation	2007
Repair/rehabilitate TA Fullerton 1, northeast of Carnis Village	Approximately 5 acres; removal of vegetation, temporary soil erosion, and sedimentation	2007
Construction of berm near Fullerton 4 near Carnis	Removal of vegetation, soil erosion, sedimentation, and loss of forest wildlife habitat	2007
Shape and surface trail on east side of GDZ with aggregate base course	Removal of vegetation, soil erosion, sedimentation, and stormwater	2007
Excavation of material and correct eroded areas at sediment basin GDZ	Removal of vegetation, soil erosion, sedimentation, and stormwater	2007
Shape GDZ and seed eroded area	Approximately 28 acres; removal of vegetation, temporary soil erosion, sedimentation, and stormwater	2007
Rehabilitate Fullerton 1	Approximately 5 acres; removal of vegetation, soil erosion, and sedimentation	2008
Installation of surveillance camera system, Rancho 45	No effects	2008
Repair eroded areas throughout GDZ	Removal of vegetation, temporary soil erosion, sedimentation, hazardous waste, and stormwater	2008
Expansion of GDZ	Removal of vegetation, soil erosion, biological resources, hazardous waste, stormwater, removal of wildlife habitat, and sedimentation	2008
Closure of four FOB water wells	Closed water wells at Anvil, Sword, McGovern, and Rancho 45; drinking water and hazardous/solid waster	2008
Improvised explosive device (IED) lane at Rancho 45	Removal of vegetation, soil erosion, and sedimentation	2008
Upgrade power from Combined Arms Collective Training Facility (CACTF) to intersection of Smith Villa and Fullerton roads	No effects	2008
Spray growth retardant herbicide on GDZ	Approximately 680 acres; air quality, indoor air quality, asbestos, lead, drinking water, stormwater, hazardous waste, and pest management	2009
Construct sediment basin north of GDZ expansion project	Approximately 30 acres; removal of vegetation, temporary soil erosion, sedimentation, biological resources, and removal of wildlife habitat	2009
Reconstruct road near sediment basin north of Tarkira/Carnis	Removal of vegetation, soil erosion, sedimentation, stormwater, and biological resources (removed approximately 3 acres of HMU)	2009
Repair Geronimo FLS ramp and runway	Removal of vegetation, soil erosion, sedimentation, and stormwater	2010
Erosion control repairs at Carnis Village	Soil erosion, sedimentation, and stormwater	2010
Erosional repairs at Maddox Village, FOB Anvil, Carnis Village, CACTF/Range Operations and Control Area (ROCA), and Artillery Road	Removal of vegetation, soil erosion, sedimentation, and stormwater	2010
Install underground electrical supply to IED after action review theater at Rancho 45	Soil disturbance, soil erosion, and sedimentation	2011

Table 4-1, continued

Contributing Activity	Description of Activity and Nature of Effects	Time Frame
Construction of a low water crossing at Fullerton 4 to include road repairs and erosion control near Carnis Village (West Carnis Village Road)	Removal of vegetation, soil disturbance, soil erosion, water quality, and stormwater	2011
Construction of horse corral around sediment basin located southwest of CACTF in GDZ	Approximately 3 acres; removal of vegetation, soil disturbance, soil erosion, sedimentation, water quality, and stormwater	2011
Demolition/disposal of Rancho 45 latrine	Soil disturbance, hazardous/soild waste, water quality, and stormwater	2011
Demolition of Rancho 45 latrine	Soil disturbance, hazardous/solid waste, water quality, and stormwater	2012
Demolition of bleachers 9793, Rancho 45	Soil disturbance and solid waste	2012
Operation of Two Reverse Osmosis Water Purification Units (ROWPUs) for Rotational Exercise 13-01 at the Pond on Southwest Corner of GDZ and the Pond on the North Side of FOB Warrior (Hospital Site/Jeane Junction)	Drinking water	2012
Reduction of Wire, Swing Fence and Posts, Light Poles, Towers, and Weapon Clearing Barrels at JCOP Turani (also known as Carnis), Fullerton 1	Solid waste	2013
Erosion Control at Fullerton 4 GDZ	Removal of vegetation, soil disturbance, soil erosion, and sedimentation	2013
Installation of Horse Corral Southeast of GDZ	Approximately 2 acres; removal of vegetation, soil disturbance, temporary soil erosion, sedimentation, and water quality	2013
Preparation of Geronimo FLS to Meet Geometrical and Structural Requirements for C17/130 Aircraft	Work included core sampling, re-establishment of crown and profile, and grading shoulders for drainage; removal of vegetation, soil disturbance, temporary erosion, sedimentation, water quality, and stormwater.	2013
Installation of Water and Sewer Facilities for Fire Station Near GDZ, Fullerton Training Area (SP0600-08-C-8257)	Removal of vegetation, soil disturbance, temporary soil erosion	2013
Tree Clearance for the Northern Section of GDZ	Action includes re-grading and re-aligning drainage, establishment of ground cover, and implementation of maintenance; soil disturbance, temporary soil erosion, sedimentation, and stormwater	2014
Implementation of Erosion Control Measures on the East Side of GDZ	Approximately 3 acres; terraced and placed culverts on the east side of GDZ; removal of vegetation, soil disturbance, temporary soil erosion, and sedimentation	2014
Preparation for the December 2015 Rotational Exercise for the 20th Engineer Brigade	Installation of training aids to include trench trainer, collapsed structure trainer, and two confined space trainers at the CACTF; soil disturbance	2014
Fullerton FLS Repairs at GDZ	Work included grading, re-establishment of crown, and application of soil cement; soil disturbance, temporary soil erosion and sedimentation	2015
Demolition of Rancho 45 General Instruction Building	Asbestos, air quality, soil disturbance, temporary soil erosion, hazardous/solid waste, and lead	2015
Placement of a Minimum of 12 inches of Soil Cement to Cap Geronimo FLS	Work included excavation, fill, grade, and repair/resurfacing of taxiways and parking areas; soil disturbance, temporary soil erosion, sedimentation, and water quality	2015
Construct three helicopter landing zones to Support Air Assault Operations in Fullerton 1	Work included clearing and grubbing of vegetation; removal of vegetation, soil disturbance, soil erosion, sedimentation, and storm water	2016
Repair Sediment Basin in Geronimo TA	Work included the removal of trees, vegetation, silt, and repair riser; removal of vegetation, soil disturbance, temporary soil erosion, sedimentation, and water quality	2016
Repair LWC 1 in Geronimo TA	Work included removing trees, installing concrete approaches, installing rip-rap, and placing aggregate; removal of vegetation, soil disturbance, temporary soil erosion, and sedimentation	2016
Construct Chemical Latrine Pads at Ranges 8A,11, 13, 14, 14D, 15, 21, 23B, 24, CACTF, and Zion Hill Shoothouse (HC 00162-7P)	Work included removing vegetation, soil disturbance, and temporary soil erosion	2016
Experimental Ponds for Amphibians in Cold Springs, Kurthwood and Simpson Training Areas (ERDC, 16E-RC3-015)	Work included removing vegetation, soil disturbance, and temporary soil erosion	2016
Simpson Training Areas 1-4 Trail Repairs (HC 00149-7P)	Work included placement of rock, water bars, ditches, and replacement of culvert; soil disturbance, temporary soil erosion, and temporary sedimentation	2017
Soil Boring for Alternative Development for Kurthwood Training Area Borrow Area	Work included soil disturbance	2017
Open, Operate, and Close an approximately 4-acre Borrow Pit in Simpson Training Area (hC 00209-7P)	Work included removing vegetation, soil disturbance, temporary soil erosion, and temporary sedimentation	2017

Table 4-1, continued

Contributing Activity	Description of Activity and Nature of Effects	Time Frame
Kurthwood LZ Construction, Kurthwood 2 (HC 001888-7P)	Work included clearing vegetation and grading 34.6 acres and repairs to existing trails (installation of culverts); soil disturbance removal of vegetation, temporary soil erosion, and temporary sedimentation	2017
Construct, Open, Operate, and Close Borrow Pit in Kurthwood Training Area (HC 00238-7P)	Work included removing vegetation, soil disturbance, temporary soil erosion, and temporary sedimentation	2017
Kurthwood Trail Upgrades (SB 00202+7P)	Work included installation of three reinforced concrete culverts, installation of rip-rap, installation of markers, re-establish road with positive drainage, turnouts and selective tree removal, machine grade, installation of aggregate course, repair base failures, and installation of geotextile; soil disturbance, vegetation removal, temporary soil erosion, and temporary sedimentation	2017
Simpson Trail Upgrades (SB 00198-7P)	Work included removal of three culverts, installation of four culverts; installation of rip-rap; construct headwalls, wingwalls, and aprons; grade 3 miles of trails, and install 6 inches of aggregate; soil disturbance, temporary soil erosion, and temporary sedimentation.	2017
Tree Clearing at Geronimo	Approximately 8 acres; work included removal of all live trees, dead trees, and stumps to at least 8 inches below ground level; remove all debris and dispose of off Fort Polk; and fill in all holes: removal of vegetation, soil disturbance, temporary erosion, sedimentation, solid waste, and water quality	2017
Tactical Area Bivouac Site Rehabilitation (TABS) Project, Fullerton 1 TA	Approximately 23 acres; work included reshaping, terracing, installation of drop pipes, water bars, and ditches, grubbing, and removal of approximately 20 trees; removal of vegetation, soil disturbance, temporary soil disturbance, sedimentation, water quality, and stormwater	2018
Fullerton 1 TABS Rehabilitation Project Phase II	Approximately 15 acres; project repaired a degraded trail in the vicinity of GDZ and East Fullerton Road located in the Fullerton 1 TA. Work included the removal of trees and stumps, installation of an earthen levee, and the placement of culverts, water bars, ditches, and rocks; removal of vegetation, soil disturbance, temporary soil disturbance, sedimentation, water quality, and stormwater	2018
Demolition of Facility TR635 (includes House, Barn, Miscellaneous Structures, Joseph Borton), Kurthwood 4	Work included soil disturbance and temporary soil erosion	2018
Prescribed Burning and Timber Harvesting in Simpson Training Area 1, Compartments 80 and 81	Work included vegetation removal, soil disturbance, temporary soil erosion, and temporary sedimentation	2018
Construct Helicopter Landing Zone (HLZ) in Simpson 1 Training Area (HC 00055-8P)	Work includes clearing of trees, soil stabilization, and revegetate with grass species.	2018
Firebreak Construction for Prescribed Burning, Timber Harvesting (CY18029), and Fire Prevention in Simpson 1 Training Area.	Work included vegetation removal, soil disturbance, temporary soil erosion, and temporary sedimentation.	2018
Simpson Tactical Entry Point - Install Commercial Driveway Connecting the Simpson Training Area to LA Hwy 465 (SB 00103-8P)	Work included using Portland Cement Concrete (PCC) and the installation of pavement markings, signage, and culverts; soil disturbance, temporary soil erosion, and temporary sedimentation.	2018
Kurthwood and Grant Tactical Entry Point - Install 2 Commercial Driveways Connecting the Cold Springs and Kurthwood Training Areas to LA Hwy 117(SB 00104-8P	Work included using PCC and the installation of pavement markings, signage, and culverts.	2018
Maneuver Trail 80A Repair Project near McFarland Road, Simpson 1 (HC 00148-8P).	Work included repairing 1.5 miles of the maneuver trail and low-water crossing spot placement of aggregate, and installation of water bars; soil disturbance, temporary soil erosion, and temporary sedimentation.	2018
Edwards Loop Road ROW and Aggregate (SB 00108-8P)	Work included clearing right of way, machine grade, installation of aggregate base course and constructing an aggregate roadway surfacing on 23,288 linear feet of Edward Loop Road in the Kurthwood and Simpson training areas. The project will require culvert replacements and 3 to 5 inches of rock at the existing ford sites; vegetation removal, soil disturbance, temporary soil erosion, and temporary sedimentation.	2018
Development of Tactical Assembly Bivouac Site (TABS), Kurthwood 3 (HC 00141-8P)	Work included land clearing of approximately 60 acres, trail repairs, grubbing, placement of rocks, installation of water bars and/or culverts and hardened crossings, and placement of erosion control measures (Sediment Basins / Terraces).; soil erosion, vegetation removal, temporary soil erosion, and temporary sedimentation.	2018
Maneuver Trail 82 (Indian Creek) Repair Project located in the Kurthwood 2 Training Area (HC 00025-9P)	Work included repairing (1.56 miles) of the existing trail network. Repairs include portions of the trail that have been washed or wallowed out, portions that hold water, reconstruction and adding water bars, spot placement of aggregate, and repairing of a low-water crossing; soil disturbance, temporary soil erosion, and temporary sedimentation.	2018

Table 4-1, continued

Contributing Activity	Description of Activity and Nature of Effects	Time Frame
Installation of Fiber Optic Network (FON) Infrastructure and Cables in the JRTC Land Expansion Area for Communications Sites 42 and (44-46). Route Located in the Kurthwood/Simpson Loop, Eastern Sector of the LEA	Work included performing directional boring, plowing, trenching, and digging; soil disturbance and temporary soil erosion.	2019
Installation of Site 46 Communication Tower located in the Simpson Training Area. Infrastructure will consist of a 300-foot self-supporting lattice tower, concrete generator shelter, 60 Kilowatt liquid propane back-up generator, subsurface 1000-gallon liquid petroleum commercial tanks, 8-foot site security fence, and a fiber vault	Work included vegetation removal, soil disturbance, temporary soil erosion, and temporary sedimentation.	2019
MT Pete Temple 86 Trail Repair (HC00095-9P). Project included repairing a 1.8 miles existing trail network in Kurthwood 4.	Work included blading of trail, removal of excess vegetation, placement of rock/or pit materials, construction of water bars and lead off ditches, and installation of culverts; vegetation removal, soil disturbance, temporary soil erosion, and temporary sedimentation.	2019
Maneuver Trail 96B Repair Project (HC 00097-9P). Project consists of repairing 0.25 mile of an existing trail network in Simpson 4	Work included blading trail, removal of excess vegetation, placement of rock or pit materials, construction of water bars and lead off ditches, and installation of culverts.	2019
Simpson 3 Borrow Pit Project (HC 000108-9P). Project consisted of opening, operating, and closing a borrow area located in the Simpson 3 Training Area	Work consisted of land clearing, blading and removal of Vegetation, and the placement of rock, construction of water bars and ditches, and installation of culverts; vegetation removal, soil disturbance, temporary soil erosion, and temporary sedimentation.	2019
Maneuver Trail 90B Project (). Project will Repair and upgrade 1.0 miles of an Existing Trail Network located in the Simpson 3 Training Area	Work includes removal of vegetation, placement of rock, installation of culverts, and the hardening of crossings, vegetation removal, soil disturbance, temporary soil erosion, and temporary sedimentation.	2019
Maneuver Trail 77A Project (). Project will repair and upgrade 1.7 miles (6.3 acres) in Kurthwood 1 Training Area Work includes: remove vegetation up to 8' from trail edge; blade trail; install geogrid, rock and/or pit material; construct lead-off ditches and water bars; install culverts; construct low water crossings.	Work includes removal of vegetation up to 8 feet from trail edge; blade trail; install geogrid, rock and/or pit material; construction of lead-off ditches and water bars; installation of culverts; construction of low-water crossings.	2019
Maneuver Trail 77D Project (). Project will repair and upgrade 1.4 miles (5.1 acres) in Kurthwood 1 Training Area	Work includes removal of vegetation up to 8 feet from trail edge; blade trail; install geogrid, rock and/or pit material; construction of lead-off ditches and water bars; installation of culverts; construction of low-water crossings.	2019
Highway 8 Simpson Staging Area Project (HC 00225-9P). The proposed action is to construct a staging area in the southern portion of Simpson 3 Training Area. The staging area will be 5 acres or less and in close proximity where the 97G trail enters the Simpson Training Area from Highway 8	Work includes construction of erosion control structures (i.e. terraces, water bars, sediment basins). The selected alternative will be cleared of all trees, stumps grubbed, cut/filled to level surface and topped with pit run and aggregate. As well as, trail repairs to include the construction of water bars and lead off ditches; addition of rock and removal of vegetation up to 8 feet from trail edge; vegetation removal, soil disturbance, temporary soil erosion, and temporary sedimentation.	2019
Kurthwood Village - Construct a MOUT Collective Training Facility (HC 00187-9P). Construct a 3.5-acre pad in an existing clearing. Some minor non-merchantable tree removal (predominately ornamental off-site species) is expected. The cleared area will be grubbed for any stumps, smoothed/shaped and stabilized with aggregate to create a foundation for containerize modular building placement (phase 2). An ingress / egress point of entry will be installed on Calcasieu Loop and another on Kurthwood Firetower Rd.	Work includes vegetation removal, soil disturbance, temporary soil disturbance, and temporary sedimentation.	2019
Calcasieu Loop Maintenance (SB 00257-9P). Machine grade, compact and install 6 inches of aggregate roadway surfacing on approximately 2 miles of Calcasieu Loop in the Simpson training area with approximately 1 mile of existing material being overlaid with geotextile fabric. Establish positive drainage to include machine grading ditches and turn outs, with addition of new turn outs, as needed. Clear and grub approximately 1 mile along roadway to establish a 70-foot right of way, establish ditches, and replace six culverts.	Work includes vegetation removal, soil disturbance, temporary soil disturbance, and sedimentation.	2020

Table 4-1, continued

Contributing Activity	Description of Activity and Nature of Effects	Time Frame
MT 96C Trail Repair (). Repair existing trail network (0.98 miles) in Simpson 4 Training Area.	Work includes clearing vegetation to a 30-foot width for entire trail length (an additional 10 feet of vegetation could be cleared in areas with heavy understory growth, but will not include merchantable timber or grubbing), grubbing, remove undesirable trail bed material and replace with suitable fill material up to 2 feet in depth, spread undesirable materials on-site but in a manner such as to prevent sedimentation of creeks and streams, stabilize sunken portions of trail using material on side slopes, pit run and aggregate, install geogrid under pit run and aggregate, install aggregate on trail surface, harden existing crossings with aggregate, improve existing crossings with 4 to 48-inch culverts, seed and fertilize areas of disturbance; vegetation removal, soil disturbance, temporary soil erosion, and temporary siltation.	2020

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From 1910 to the late 1930s, large scale clear-cutting of timber for lumber production occurred throughout the region. By 1937, nearly 120 billion board feet of lumber had been produced, converting the longleaf pine canopy to grassland. "*Fullerton Mill, located just south of Fort Polk produced at its peak 120 million board feet of lumber per year and some 2.25 billion board feet over its lifetime"* (Fort Polk 2009). By 1943, it was estimated that only three percent of Louisiana's longleaf pine forest remained uncut old growth, most of which was located in Vernon and Rapides Parishes (Fort Polk 2009). These clear-cut timber practices contributed to soil erosion and soil compaction from heavy equipment, and changed much of the landscape from forest to grasslands and thickets. In 1924, the U.S. Congress passed the Clarke-McNary Act, which allowed the purchase of cut-over lands for National Forests, and Louisiana passed an act that authorized the state to cooperate with the federal government in purchasing forest land (Fort Polk 2009).

Camp Polk, now Fort Polk, was established between 1939 and 1945. During the early years of Fort Polk and between 1974 and 1993, when the 5th Infantry Division (Mechanized) was Fort Polk's major tenant, there were construction and training activities that contributed further to localized soil erosion, storm water run-off, and sedimentation. The 5th Infantry Division (Mechanized) trained with heavy-tracked vehicles that caused considerable soil erosion, soil compaction, and stream sedimentation.

Since 1993, when the JRTC was established at Fort Polk, positive changes have occurred in training activities and forestry practices, despite adverse effects of construction. Because of changes in force structure and mission requirements, training events changed from the frequent use of heavy, mechanized track vehicles to training events involving foot soldiers and the use of wheeled vehicles, which reduced soil erosion and soil compaction. Although tracked vehicles are employed by some home station and rotational units that train at JRTC and Fort Polk, the number of tracked vehicles and frequency of use has diminished substantially since realignment of the 5th Infantry Division to Fort Hood, Texas, in 1992.

Although reforestation and environmental and natural resource management efforts by the Army have helped to restore the longleaf pine forest at a landscape scale, localized reductions in habitat suitability and availability for many species have resulted from past construction of firing ranges, training facilities, and other facilities. Construction of the North and South Fort cantonment areas, ranges, drop zones on Fort Polk's Main Post and Peason Ridge Training Areas, the Peason Ridge Live-Fire Complex, and the Multi-Purpose Range Complex resulted in habitat losses or reduced habitat quality for RCWs, LPSs, as well as sensitive, conservation, and management indicator species associated with upland pine habitats and communities. Habitat losses from mature upland pine associated species have also occurred as a result of past road construction and clearing for mineral extraction.

Timber harvests have altered vegetation conditions either by thinning stands (i.e. reducing timber stocking), shelterwood cutting, or clear-cutting. These activities were required to provide habitat for species reliant on early successional habitats and to maintain upland pine forest health, especially longleaf pine stands. Understory development in overstocked longleaf pine stands is generally poor. Poorly developed understories reduce habitat suitability for species associated with mature longleaf pine forest and reduce the efficiency with which prescribed fire can be applied for proper stand management. When Fort Polk was established, most of the longleaf pine timber had been removed. Through replanting, natural succession, and forest management, most of those lands were reforested, ameliorating the effects of deforestation within the ROI. Also, most of the maneuver damage resulting from training during the World War II and Vietnam War eras has since been repaired or naturally recovered. Although localized clearing for roads and building construction, and the establishment of training areas and ranges represent long-term land use commitments with limited value to proposed, threatened or endangered species, Fort Polk and the KNF largely remain "*islands of biodiversity*" within the ROI, which is dominated by intensively managed industrial forests, agricultural, and rural land uses. Past, present, and reasonably foreseeable future actions were considered in the determination of cumulative effects. In some instances, the effects of past actions by the Army and other federal or private

interests persist to the present time and may result in cumulative, or additive, effects on resources of concern. In other instances, the effects of past actions have been largely ameliorated or offset over time and no longer present a source of cumulative effects. An overview of past actions or types of actions within the ROI and descriptions of the overall cumulative effects are described in Table 4-1.

4.1 Cumulative Effects for Water Resources: Streams, Wetlands, and Other Surface Water Resources

A major adverse impact on surface water resources would occur if an action substantially depletes surface water supplies, substantially alters drainage patterns, violates CWA or state water quality regulations, or results in the loss of waters of the U.S. that cannot be compensated. The Proposed Action would have direct, permanent, minor, and adverse impacts to streams, wetlands, and potential waters of the U.S. Unavoidable impacts to jurisdictional wetlands will be permitted through the Section 404 process. These impacts will be mitigated at an established wetland mitigation bank to ensure a no net loss of wetlands. The mitigation ensures the project will result in no net loss of wetlands, and the project is in compliance with Section 404 of the CWA. Thus, the Proposed Action would not have a cumulative effect on wetlands.

4.2 Cumulative Effects for Biological Resources: Forest Ecology, Native Plants, and Invasive Plant Species

A major adverse cumulative impact on forest ecology, native plants, and invasive plant species would occur if a substantial reduction in ecological processes, communities, or populations would threaten the long-term viability of a species or result in the substantial loss of a sensitive community that could not be offset or otherwise compensated. Under the Proposed Action vegetation would be cleared and impacts on forest ecology and native plants are anticipated to be direct, moderate, long-term, and adverse.

The majority of vegetation types contained in the alternative areas are common on Fort Polk and the ROI. However, Fort Polk and KNF contain the most and the largest

acreage of pitcher plant bogs in Louisiana (Gene Stout and Associates 2004, LDWF 1996) which contain high amounts of plant diversity; a large pitcher plant bog may contain up to 100 different species (Louisiana Natural Heritage Program 1996). There are 13 pitcher plant bogs located in the alternative areas, possibly containing rare plant species. Threats to these ecosystems include mechanical damage from machinery and chemical pollution, among others. The Proposed Action, when considered with other past, current, and foreseeable future actions, would not result in major adverse cumulative impacts on forest ecology and native plants.

Several invasive plant species would be removed under the Proposed Action, resulting in direct, long-term, negligible impacts. Although the direct removal of invasive species would initially have beneficial impacts on forest ecology, the Proposed Action may result in additional occurrences of invasive species in the future. When considered with other past, current, and foreseeable future actions, the Proposed Action would not result in major cumulative impacts on invasive species.

4.3 Cumulative Effects for Biological Resources: Species of Concern, and Threatened and Endangered Species

4.3.1 Species of Concern

A major adverse cumulative impact on species of concern would occur if a combination of past, present, and foreseeable future actions resulted in a jeopardy opinion for any endangered, threatened, or special status species. Twenty different species of concern could potentially be impacted due to the Proposed Action. Depending on the species, impacts could either be direct, negligible, short-term, adverse impacts or direct, moderate, permanent, adverse impacts.

4.3.2 Red-Cockaded Woodpecker

The Proposed Action is not likely to adversely affect the RCW, as there are no known RCW partitions, clusters, or HMU within the Proposed Action footprint; therefore the Proposed Action would not result in major cumulative impacts on RCW populations in the ROI.

4.3.3 Louisiana Pinesnake

The Proposed Action is anticipated to have negligible, short-term, adverse impacts on LPS during construction. Negligible impacts, by definition, are unmeasurable and therefore cannot be added to other past, present, and reasonably foreseeable future actions to produce a measurable cumulative impact. Additionally, protective measures have been developed and will be incorporated during construction to prevent LPS mortality as a result of construction activities. Thus, the Proposed Action is not anticipated to have a cumulative effect on the LPS. However, informal consultation has commenced with the USFWS in accordance with Section 7 of ESA. Any protective or mitigation measures that are determined during the informal consultation with USFWS will be incorporated into the project design prior to the start of construction.

4.4 Cumulative Effects for Biological Resources: Migratory Birds

The Proposed Action is anticipated to have direct, short-term, minor impacts on migratory bird populations. Negligible impacts, by definition, are unmeasurable and therefore cannot be added to other past, present, and reasonably foreseeable future actions to produce a measurable cumulative impact.

4.5 Cumulative Effects for Biological Resources: Game Species

The Proposed Action is anticipated to have negligible impacts on game species populations. Negligible impacts, by definition, are unmeasurable and therefore cannot be added to other past, present, and reasonably foreseeable future actions to produce a measurable cumulative impact.

4.6 Cumulative Effects for Soils

A major cumulative impact on soils would occur if the action exacerbates or promotes long-term erosion or if there would be a substantial reduction in agricultural production or loss of prime farmland soils. The environmental impacts to soils under the Proposed

Action are anticipated to be direct, short-term, moderate, and adverse during construction. Adverse impacts are anticipated during construction due to the soil disturbance created by the tree removal. Between four and 55 acres of prime farmland soils would be disturbed under the Proposed Action while 13 soil types located within the Proposed Action Alternatives have moderate to very severe erosion potential and may require erosion control measures. Erosion control measures will be implemented prior to land clearing. Therefore when combined with other existing and proposed actions in the region, the Proposed Action does not have the potential to result in major adverse cumulative impacts on soils.

The environmental impacts to soils under the Proposed Action are anticipated to be direct, long-term, negligible, and adverse during operation. Adverse impacts are anticipated during operation due to the normal activities and operation of a drop zone. Negligible impacts, by definition, are unmeasurable and therefore cannot be added to other past, present, and reasonable foreseeable future actions to produce a measurable cumulative impact.

4.7 Cumulative Effects for Cultural Resources

The environmental impacts to cultural resources under the Proposed Action are anticipated to be direct, significant, and adverse. There are nine archaeological sites located within the Proposed Alternatives and each alternative area has between zero to three archaeological sites eligible for the NRHP within their boundaries. Six of these sites are eligible for the NRHP and the remaining sites are considered not eligible. Therefore, the Proposed Action, when combined with past, current, and foreseeable future actions in the region, would result in cumulative impacts on cultural resources. Environmental requirements included in Appendix B would lessen the impact on cultural resources to below significant.

4.8 Cumulative Effects for Noise Impacts

The environmental impacts of noise under the Proposed Action are anticipated to be negligible during training activities and direct, long-term, minor, and adverse during singular overflights. Negligible impacts, by definition, are unmeasurable and therefore cannot be added to other past, present, and reasonable foreseeable future actions to produce a measurable cumulative impact. When combined with other past, current, and foreseeable future projects in the ROI, the Proposed Action would not results in adverse cumulative noise impacts.

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5.0 SUMMARY

This EA has been prepared to evaluate the potential effects on the natural and human environment from activities associated with the Proposed Action to construct a DZ and FLS with DRAS capable of supporting DRAS missions at JRTC and Fort Polk. The EA has evaluated the potential effects of implementing each viable Alternative, as identified in Section 2.0. The following VECs were analyzed in detail; Water Resources: Streams, Wetlands, and Other Surface Water Resources; Biological Resources: Forest Ecology, Native Plants, and Invasive Plant Species; Species of Concern, and Threatened and Endangered Species; Migratory Birds; Game Species; Soils; Cultural Resources; and Noise impacts. Additionally a number of previous mitigation and monitoring measures and commitments were identified for each VEC in the detailed analysis of Section 3.0. Implementation of these measures will lessen the impacts to those resource areas and reduce the anticipated impacts to a non-significant level. Table 5-1 summarizes the potential impacts of the Proposed Action.

Table 5-1. Summary of Impacts

Alternative	Alternative 1 (West DZ – Preferred Alternative)	Alternative 2 (Central DZ)	Alternative 3 (Eastern DZ)	Alternative 4 (Eastern DZ with Imbedded FLS)	Alternative 5 (No Action)
Meets Purpose	Yes	Yes	Yes	Yes	No
Meets Need	Yes	Yes	Yes	Yes	No
Water Resources: Streams, Wetlands, Other Water Resources	Direct, permanent, minor, and adverse impacts to streams, wetlands, and potential waters of the U.S.	Direct, permanent, minor, and adverse impacts to streams, wetlands, and potential waters of the U.S.	Direct, permanent, minor, and adverse impacts to streams, wetlands, and potential waters of the U.S.	Direct, permanent, minor, and adverse impacts to streams, wetlands, and potential waters of the U.S.	No impacts
Biological Resources: Forest Ecology, Native Plants	Direct, moderate, long-term, and adverse impacts	Direct, moderate, long-term, and adverse impacts	Direct, moderate, long-term, and adverse impacts	Direct, moderate, long-term, and adverse impacts	No impacts
Biological Resources: Invasive Species	Direct, long-term, and negligible impacts	Direct, long-term, and negligible impacts	Direct, long-term, and negligible impacts	Direct, long-term, and negligible impacts	No impacts
Biological Resources: Species of Concern and Threatened and Endangered Species	Direct, negligible, short-term, adverse impacts on up to 12 SGCN; direct, moderate, adverse impacts on eight SGCN; no impacts on RCW; short-term, negligible, adverse impacts on LPS	Direct, negligible, short-term, adverse impacts on up to 12 SGCN; direct, moderate, adverse impacts on eight SGCN; no impacts on RCW; short-term, negligible, adverse impacts on LPS	Direct, negligible, short-term, adverse impacts on up to 12 SGCN; direct, moderate, adverse impacts on eight SGCN; no impacts on RCW; short-term, negligible, adverse impacts on LPS	Direct, negligible, short-term, adverse impacts on up to 12 SGCN; direct, moderate, adverse impacts on eight SGCN; no impacts on RCW; short-term, negligible, adverse impacts on LPS	No impacts

Table 5-1, continued

Alternative	Alternative 1 (West DZ – Preferred Alternative)	Alternative 2 (Central DZ)	Alternative 3 (Eastern DZ)	Alternative 4 (Eastern DZ with Imbedded FLS)	Alternative 5 (No Action)
Biological Resources: Migratory Birds and Game Species	Direct, short-term, minor, and adverse impacts on migratory birds; negligible impacts on game species	Direct, short-term, minor, and adverse impacts on migratory birds; negligible impacts on game species	Direct, short-term, minor, and adverse impacts on migratory birds; negligible impacts on game species	Direct, short-term, minor, and adverse impacts on migratory birds; negligible impacts on game species	No impacts
Soils	Direct, short-term, moderate, and adverse impacts	Direct, short-term, moderate, and adverse impacts	Direct, short-term, moderate, and adverse impacts	Direct, short-term, moderate, and adverse impacts	No impacts
Cultural Resources	No direct impact to historic properties	Eligible cultural resources sites would be avoided or mitigation would be provided to minimize direct, long-term, adverse impacts	Eligible cultural resources sites would be avoided or mitigation would be provided to minimize direct, long-term, adverse impacts	Eligible cultural resources sites would be avoided or mitigation would be provided to minimize direct, long-term, adverse impacts	No impacts
Noise Impacts	Negligible impacts due to training activities; direct, long-term, and minor impacts due to single overflights	Negligible impacts due to training activities; direct, long-term, and minor impacts due to single overflights	Negligible impacts due to training activities; direct, long-term, and minor impacts due to single overflights	Negligible impacts due to training activities; direct, long-term, and minor impacts due to single overflights	No impacts

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7.0 ACRONYMS AND ABBREVIATIONS

ADNL	A-weighted Day-Night average sound level
AGL	Above Ground Level
AR	Army Regulation
BCTs	Brigade Combat Teams
BMPs	Best Management Practices
CBC	Christmas Bird Count
CDS	Cargo Delivery System
CEA	Cumulative Effects Analysis
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
cmbgs	Centimeters below ground surface
COA	Conservation Opportunity Area
COR	Contracting Office Representative
CTC	Combat Training Centers
CWA	Clean Water Act
dB	Decibel
dBA	A-weighted decibel
DNL	Day/Night Average Noise Level
DoD	Department of Defense
DPTMS	Directorate of Plans, Training, Mobilization, and Security
DRAS	Dual Row Aerial Supply
DZ	Drop Zone
EA	Environmental Assessment
ENRMD	Environmental and Natural Resources Management Division
ESA	Endangered Species Act
EIS	Environmental Impact Statement
EO	Executive Order
FEIS	Final Environmental Impact Statement
FLS	Forward Landing Strip
FNSI	Finding of No Significant Impact
FORSCOM	Forces Command

HMU	Habitat Management Units
INRMP	Integrated Natural Resources Management Plan
IRRG	Installation Regional Recovery Goal
ITAM	Integrated Training Area Management
IUA	Intensive Use Area
JRTC	Joint Readiness Training Center
KIAS	Knots Indicated Air Speed
KNF	Kisatchie National Forest
kts	knots
LDEQ	Louisiana Department of Environmental Quality
LDWF	Louisiana Department of Wildlife and Fisheries
LOS	Level of Service
LPS	Louisiana Pine Snake
LUA	Limited Use Area
LUPZ	Land Use Planning Zone
MAPS	monitoring avian productivity surveys
MBTA	Migratory Bird Treaty Act
NEPA	National Environmental Policy Act
NOA	Notice of Availability
NOI	Notice of Intent
NRHP	National Register of Historic Places
RCW	Red-cockaded Woodpecker
ROI	Region of Influence
RTV	Rational Threshold Value
SGCN	Species of Greatest Conservation Need
SLUA	Special Limited Use Area
SDZ	Surface danger zones
SWPPP	Stormwater Pollution Prevention Plan
USACE	United States Army Corps of Engineers
USAPHC	United States Army Public Health Center
USC	United States Code
USEPA	United States Environmental Protection Agency
USFS	United States Forest Service

USFWS	U.S. Fish and Wildlife Service
USGS	United States Geological Survey
VEC	valued environmental components

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APPENDIX A
MONITORING AND MITIGATION COMMITMENTS

Below is the list of monitoring and mitigation points. These are tiered to resource areas but the soils and water resources can go either way.

WATER RESOURCES

Previous Commitments

Fort Polk has established programs and procedures to protect watersheds within its training lands (see Appendix A). The following measures are currently implemented Installation wide and would be used to maintain and sustain the training lands associated with the Proposed Action. The following describes existing procedures and programs utilized to protect watersheds and thereby protect waterways from sedimentation.

- *Development of Stream Gage Network.* US Geological Survey (USGS) and Fort Polk ENRMD have established a network of stream gaging stations to monitor stream flow and water quality parameters, for the purpose of assessing stream responses to changes in training intensity or land use. Data collected by the gages assist with estimating and mitigating sedimentation rates, a water quality issue of concern because of the highly erodible nature of the native soils and the potential for construction and training activities to increase soil erosion and delivery of sediment to streams.

- *Bog Mapping and Monitoring.* All bogs on the Installation will be digitally mapped and monitored. Bogs will be inspected for maneuver damage following training exercises and during annual training land inspection events, and corrective action to protect wetlands and rare/sensitive plants species are implemented as appropriate.

- *Environmental Screening/Alternatives Analysis for Construction Projects*. The Installation Master Planner would provide project footprint and alternative sites to the Environmental and Natural Resources Management Division (ENRMD) before the plans are presented to the Real Property Planning Board (RPPB) for development of a screening analysis of effects and identification of environmentally preferred siting and design options. The environmentally preferred options would be presented to the RPPB, along with other options under consideration, to ensure that environmental factors and concerns are integrated early in the planning process. Potential benefits are reductions in future construction and mitigation costs, reduction or avoidance of adverse cumulative effects to environmental resources, streamlining of design and construction processes, and promotion of sustainability, conservation, and compliance with environmental regulations.

- *Construction Process Oversigh*t. Procedures to ensure that environmental compliance requirements and measures to reduce adverse effects to environmentally sensitive resources are included in contract specifications for military construction projects. Contracting Office Representative (COR) would ensure compliance with specified limits of construction, construction sequencing, Section 404 permit

conditions, storm water pollution prevention plans (SWPPPs), and other environmental considerations during construction, as specified in construction specifications, National Environmental Policy Act (NEPA) and permit documents. The COR would review environmental requirements before construction, coordinate with the ENRMD NEPA document point-of-contact to ensure compliance, and have authority to halt construction if work is not performed in accordance with environmental requirements.

Best Management Practices

- *Construction Activity of Any Size*: Only storm water should enter the storm water conveyances and inlet systems; the Installation has a separate storm sewer system that drains directly to receiving streams. The following BMPs should be routinely employed before, during and after construction:

    - Employ soil erosion prevention measures such as silt fences and inlet protection to prevent sediment from leaving the site and entering the storm drains;
    - Vegetate or re-vegetate areas of ground that have been disturbed as soon as possible to prevent soil erosion and subsequent storm water conveyance/receiving stream sedimentation;
    - On-site preventative measures should be taken to ensure that potential pollutants are not released into the environment;
    - During construction and upon completion, the site should be free of excess construction debris and associated litter to prevent contamination of storm water.

- *Utilization of Stream Bank Buffers*: Stream bank buffers are used to stabilize, control or minimize erosion problems and minimizing impacts to fisheries habitat while providing shade, shelter, organic matter (leaf detritus and large woody debris), and other nutrients that are necessary for fish and other aquatic organisms. The buffer width utilized at Fort Polk ranges from 50-100 feet depending on the order of the stream. Stream bank and channel disturbance resulting from construction activities can increase the stream's sediment load, which can cause channel erosion or sedimentation and have adverse effects on the biotic system.

- *Coordination With ENRMD Before Implementation*: The proponent should coordinate with ENRMD representatives in advance of implementing work to implement the plan on ranges where there is encroached vegetation to help ensure that sensitive resources are protected as required.

SOILS

Previous Commitments

Fort Polk has established programs and procedures to minimize soil erosion on its training lands (see Appendix A). The following measures are currently implemented Installation wide and would be used to maintain and sustain the training lands associated with the Proposed Action. The following describes existing procedures and programs utilized to decrease soil displacement and thereby protect waterways from sedimentation.

- *Maneuver Damage Inspection and Monitoring.* The JRTC and Fort Polk maneuver damage inspection and repair program is being expanded to include identification, repair, and monitoring for damages from routine home station and rotational training events. All training lands are inspected for damage to soils, vegetation, streams and wetlands, and sensitive environmental resources following each training exercise and corrective actions are initiated to minimize soil displacement.

- *Development and Implementation of Watershed Management Plans.* Watershed management plans are implemented on the Installation where ground disturbing military activities are permitted. Watershed sites requiring rehabilitation or maintenance would be prioritized by identification of severity of erosion problem areas. Implementation of the plans would involve design and installation of BMPs such as a sediment basin network or individual sediment basins in specific watersheds, silt fences, check dams, riprap in drainage pathways, erosion mats, reseeding, gabions, or enhancement/preservation of wider vegetated buffers adjacent to streams.

- *Annual Maintenance of Sediment Basins.* All sediment basins are inspected to ensure they are functioning properly. Basin maintenance will be prioritized according to need. Excess sediment will be removed from basins, applied to upland areas, and stabilized.

- *Temporary Closure of Sites.* The maneuver damage inspection and repair program identify sites on the Installation needing protection to facilitate recovery from maneuver damage to soils, vegetation, streams and wetlands, and sensitive environmental resources. Sites will be marked as temporarily off-limits to digging and driving until the sites are recovered. Closed areas will be added quarterly or as needed to the “No Dig/No Drive” map used by military trainers for planning purposes.

- *Integrated Training Area Management (ITAM) and Land Rehabilitation and Maintenance (LRAM).* The ITAM and LRAM programs are used to identify and repair land that requires rehabilitation. Training areas are inspected following each training exercise, by implementation of the maneuver damage inspection and repair program, to identify sites needing repair. All range repair and sustainment programs

utilize contouring, grading, seeding, and fertilization, on a site-specific, as need basis to maintain an adequate ground cover.

BIOLOGICAL RESOURCES: THREATENED AND ENDANGERED SPECIES

Previous Commitments

Fort Polk has established programs and procedures to protect the Louisiana pine snake on its training lands (see Appendix A and B). The following measures are currently implemented Installation wide and would be used to maintain and sustain Louisiana pine snake and its habitat associated with the Proposed Action. The following describes existing procedures and programs utilized to protect the Louisiana pine snake and its habitat.

- *Louisiana Pine Snake Conservation.* To avoid or reduce future construction-related effects to the Louisiana pine snake, Fort Polk conducts surveys for the Louisiana pine snake and/or Baird's pocket gopher mounds within proposed construction footprints for all new construction projects within the range and maneuver training areas. Baird's pocket gopher mounds will be avoided during construction wherever feasible.

- Minimize or avoid adverse impacts through Soldier education.

APPENDIX B
ENVIRONMENTAL REQUIREMENTS

ENVIRONMENTAL REQUIREMENTS
PROPOSED NEW DROP ZONE
KURTHWOOD AND COLD SPRINGS TRAINING AREA
JOINT READINESS TRAINING CENTER AND FORT POLK

RESOURCE	ENVIRONMENTAL REQUIREMENT
Water Resources	• Develop and approve a Stormwater Pollution Prevention Plan prior to construction. • Obtain a Department of the Army permit for unavoidable impacts to Jurisdictional Wetlands. • Determine the number and size of sediment basins needed to minimize sedimentation in local tributaries prior to construction and construct prior to land clearing.
Biological Resources	• Survey for pitcher plant bogs and delineate known bogs prior to construction. • Consult with USFWS on the proposed action for Federally listed species with the potential to occur in the action area as part of the NEPA process.
Soils	• Develop and approve a Stormwater Pollution Prevention Plan prior to construction. • Determine the number and size of sediment basins needed to minimize sedimentation in local tributaries prior to construction and construct prior to land clearing.
Cultural Resources	• Avoid cultural resources site eligible for the National Register of Historic Places to the extent practical. Eligible sites would be delineated and a cluster of trees would be left around the site. • Consult with the SHPO and Tribes if avoidance of eligible sites is not practical. • Develop and implement mitigation measures (Traditional mitigation or Alternate mitigation) if required prior to construction. • If a potentially eligible discovery occurs during construction, Fort Polk shall identify and implement actions to resolve immediate adverse effects and shall promptly upon discovery but in no event later than 48 hours from discovery, notify the Louisiana SHPO, the Advisory Council, and any Tribes that may attach religious and cultural importance to the affected property. • Any eligible artifacts discovered will be stored in an appropriate curation facility in accordance with 36 CFR 79.

APPENDIX C
NOISE ANALYSIS

DEPARTMENT OF THE ARMY
US ARMY PUBLIC HEALTH CENTER
BUILDING 5158
8252 BLACKHAWK ROAD
ABERDEEN PROVING GROUND MARYLAND 21010-5403

MCHB-PH-WMG 15 June 2020

MEMORANDUM FOR Department of Public Works, Environmental Division, (IMPO-PWE/Mr. Peter Dunlevy), 1697 23rd Street, Building 2543, Fort Polk, LA 71459-5503

SUBJECT: Environmental Health Sciences, Environmental Noise Consultation No. S.0054859b-20, Noise Assessment for Proposed Forward Landing Strip and Drop Zone, Joint Readiness Training Center and Fort Polk, Louisiana, 22 April 2020

1. Subject document is enclosed.

2. The U.S. Army Public Health Center (APHC) strives to provide high quality products and services in a timely manner. We would appreciate a few moments of your time to tell us how we did. Please visit the following link: https://usaphcapps.amedd.army.mil/Survey/se.ashx?s=25113745052C38DC. To help ensure we evaluate the proper project:

a. For Question 1 “Directorate/Division” please indicate:

(1) Directorate: Environmental Health Sciences and Engineering

(2) Division: Environmental Health Sciences

b. For Question 2 “Type of product or service received,” please indicate: Technical or Surveillance Report

3. Our points of contact for this consultation are Ms. Kristy Broska, Environmental Protection Specialist or Ms. Catherine Stewart, Branch Chief, Environmental Noise, APHC, commercial 410-436-1029 or DSN 584-1029, or e-mail: kristy.a.broska.civ@mail.mil or catherine.m.stewart20.civ@mail.mil.

FOR THE DIRECTOR:

Encl

ALICK E. SMITH
COL, MS
Director, Environmental Health Sciences and Engineering

U.S. ARMY PUBLIC HEALTH CENTER
8252 Blackhawk Road, Aberdeen Proving Ground, Maryland 21010-5403

Environmental Health Sciences, Environmental Noise Consultation No. S.0054859b-20, June 2020
Environmental Health Sciences and Engineering

Noise Assessment for Proposed Forward Landing Strip and Drop Zone, Joint Readiness Training Center and Fort Polk, Louisiana, 22 April 2020

Prepared by Ms. Kristy Broska, Environmental Noise Branch

EXECUTIVE SUMMARY
ENVIRONMENTAL HEALTH SCIENCES
ENVIRONMENTAL NOISE CONSULTATION
NO. S.0054859b-20
NOISE ASSESSMENT FOR
PROPOSED FORWARD LANDING STRIP AND DROP ZONE
JOINT READINESS TRAINING CENTER
FORT POLK, LOUISIANA
22 APRIL 2020

1. PURPOSE

The U.S. Army Public Health Center completed this consultation to provide noise analysis for the proposed Forward Landing Strip (FLS) and Drop Zone (DZ) at the Joint Readiness Training Center and Fort Polk.

2. CONCLUSIONS

The proposed FLS/DZ activity would not have a significant impact on the surrounding community. The Noise Zones would be contained within the post boundary. However, individual overflights arriving and departing the FLS/DZ or using the local airspace would have the potential to cause annoyance.

3. RECOMMENDATIONS

Include the information from this consultation in the environmental analysis documentation for the proposed action.

Provide public notification of upcoming FLS and DZ training events.

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NOISE ASSESSMENT FOR
PROPOSED FORWARD LANDING STRIP AND DROP ZONE
JOINT READINESS TRAINING CENTER
FORT POLK, LOUISIANA
22 APRIL 2020

1. PURPOSE

The U.S. Army Public Health Center completed this consultation to provide noise analysis for the proposed Forward Landing Strip (FLS) and Drop Zone (DZ) at the Joint Readiness Training Center and Fort Polk.

2. REFERENCES AND TERMS

Appendix A contains a list of references used to prepare this consultation. The glossary provides definitions for acronyms, abbreviations, and terms.

3. GENERAL

The proposed FLS and DZ would be located within the eastern portion of Peason Ridge in the Kurthwood and/or Simpson Training Areas (Figure 1). There are four alternative locations under consideration (Figure 2):

- Alternative 1 (West Drop Zone) – an imbedded FLS within the DZ.
- Alternative 2 (Central Drop Zone) – an imbedded FLS within the DZ.
- Alternative 3 (Eastern Drop Zone - Preferred Alternative) – a DZ with an offset FLS. The FLS would be located to the southwest of the DZ.
- Alternative 4 (Eastern Drop Zone) – an imbedded FLS within the DZ.

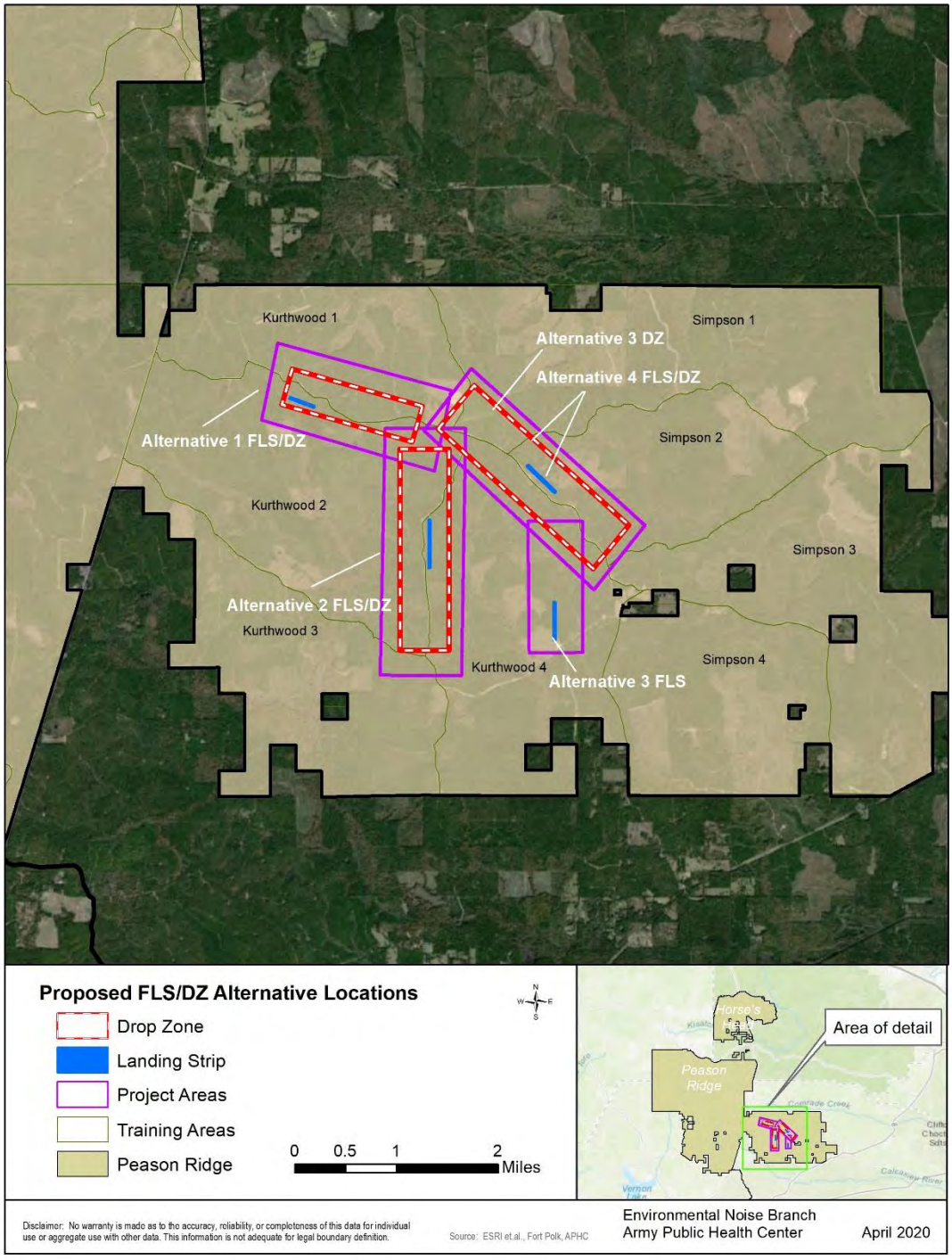

Figure 1. Proposed Project Location

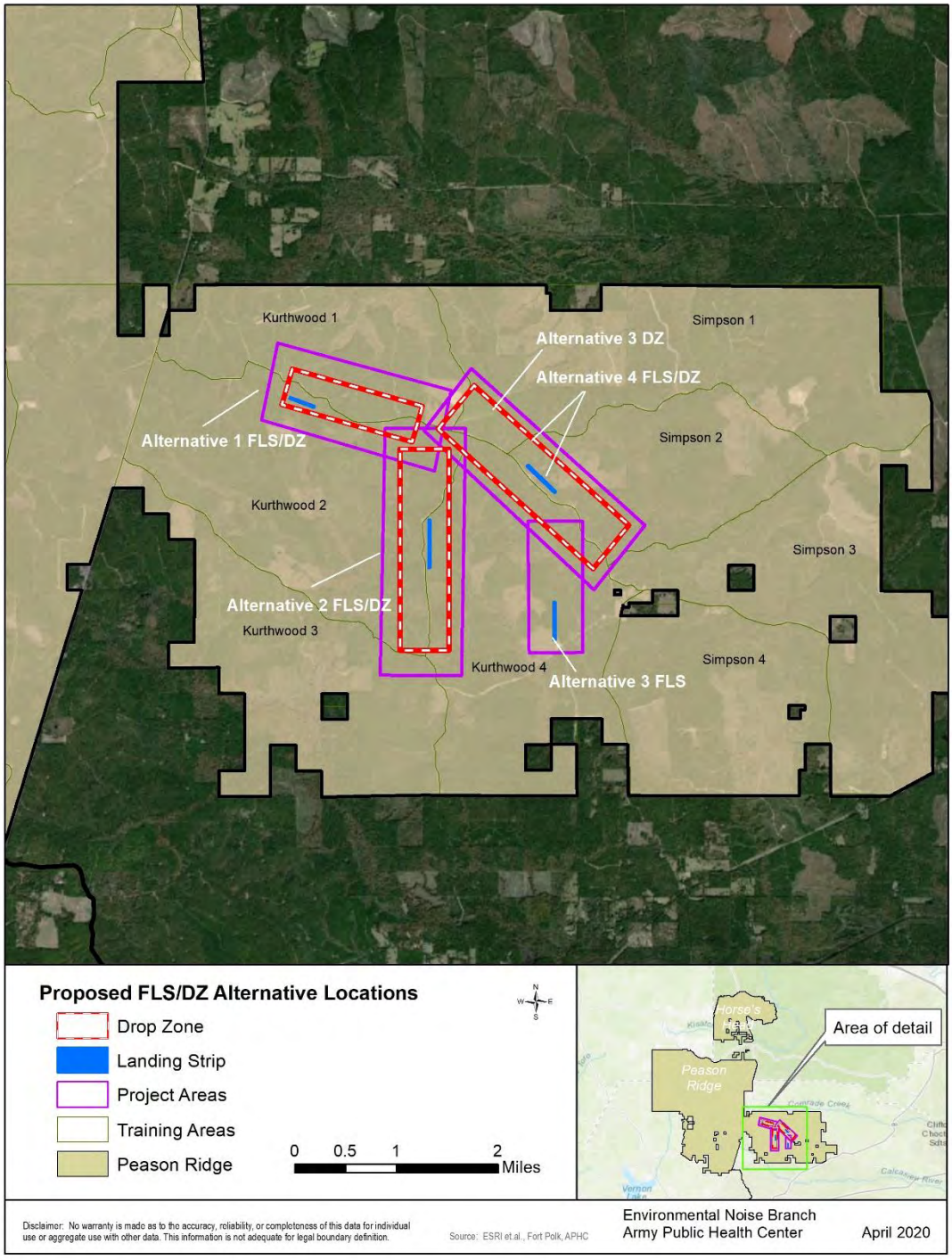

Figure 2. Proposed FLS/DZ Alternative Locations

4. NOISE ASSESSMENT GUIDELINES

Noise Zones are defined in Army Regulation (AR) 200-1. Per AR 200-1 (chapter 14), noise-sensitive land uses, such as housing, schools, and medical facilities are acceptable within the Land Use Planning Zone (LUPZ) and Noise Zone I, generally not compatible in Noise Zone II, and not compatible in Noise Zone III (Department of the Army, 2007). Table 1 lists the land use planning guidelines.

Table 1. Land Use Planning Guidelines

	Noise Limits			
Noise Zone	Aviation ADNL (dB)	Impulsive CDNL (dB)	Small Arms Peak (dB)	**Noise-Sensitive Land Use**
LUPZ	60 – 65	57 – 62	n/a	Generally Compatible
I	< 65	< 62	< 87	Generally Compatible
II	65 – 75	62 – 70	87 – 104	Generally Not Compatible
III	> 75	> 70	> 104	Not Compatible

Source: AR 200-1
Legend:
dB = decibel
ADNL = A-weighted Day-Night average sound Level
CDNL = C-weighted Day-Night average sound Level
LUPZ = Land Use Planning Zone

Average noise levels are an accepted tool for long-term land use planning, but they may not adequately assess the probability of community annoyance. As recommended in AR 200-1, this assessment also includes supplemental metrics to identify where noise from overflight activity may periodically reach levels high enough to generate annoyance.

5. NOISE CONTOURING PROCEDURES

NoiseMap is a suite of computer programs and components developed by the Air Force to predict noise exposure near an airfield/runway due to aircraft flight, maintenance, and ground run-up operations (U.S. Air Force, 2013). Aircraft flight data are obtained to derive average daily operations by runway and type of aircraft. Noise Zones for aircraft operations are quantified using the A-weighted Day-Night average sound Level (ADNL) metric.

6. PROPOSED ACTIVITY

The Proposed Action would provide an FLS/DZ to support airborne operations for heavy equipment drops and paratroopers. The projected mix of FLS activity is C-130 (50%), UH-60 (30%) and 5% each for C-17, C-27, CH-47, and AH-64. For the DZ, the projected mix is C-130 (50%), UH-60 (30%), C-17 (10%), and 5% each for C-27 and CH-47.

The training exercises may include a single pass or multi pass (i.e., closed route) with circling maneuvers between each pass. The release altitudes will vary depending upon mission and airframe, ranging from 300 to 13,000 feet Above Ground Level (AGL). Training exercises may occur during the day or night, depending on the training needs of the unit.

The number of passes and landing/take-offs occurring at the FLS/DZ could vary each month depending upon several factors including the point in the training rotation. Based on current projections, there would be approximately 88 training days per year. Each training day, there would be an average of 21 passes over the FLS/DZ per training exercise resulting approximately 1,860 individual passes occurring in a given year (Table 2).

Table 2. Projected FLS/DZ Annual Utilization

	FLS		DZ	
	In Rotation	Out of Rotation	In Rotation	Out of Rotation
Number of Months Utilized per Year	2	7	6	9
Number of Days Utilized per Month	7	2	7	2
Number of Passes per Training Exercise	50	10	20	10
Total Annual Movements per Category	700	140	840	180
Projected Annual FLS/DZ Movements	1,860			

Legend:
DZ = Drop Zone
FLS = Forward Landing Strip

7. NOISE ASSESSMENT

7.1 Land Use Compatibility

The limited number of aircraft movements within the FLS/DZ do not generate a Zone II or III. As shown in Figures 3 through 6, the LUPZ (60–65 dB ADNL) is located in the immediate FLS area. As shown in the figures, the dominant noise is the landing/take-offs at the FLS. Therefore, for Alternative 3, the limited number of flights at the DZ would not generate noise levels above 60 dB ADNL (Figure 5).

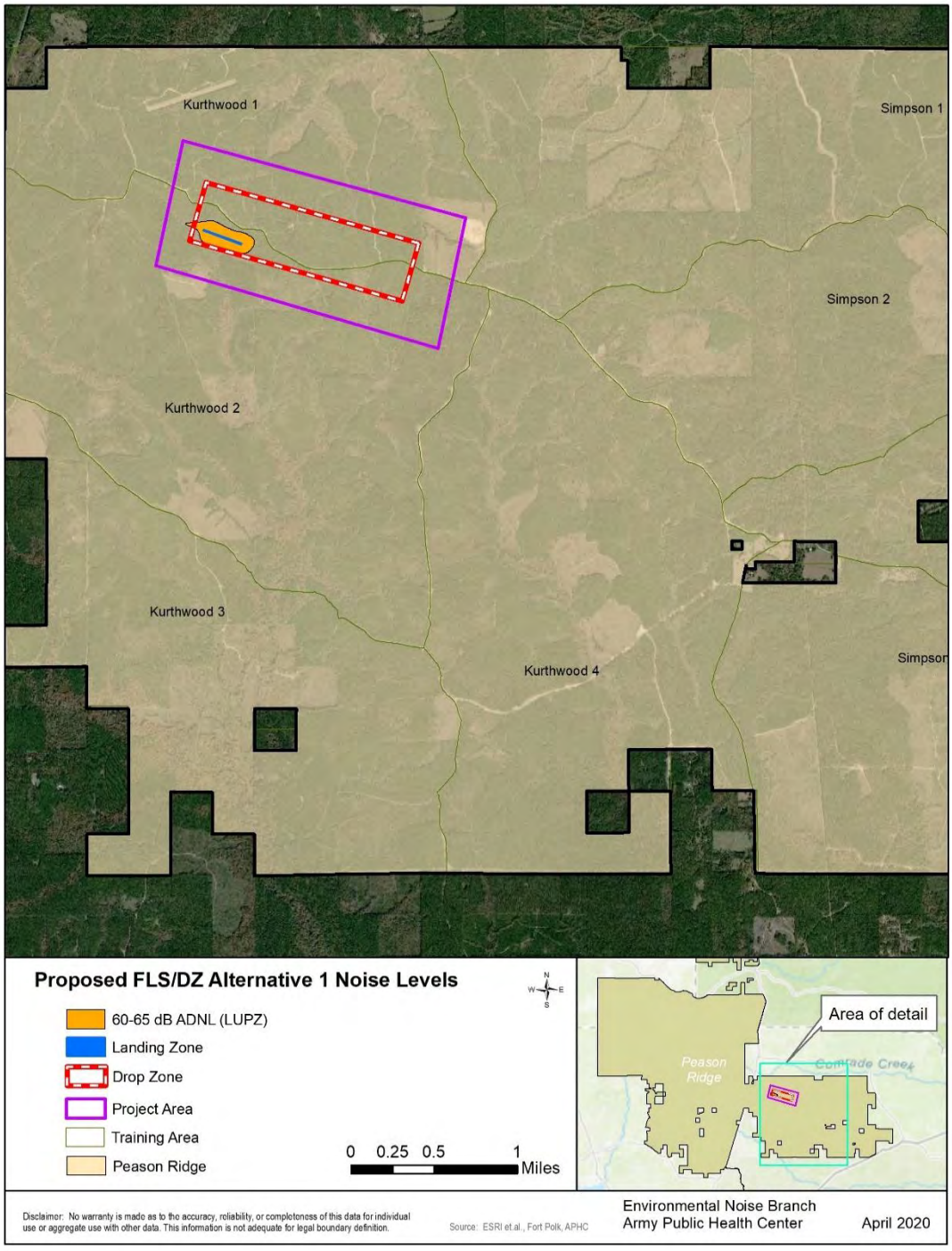

Figure 3. FLS/DZ Alternative 1 Noise Zone

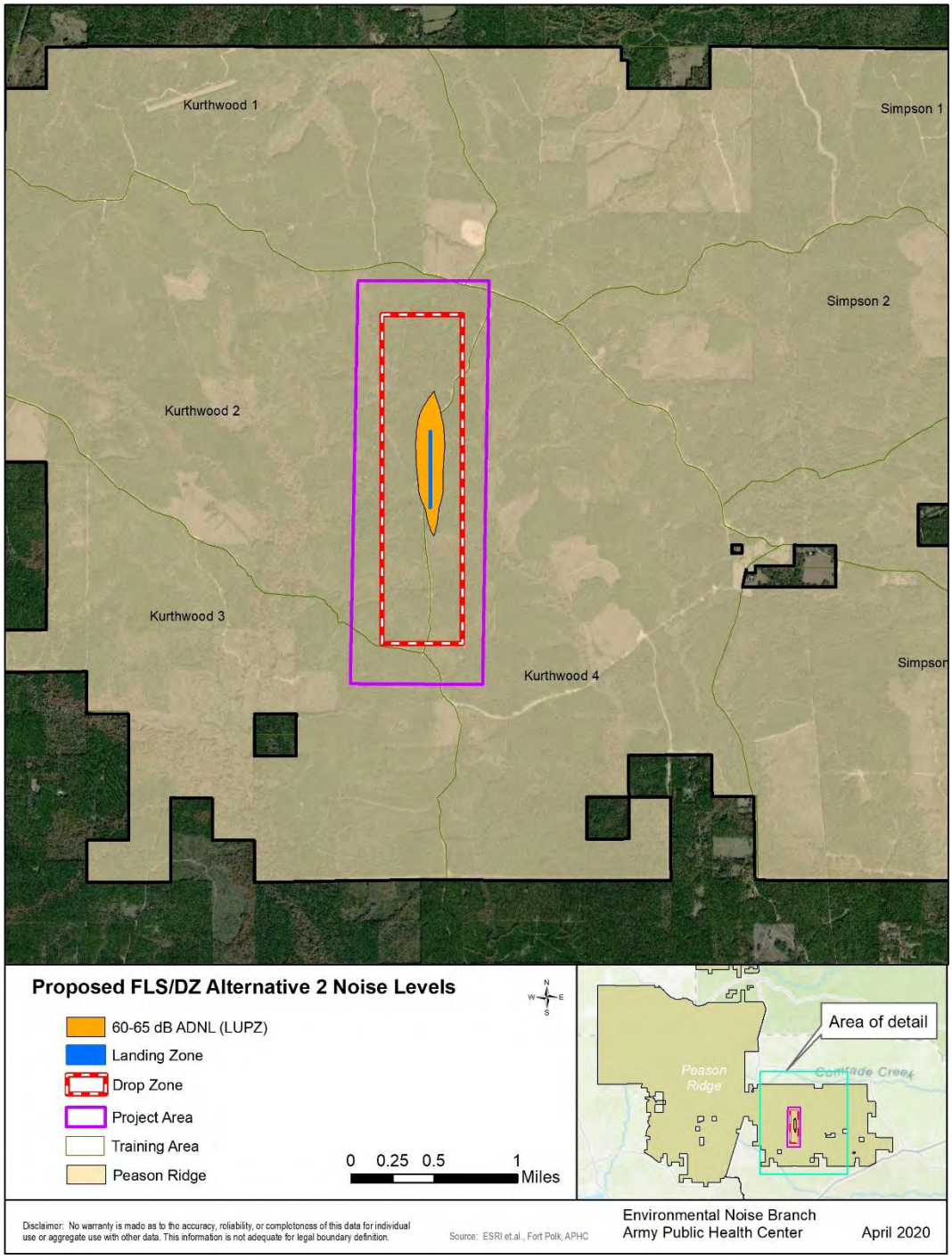

Figure 4. FLS/DZ Alternative 2 Noise Zone

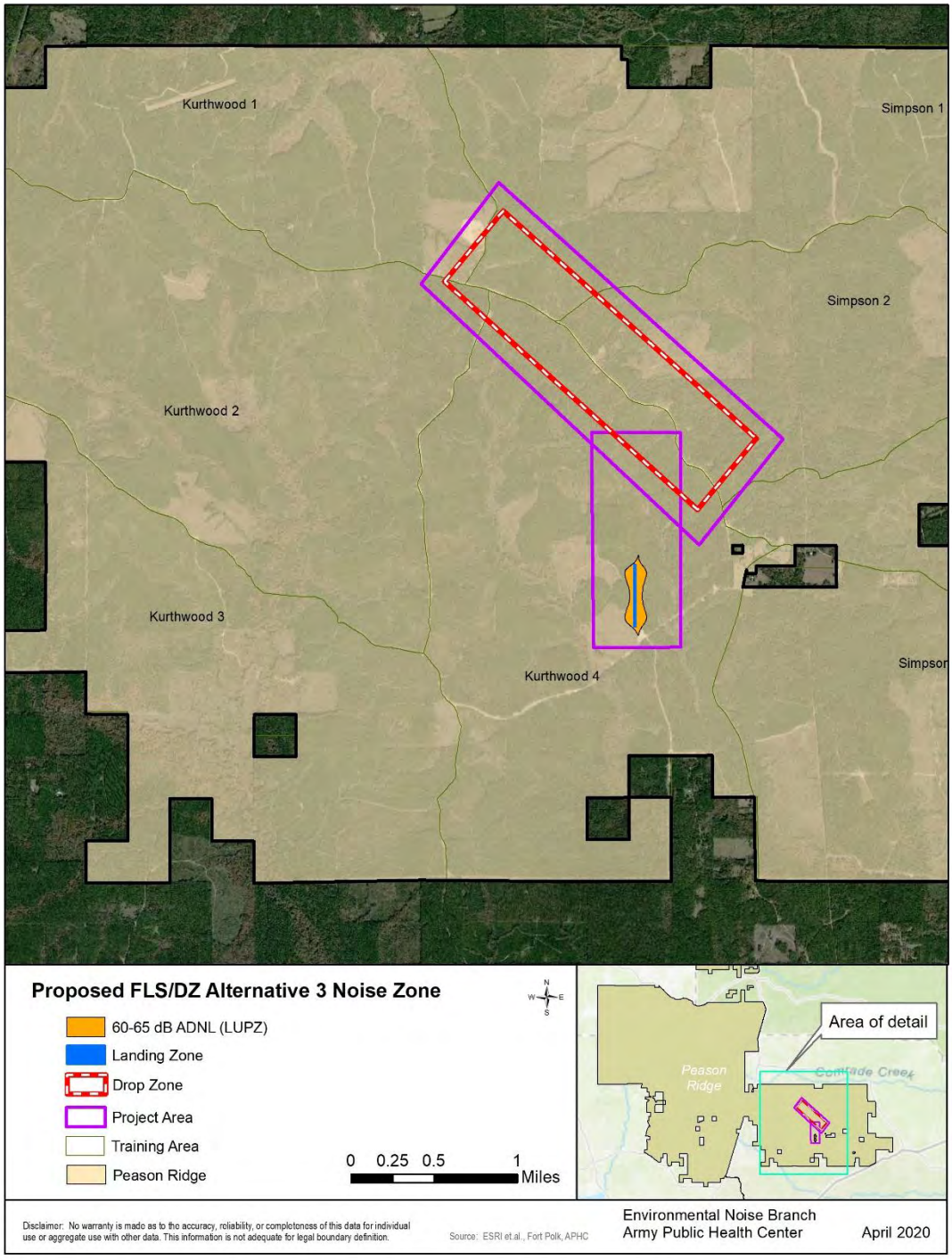

Figure 5. FLS/DZ Alternative 3 Noise Zone

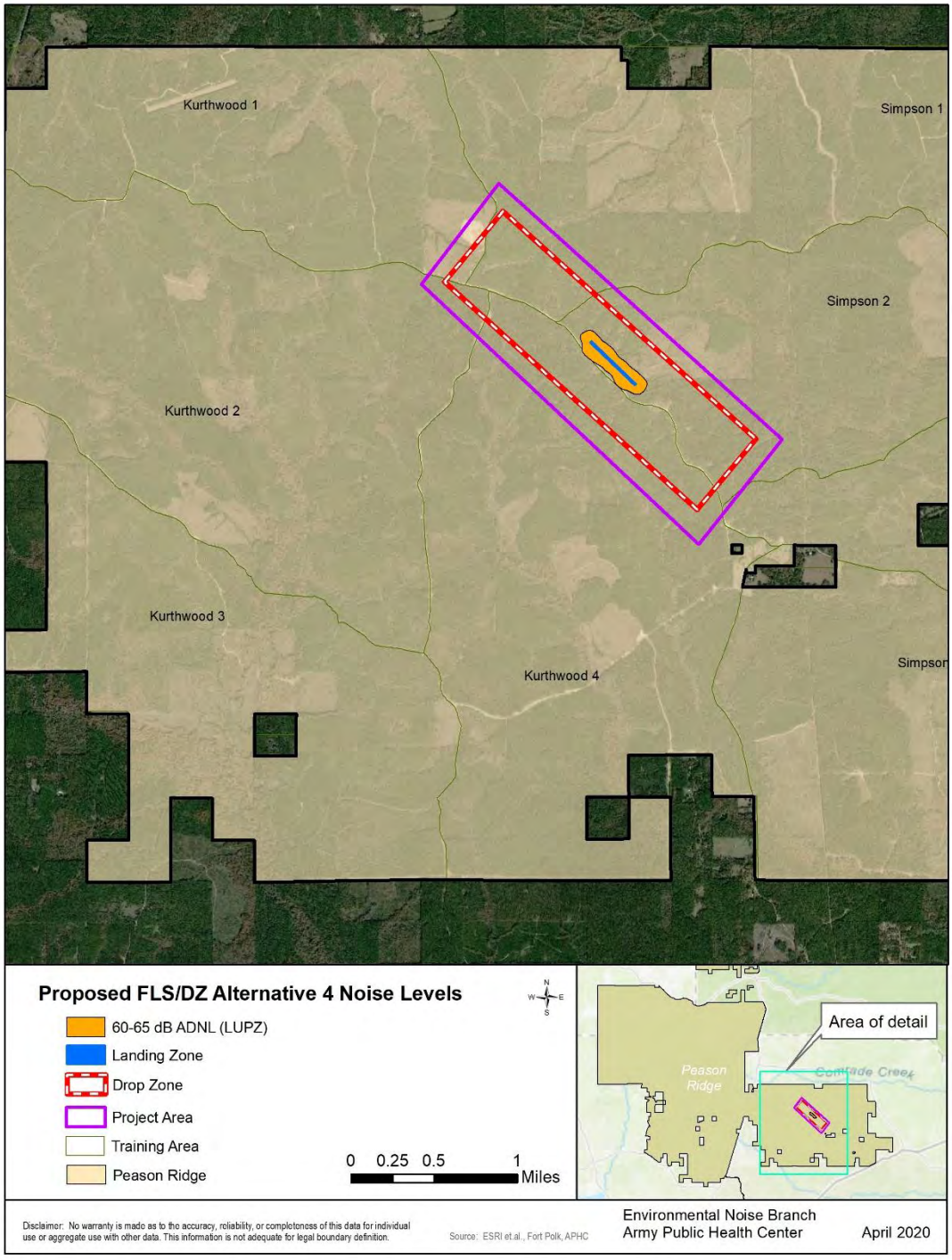

Figure 6. FLS/DZ Alternative 4 Noise Zone

7.2 Annoyance Potential from Singular Overflights

Although ADNL Noise Zones address annual noise exposure, individual aircraft overflights beyond the airfield, transitioning to or training within the local flying area, generate noise levels that some individuals might find disruptive and/or annoying. This can be particularly true for military aircraft, which tend to perform repetitive and low altitude training activities. Singular aircraft overflight is often the culprit of noise complaints received by an installation.

Scandinavian Studies (Rylander et al., 1974, 1980, 1988) found that a good predictor of annoyance in areas around airports with 50 overflights per day or more is the maximum level of the noisiest aircraft type that occurs at least three times (24-hours). The research demonstrated that few individuals considered themselves "highly annoyed" in areas exposed to maximum levels of 70 decibels A-weighted (dBA) or less; however, progressive increases were evident for those same areas exposed to 80 and 90 dBA (Table 3). Furthermore, although the Rylander studies did not include sampling in excess of 90 dBA, it is intuitive that a greater number of individuals would describe even a very low number of overflights at an extremely high dBA level as very annoying.

Table 3. Percentage of Population Highly Annoyed at Varying Decibel Levels

Maximum Sound Level, dBA	Highly Annoyed (%)
90	35
85	28
80	20
75	13
70	5

Source: Rylander 1980
Legend:
dBA = decibels A-weighted

Anecdotal evidence shows noise complaints are frequently lodged from aircraft activities occurring along less frequented aviation routes and flight corridors in and around Army installations. Thus, these study results may serve as an indicator for annoyance potential from intermittent overflights. Table 4 lists the maximum sounds levels from the most common aircraft and the loudest aircraft used at the FLS/DZ. These levels are then compared against the levels listed in Table 3 to determine the percent of the population that may consider itself highly annoyed.

Table 4. Maximum A-Weighted Sound Levels

Slant Distance (Feet)	Maximum Sound Level by Aircraft Type (dBA)[a]				
	C-130[b] 970 C TIT 170 kts	C-17[b] 90% NC 250 kts	CH-47 Light[c,d,e] 130 KIAS	CH-47 Heavy[c,d,e] 120 KIAS	UH-60[c] 70 KIAS
500	92	97	93	89	77
1,000	85	89	87	83	71
1,500	80	84	83	79	67
2,000	77	79	80	76	64
2,500	75	76	78	74	61
5,000	66	73	--	--	--

Legend:
dBA = decibels A-weighted
KIAS = Knots Indicated Air Speed
kts = knots
Notes:
[a] During flyover at constant airspeed.
[b] Obtained via SelCalc Program (U.S. Air Force, 2005).
[c] Obtained via Rotary Noise Model (RNM) Program (U.S. Air Force, 2013).
[d] Heavy indicates a sling load. Light indicates no sling load.
[e] Only KIAS available in single track mode.

Applying the Rylander results, the noise model was used to calculate the distance in ground track from zero (aircraft directly overhead) to where the maximum A-weighted noise level would decay to 70 dBA or below (threshold for annoyance). This takes into account not only those directly under a flight path but also those to the side of a passing aircraft, where noise levels may remain high enough to cause annoyance. Table 5 is based on typical AGL altitudes and lists the ground track distance, maximum sound level, and subsequent annoyance potential, and represents the best strategy for predicting areas that may be impacted based on annoyance potential from a singular overflight. Current and future flight adjustments can be based on the distances in the Table 5 to help avoid the overflight of noise-sensitive areas. As an example, Figure 7 illustrates the overflight annoyance potential for the C-130 at 1,000 feet AGL.

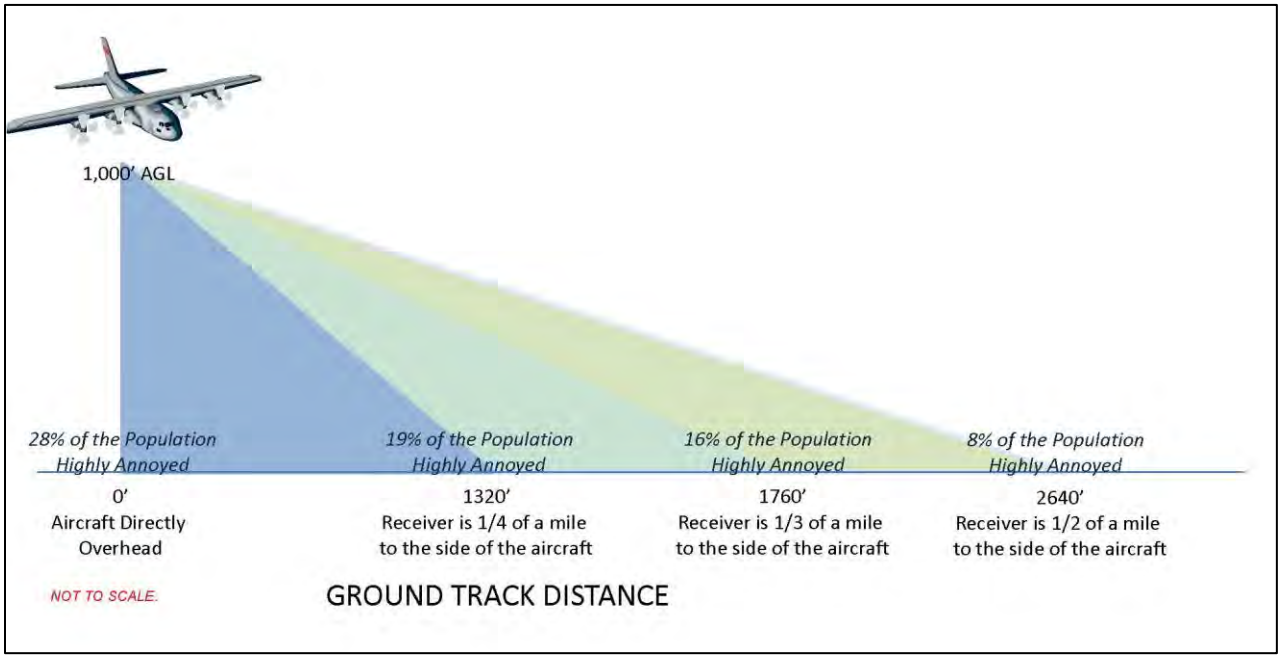

Figure 7. C-130 Overflight Annoyance Potential

Table 5. Overflight Annoyance Potential[a]

Source	Ground Track Distance[b] (feet)	dBA Maximum[c]	Population Highly Annoyed[d] (%)
C-130 – 500' AGL 970 C TIT 170 kts	0'	92	+35
	1320' (1/4 mile)	80	20
	1760' (1/3 mile)	77	16
	2640' (1/2 mile)	72	8
	5280' (1 mile)	62	<1
C-130 – 1000' AGL 970 C TIT 170 kts	0'	85	28
	1320' (1/4 mile)	79	19
	1760' (1/3 mile)	77	16
	2640' (1/2 mile)	72	8
	5280' (1 mile)	64	<1
C-130 – 2000' AGL 970 C TIT 170 kts	0'	77	16
	1320' (1/4 mile)	75	13
	1760' (1/3 mile)	74	11
	2640' (1/2 mile)	71	7
	5280' (1 mile)	64	<1
C-17 – 500' AGL 90% NC 250 kts	0'	97	+35
	1320' (1/4 mile)	84	26
	1760' (1/3 mile)	80	20
	2640' (1/2 mile)	73	10
	5280' (1 mile)	62	<1
C-17 – 1000' AGL 90% NC 250 kts	0'	89	34
	1320' (1/4 mile)	82	23
	1760' (1/3 mile)	79	19
	2640' (1/2 mile)	74	11
	5280' (1 mile)	63	<1
C-17 – 2000' AGL 90% NC 250 kts	0'	79	19
	1320' (1/4 mile)	77	16
	1760' (1/3 mile)	75	13
	2640' (1/2 mile)	72	8
	5280' (1 mile)	64	<1
CH-47 Light[e]– 500' AGL 130 KIAS	0'	93	+35
	1320' (1/4 mile)	94	+35
	1760' (1/3 mile)	93	+35
	2640' (1/2 mile)	90	+35
	5280' (1 mile)	70	5
CH-47 Light[e] – 1000' AGL 130 KIAS	0'	87	31
	1320' (1/4 mile)	85	28
	1760' (1/3 mile)	84	26
	2640' (1/2 mile)	83	25
	5280' (1 mile)	81	22

Table 5. Overflight Annoyance Potential[a], continued

Source	Ground Track Distance[b]	dBA Maximum[c]	Population Highly Annoyed[d] (%)
CH-47 Heavy[e] – 500’ AGL 120 KIAS	0’	89	34
	1320' (1/4 mile)	77	16
	1760’ (1/3 mile)	74	11
	2640' (1/2 mile)	70	5
	5280' (1 mile)	63	<1
CH-47 Heavy[e] – 1000’ AGL 120 KIAS	0’	83	25
	1320' (1/4 mile)	77	16
	1760’ (1/3 mile)	75	13
	2640' (1/2 mile)	70	5
	5280' (1 mile)	63	<1
UH-60–500’ AGL 70 KIAS	0’	77	16
	1320' (1/4 mile)	68	2
	1760’ (1/3 mile)	64	<1
UH-60–1000’ AGL 70 KIAS	0’	71	7
	1320' (1/4 mile)	67	1
	1760’ (1/3 mile)	65	<1

Legend:
AGL = Above Ground Level
dBA = decibels A-weighted
KIAS = Knots Indicated Airspeed
kts = knots
Notes:
[a] Percent annoyance shown is based upon 50 to 200 overflights per day (Rylander et al., 1980).
[b] Distance between receiver and the point on Earth at which the aircraft is directly overhead.
[c] Obtained via SelCalc Program (U.S. Air Force, 2005) or via RNM (U.S. Air Force, 2013).
[d] Calculated percentage based upon regression using the known values in Table 3.
[e] Heavy indicates a sling load. Light indicates no sling load.
+35% – The Rylander studies did not include sampling in excess of 90 dBA.

8. CONCLUSIONS

The FLS/DZ Noise Zones remaining within Peason Ridge indicate no significant impact on the surrounding community. However, individual overflights arriving and departing the FLS/DZ or using the local airspace have the potential to cause annoyance.

Environmental Health Sciences, Environmental Noise Consultation No. S.0054859b-20, 22 April 2020

9. RECOMMENDATIONS

Include the information from this consultation in the environmental analysis documentation for the proposed action.

Provide public notification of upcoming FLS/DZ training events.

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APPROVED:

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APPENDIX A

REFERENCES

Department of the Army. 2007. Army Regulation 200-1, *Environmental Protection and Enhancement.*

Rylander, R, S Sörensen, and K Berglund. 1974. Re-analysis of aircraft noise annoyance data against the dB(A) peak concept. *Journal of Sound and Vibration* 36(3):399–406.

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Rylander R and M Björkman. 1988. Maximum noise levels as indicators of biological effects. *Journal of Sound and Vibration* 127(3):555–563.

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GLOSSARY

Acronyms/Abbreviations

ADNL
A-weighted Day-Night average sound Level

AGL
Above ground level

AR
Army Regulation

dB
Decibels

dBA
Decibels A-weighted

DZ
Drop Zone

FLS
Forward Landing Strip

KIAS
Knots Indicated Air Speed

kts
knots

LUPZ
Land Use Planning Zone

Terms

A-Weighted Sound Level
The ear does not respond equally to sounds of all frequencies, but is less efficient at low and high frequencies than it is at medium- or speech-range frequencies. The A-scale weighting discriminates against the lower frequencies according to a relationship approximating the auditory sensitivity of the human ear. The A-scale sound level measures approximately the relative "noisiness" or "annoyance" of many common sounds.

Average Sound Level
The mean-squared sound exposure level of all events occurring in a stated time interval, plus 10 times the common logarithm of the quotient formed by the number of events in the time interval, divided by the duration of the time interval in seconds.

Day-Night Average Sound Level (DNL)
The 24-hour average frequency-weighted sound level, in decibels, from midnight to midnight, obtained after addition of 10 decibels to sound levels in the night from midnight up to 7 a.m. and from 10 p.m. to midnight (0000 up to 0700 and 2200 up to 2400 hours).

Decibels (dB)
A logarithmic sound pressure unit of measure.

Ground Track Distance
The distance between the receiver and the point on the Earth at which the aircraft is directly overhead.

Land Use Planning Zone (LUPZ)
DNL noise contours represent an annual average that separates the Noise Zone II from the Noise Zone I (60–65 dB for aviation operations).

Noise
Any sound without value.

Noise Zone III
The area around a noise source in which the ADNL is greater than 75 dB for aviation operations.

Noise Zone II
The area around a noise source in which the CDNL is 65–75 dB for aviation operations.

Noise Zone I
Includes all areas around a noise source in which the ADNL is less than 65 dB for aviation operations.

Environmental Health Sciences, Environmental Noise Consultation No. S.0054859b-20, 22 April 2020

Slant Distance
The line of sight distance between the receiver and the aircraft. The slant distance is the hypotenuse of the triangle represented by the altitude AGL of the aircraft and the distance between the receiver and the aircraft's ground-track distance.