ENVIRONMENTAL ASSESSMENT

Proposed Project to Establish and Maintain Line of Sight within Peason Ridge Impact Area

JOINT READINESS TRAINING CENTER AND FORT POLK, LOUISIANA

JULY 2021

FINDING OF NO SIGNIFICANT IMPACT (FNSI)
Proposed Project to Establish and Maintain Line of Sight within Peason Ridge Impact Area at the Joint Readiness Training Center and Fort Polk

1. BACKGROUND: 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 remove trees blocking line of sight (LoS) within Peason Ridge impact area using rotary-wing aerial herbicide applications. The purpose of the Proposed Action is to achieve and thereafter maintain the LoS necessary for the capability of supporting direct and indirect live fire training requirements; which would fulfill JRTC and Fort Polk mission objectives. Currently, the capacity to conduct direct and indirect live fire training in the Peason Ridge Training Area is being impeded by the loss of LoS required for these exercises.

The need for the Proposed Action is to ensure that Peason Ridge Impact Area provides adequate training opportunities to support its mission and maintain military readiness. A clear LOS is required for direct and indirect live fire into the impact area.

3. ALTERNATIVES CONSIDERED: To address the purpose and need, JRTC and Fort Polk considered and analyzed three alternatives in the EA. Two consider different herbicide application methods and the third is the No Action Alternative. Two of the alternatives (2 and 3) meet the purpose and need of the Proposed Action. Alternative 1 (No Action) would result in the continued obstruction of LoS for direct and indirect fire into the impact area and does not meet the purpose and need for the Proposed Action.

Alternative 1: No Action—Analysis of the no action alternative is required under NEPA. LoS would not be achieved or maintained under this alternative. The negative impacts on the capability of supporting direct and indirect live fire training requirements necessary to fulfill JRTC and Fort Polk mission objectives would continue under this alternative.

Alternative 2 (Preferred): Rotary-wing Aerial Herbicide Application—For the preferred alternative, the aerial broadcast will be conducted via a helicopter fitted with specialized herbicide application equipment. The herbicide mixture (224 oz. Accord XRT II, a.i. 53.6% glyphosate /16 oz. Arsenal AC, a.i. 53.1% imazapyr /2 oz. Detail, a.i. 29.74% saflufenacil) with 19 oz. of Elite Supreme (an adjuvant) and water will be sprayed at 15 gallons per acre during the peak growing season (15 June thru 15 July) to remove mature trees (primarily loblolly and long leaf pine) and establish LoS to target arrays in Peason impact area.

Alternative 3: Fixed-wing Aerial Herbicide Application—Under this alternative, LoS would be completed and maintained. However, this would be accomplished using aerial broadcast from a fixed-wing aircraft with specialized spraying equipment (crop duster). In all other respects, this alternative is the same as Alternative 2.

During the scoping process, two other alternatives were identified in addition to those considered for implementation. These alternatives were considered but rejected because they were not feasible to implement.

Mechanical Clearing of LoS—The mechanical clearing of trees blocking LoS was deemed not feasible to implement. The need for aerial broadcast herbicide application is due to the presence of unexploded ordinance (UXO) and the safety and cost issues associated with clearing the trees with a typical ground-based mechanical approach.

Development of New Impact Area—Land area limitations, high-cost prohibitive, extensive time required and a DoD-wide moratorium on new permanent dud-producing impact areas preclude the development of a new impact area. In addition, eventually, the same issue would arise.

4. ENVIRONMENTAL IMPACTS: Potential impacts to environmental (air, soil, water, etc.) and biological (flora and fauna) resources, as well as the human environment (health and safety) were considered and analyzed for Alternative 1 (No Action), Alternative 2 (Preferred) Rotary-wing Aerial Herbicide Application and Alternative 3 Fixed-wing Aerial Herbicide Application; with mitigation measures and monitoring procedures described in the EA. Based on the examination of baseline conditions,

proposed actions, mitigation measures, monitoring procedures, regulatory requirements and potential environmental effects; no significant direct, indirect or cumulative impacts on the environment or human health and safety are expected to occur under the implementation of either Alternative 2 (Preferred) Rotary-wing Aerial Herbicide Application or Alternative 3 Fixed-wing Aerial Herbicide Application.

5. PUBLIC COMMENT: The EA and Draft FNSI were made available for public review from , 2021 to , 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: Mr. R. Kavanaugh Breazeale
7033 Magnolia Drive
Fort Polk, Louisiana 71459-5342
(337) 531-1344

6. CONCLUSION: I have carefully reviewed the attached EA and the analysis of potential impacts of each of the Alternative actions. Based on this review, I have determined that all the Alternatives assessed will have no significant impacts on the environment or human health and safety.

7. DECISION: In light of the preceding discussion points, I have decided to implement _____ as described in this EA. This will allow the Joint Readiness Training Center and Fort Polk to establish and maintain LoS within the Peason Ridge Impact Area with mitigation measures and monitoring procedures, as described in this EA.

_____

Samuel P. Smith, Jr.
COL, MI
Commanding

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Establish and Maintain Line of Sight within Peason Ridge Impact Area at the Joint Readiness Training Center and Fort Polk

Environmental Assessment

20 July 2021

(UNCLASSIFIED)

Prepared by:

Directorate of Public Works,
Environmental and Natural Resources Management Division

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ENVIRONMENTAL ASSESSMENT
for the Proposed Project to
Establish and Maintain Line of Sight
within Peason Ridge Impact Area
at the Joint Readiness Training Center and Fort Polk

Approved By:

_____

Samuel P. Smith, Jr.
COL, MI
Commanding

Date:_____

Prepared By:

Directorate of Public Works,
Environmental and Natural
Resources Management Division

Reviewed By:

_____

Ron Semerena
Range Management Authority
Range Control, G3
JRTC and Fort Polk, Louisiana

Date:_____

_____

Jonathan A. West
Chief, Conservation Branch
DPW, ENRMD
JRTC and Fort Polk, Louisiana

Date:_____

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EXECUTIVE SUMMARY

This Environmental Assessment (EA) has been developed by the United States Army, Joint Readiness Training Center (JRTC) and Fort Polk in accordance with the National Environmental Policy Act (NEPA) of 1969 as amended, the President's Council on Environmental Quality (CEQ) regulations for Implementing NEPA (Title 40 Code of Federal Regulations Part 1500-1508) and 32 CFR Part 651, Environmental Analysis of Army Actions, Final Rule dated March 29, 2002, which implements NEPA and CEQ regulations. Its purpose is to inform decision-makers, JRTC/Fort Polk and the public of the potential environmental consequences of the proposed action and alternatives.

The JRTC and Fort Polk is required to provide a training environment capable of challenging and evaluating Brigade Combat Team operations. Currently, the capacity to conduct direct and indirect live fire training in Peason Ridge Training Area is being impeded by the loss of Line of Sight (LoS) required for these exercises. The purpose and need of the proposed action is to achieve and thereafter maintain the LoS necessary for the capability of supporting direct and indirect live fire training requirements; which would fulfill JRTC and Fort Polk mission objectives.

The proposed action is to remove trees blocking LoS within Peason Ridge impact area using rotary-wing aerial herbicide applications. Due to safety and cost issues resulting from the presence of unexploded ordinance (UXO) within the impact area, traditional ground-based mechanical means of tree removal are not feasible.

The project proponent and implementation lead is Range Operations-ITAM; the responsible authority for managing and maintaining training areas, including impact areas. The planned approach is to treat 398 acres in FY22, 261 in FY23, 298 in FY24 and 276 in FY25 and as needed thereafter to maintain LoS. Streamside Management Zones (SMZ)—buffer zones along perennial or intermittent streams[1]—of 200 feet will not be treated with herbicides. In addition to aerial broadcast of the herbicide mixture, mitigation effectiveness monitoring will be conducted to confirm no significant adverse effects associated with the project occur. Mitigation effectiveness monitoring results will be considered in the development of subsequent aerial herbicide broadcast applications to provide and/or maintain clear LoS to target arrays from observation points.

This EA analyzes the potential environmental consequences of the considered alternatives, including the No Action Alternative. Environmental resource impact analyses include water quality, soil resources, biological resources and public health and safety. Environmental risks associated with the removal of trees via aerial herbicide application are expected to be

[1] perennial or intermittent streams as defined in Federal Register Vol. 85, No. 77 / Tuesday, April 21, 2020 / Rules and Regulations -- The Navigable Waters Protection Rule: Definition of ''Waters of the United States''. All further references to 'streams' in association with Streamside Management Zones or buffer zones refer to this definition.

minimal. Based upon this EA, minimal environmental impacts to water quality, soil resources, biological resources and human health and safety are anticipated.

Careful adherence to federal, state, military and local environmental regulations; installation processes, including spill contingency plans and pollution prevention plans; and procedures for aerial herbicide application should preclude any potential significant environmental impacts associated with execution of the proposed action. No cumulative environmental impacts are anticipated. In addition, there are no Executive Order (EO) 12898 Environmental Justice concerns since the proposed action does not result in any disproportionately high and adverse human health and environmental effects on minority or low-income populations. As a result, the preparation of an Environmental Impact Statement is not required and a Finding of No Significant Impact (FoNSI) has been prepared.

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List of Tables, Figures and Appendices

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Appendices:

ACRONYMS

AR	Army Regulation
BA/BE	Biological Assessment/Biological Evaluation
BO	Biological Opinion
BCT	Brigade Combat Team
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CWA	Clean Water Act
DDT	Dichlorodiphenyltrichloroethane
DPW	Department of Public Works
DoD	Department of Defense
DT50	Degradation Half-time
EA	Environmental Assessment
EEC	Expected Environmental Concentration
EIS	Environmental Impact Statement
ENRMD	Environmental and Natural Resources Management Division
EOD	Explosive Ordinance Disposal
ESA	Endangered Species Act
ESMC	Endangered Species Management Component
ESMP	Endangered Species Management Plan
FoNSI	Finding of No Significant Impact
FORSCOM	Forces Command
GPS	Geographic Positioning System
HQ	Hazard Quotient
ITAM	Installation Training Area Management
IUA	Intensive Use Area
JRTC	Joint Readiness Training Center

LD50	Lethal Dosage to 50% of test population
LDEQ	Louisiana Department of Environmental Quality
LoC	Level of Concern
LoS	Line of Sight
LPS	Louisiana Pine Snake
LUA	Limited Use Area
MBTA	Migratory Bird Treaty Act
NEPA	National Environmental Policy Act
NoI	Notice of Intent
NOAEL	No Observed Adverse Effect Level
NOEL	No Observed Effect Level
NPDES	National Pollution Discharge Elimination System
pH	Power of Hydrogen
PPP	Power Projection Platform
RCW	Red-cockaded Woodpecker
RfD	Reference Dose
SLUA	Special Limited Use Area
SMZ	Streamside Management Zone
T&E	Threatened and Endangered
USDA	United States Department of Agriculture
USEPA	United States Environmental Protection Agency
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service
UXO	Unexploded Ordinance
VEC	Valued Environmental Component

Chapter 1: Purpose and Need

This section states the purpose and need of the proposed action and outlines the scope of the environmental analysis for the considered alternatives. Finally, the decision to be made will be identified.

1.1 Introduction

The Joint Readiness Training Center (JRTC) and Fort Polk have prepared this Environmental Assessment (EA) to analyze the potential environmental effects associated with the following proposed management actions within Peason Ridge Impact Area:

1. Removal of trees obstructing Line of Sight (LoS) via aerial herbicide application
2. Ongoing maintenance of trees obstructing LoS via aerial herbicide application

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). The proposed action involves the issuance of federal and/or state agency permits, the use of Federal funds and actions on a Department of the Army military installation.

1.2 Army Mission

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.

1.3 JRTC and Fort Polk Mission

JRTC and Ft. Polk Mission: The JRTC and Fort Polk train Brigade Combat Teams/ Security Force Assistance Brigades to conduct large scale combat operations on the decisive action battlefield against a near-peer threat with multi-domain capabilities. Fort Polk enables FORSCOM units to increase Readiness in support of globally deployable missions; while facilitating a high quality of life for Soldiers and Army Families.

Tenant units assigned to 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 (changed to the 32d Field Hospital in MAR19). Several Louisiana, Texas and Mississippi Reserve and Army National Guard units are trained during annual training periods at JRTC and Fort Polk.

The JRTC allows the Army to train and develop highly proficient and cohesive units capable of conducting operations across the full spectrum of conflict. The JRTC accomplishes its mission by providing superior training to the home station tenants and deployable combat units, while supporting up to 11 annual JRTC training rotations. The JRTC is focused on improving unit readiness; providing advanced level training, as well as doctrine-based feedback for America's

light infantry forces to develop Leaders and Soldiers and to prepare them for the challenges of full spectrum operations. JRTC conducts thorough realistic multi-echelon joint and combined arms training so that Leaders can deal with complex situations and to create flexible, skilled Soldiers. Each rotation is comprised of different Army, Air Force, Navy and Marine Corps units for advanced joint training under unique, realistic and constantly evolving battlefield scenarios.

1.4 Purpose and Need for the Proposed Action

The JRTC and Fort Polk is required to provide a training environment capable of challenging and evaluating BCT operations. Currently, the capacity to conduct direct and indirect live fire training in the Peason Ridge Training Area is being impeded by the loss of LoS required for these exercises. The purpose and need of the proposed action is to achieve and thereafter maintain the LoS necessary for the capability of supporting direct and indirect live fire training requirements; which would fulfill JRTC and Fort Polk mission objectives.

1.5 Scope of Analysis and Decision to be Made

This EA considers the direct, indirect and cumulative effects of the evaluated alternatives and the no action alternative for the removal of trees obstructing LoS via aerial herbicide application within Peason Ridge impact area. 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, as well as the human environment (health and safety). 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; groundwater;
- Soil Resources: soil erosion; and
- Biological Resources: forest ecology, native plants (species and communities), invasive plant species, species of concern, threatened and endangered species, migratory birds and game species

The decision to be made is whether to implement one of the action alternatives for the proposed action at this time or if the No Action alternative should be implemented. A Finding of No Significant Impact (FoNSI) will be issued if the selected alternative results in no significant impact to the human or natural environment health. If the selected alternative results in significant impact, an Environmental Impact Statement (EIS) shall be developed via a Notice of Intent (NoI).

1.6 Regulatory Framework

This EA is the primary mechanism for compliance with natural resources laws and regulations. Federal, state and local laws and regulations may apply to proposed management actions in this EA. The proposed action is authorized by the federal laws and regulations listed below.

1.6.1 Federal Laws

National Environmental Policy Act of 1969, as amended

Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) of 1947, as amended

Clean Water Act of 1972, as amended

Endangered Species Act of 1973, as amended

Migratory Bird Treaty Act of 1918, as amended

1.6.2 DoD, Army and JRTC/Fort Polk

AR 200-1 Environmental Protection and Enhancement, 1997

AR 200-2 Environmental Analysis of Army Actions, 2002

AR 200-3 Natural Resources—Land, Forest and Wildlife Management, 1995

AR 200-5 Pest Management, 1999

AR 350-4 Integrated Training Area Management, 1998

Chapter 2: Alternatives

2.1 Introduction

This chapter will describe the three alternatives that are considered for implementation in the EA, including the preferred alternative (Alternative 2). It also identifies the criteria used to formulate the alternatives. The criteria were developed as a result of internal scoping conducted for the development of this analysis. Methods or alternatives that were considered but dismissed from further consideration are described. A comparison of the potential environmental effects of the alternatives is found in Chapter four.

2.2 Alternative Development

Section 102(e) of NEPA states that all Federal agencies shall "study, develop and describe appropriate alternatives to recommend courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources." In addition to responding to unresolved conflicts, an environmental analysis must "rigorously explore and objectively evaluate all reasonable alternatives" [40CFR 1502.14(a)].

The proposed actions, were the result of a land management assessment conducted by DPW-ENRMD-Conservation Branch and Range Operations-ITAM resource management staff in collaboration with G3. The assessment identified actions necessary to respond to the negative impacts from the loss of LoS on the training mission of JRTC and Fort Polk.

The alternatives detailed below were developed to focus on the issues identified by DPW-ENRMD-Conservation Branch and Range Control-ITAM wildlife biologists, ecologists, land managers, combat training specialists and leadership. The Agencies Consulted section lists all individuals, organizations and agencies that were invited to provide comments regarding the proposed action.

2.3 Scoping and Public Involvement

The NEPA scoping process [40CFR 1501.7] was used to determine the scope of the analysis and identify potential issues and alternatives for the proposed action. This section summarizes the scoping that was conducted to identify environmental issues to be considered.

2.3.1 Internal Scoping

The ENRMD-Conservation Branch and the proponent, Range Operations-ITAM, have conducted site visits and studies that focus on the removal and ongoing maintenance of trees obstructing LoS via aerial herbicide application. The knowledge gained from these studies and site visits was used to formulate the proposed alternatives.

2.3.2 External Scoping

The external scoping refers to the effort the ENRMD-Conservation Branch made to solicit input from the public, state and federal regulatory agencies and non-governmental organizations. This includes public review of the Draft EA.

- The DPW-ENRMD-Conservation Branch contacted government regulatory agencies that have oversight or potential regulatory concerns regarding the project, including the U.S. Fish and Wildlife Service-Ecological Services and Louisiana Department of Environmental Quality. A list of all individuals and organizations contacted is in the Agencies Contacted section of this document.
- The EA and Draft FNSI will be made available to federal, state and local agencies, Native American tribes, and the public for review and comment for 30 days. A Notice of Availability (NOA) for the EA and Draft FNSI will be published in the Leesville Daily Leader, Beauregard Daily Times, Sabine Index and Fort Polk Guardian. The EA can be viewed online at http://www.jrtcpolk.army.mil/environmental_compliance/NEPA.html or at the following libraries:

  • Beauregard Parish Library, 206 South Washington Avenue, DeRidder, Louisiana

  • Vernon Parish Library, 140 Nolan Trace, Leesville, Louisiana

  • Natchitoches Parish Library, 431 Jefferson Street, Natchitoches

  Comments received on the EA, following release of the NOA and EA, will be incorporated in the NEPA process. If any significant impacts are identified during the review of these comments, a NOI will be prepared and an EIS process will commence. If no significant impacts are identified, the FNSI will be prepared and signed, and the proposed project will commence.

2.4 Important Project and Environmental Issues

Important environmental issues are those that may require project specific alternatives, mitigation measures or design elements to address the potential effects of the proposed

activities. The following important project and environmental issues were identified during the scoping process.

2.4.1 Issue 1: Achieve and Thereafter Maintain LoS

How well will the various alternatives meet the goals of achieving and thereafter maintaining the LoS?

2.4.2 Issue 2: Soil and Water Impacts

What impacts may occur to the water and soil resources?

2.4.3 Issue 3: Nontarget Species Impacts

What are the potential impacts of the proposed alternatives on nontarget plants and animals? Are there threatened or endangered species at risk from project activities? What impacts may occur to the biological resources?

2.4.4 Issue 5: Human Health and Safety Impacts

How safe are the alternatives to the public, biologists and field crews?

2.5 Alternatives

This section describes the alternatives considered for implementation, including the "No-Action" alternative.

2.5.1 Alternative 1: No Action

Analysis of the no action alternative is required under NEPA. LoS would not be achieved or maintained under this alternative. The negative impacts on the capability of supporting direct and indirect live fire training requirements necessary to fulfill JRTC and Fort Polk mission objectives would continue under this alternative.

2.5.2 Alternative 2 (Preferred): Rotary-wing Aerial Herbicide Application

For the preferred alternative, the aerial broadcast will be conducted via a helicopter fitted with specialized herbicide application equipment. The herbicide mixture (224 oz. Accord XRT II, a.i. 53.6% glyphosate /16 oz. Arsenal AC, a.i. 53.1% imazapyr /2 oz. Detail, a.i. 29.74% saflufenacil) with 19 oz. of Elite Supreme (an adjuvant) and water will be sprayed at 15 gallons per acre during the peak growing season (15 June thru 15 July) to remove mature trees (primarily loblolly and long leaf pine) and establish LoS to target arrays in Peason impact area (1233 acres, Figure 1).

During aerial broadcast application of the herbicide mixture all appropriate measures will be taken to avoid potential drift to nontarget areas (e.g., wind speed less than 8 miles per hour, no low level inversion conditions, proper spray equipment, etc.--as indicated on the herbicide labels), ensure efficacy (e.g., no rainfall four hours prior to or after treatment, trees in full growth stage, etc.--as indicated on the herbicide labels) and document the area treated (e.g., real time differential GPS tracking system capable of producing individual swath flight line

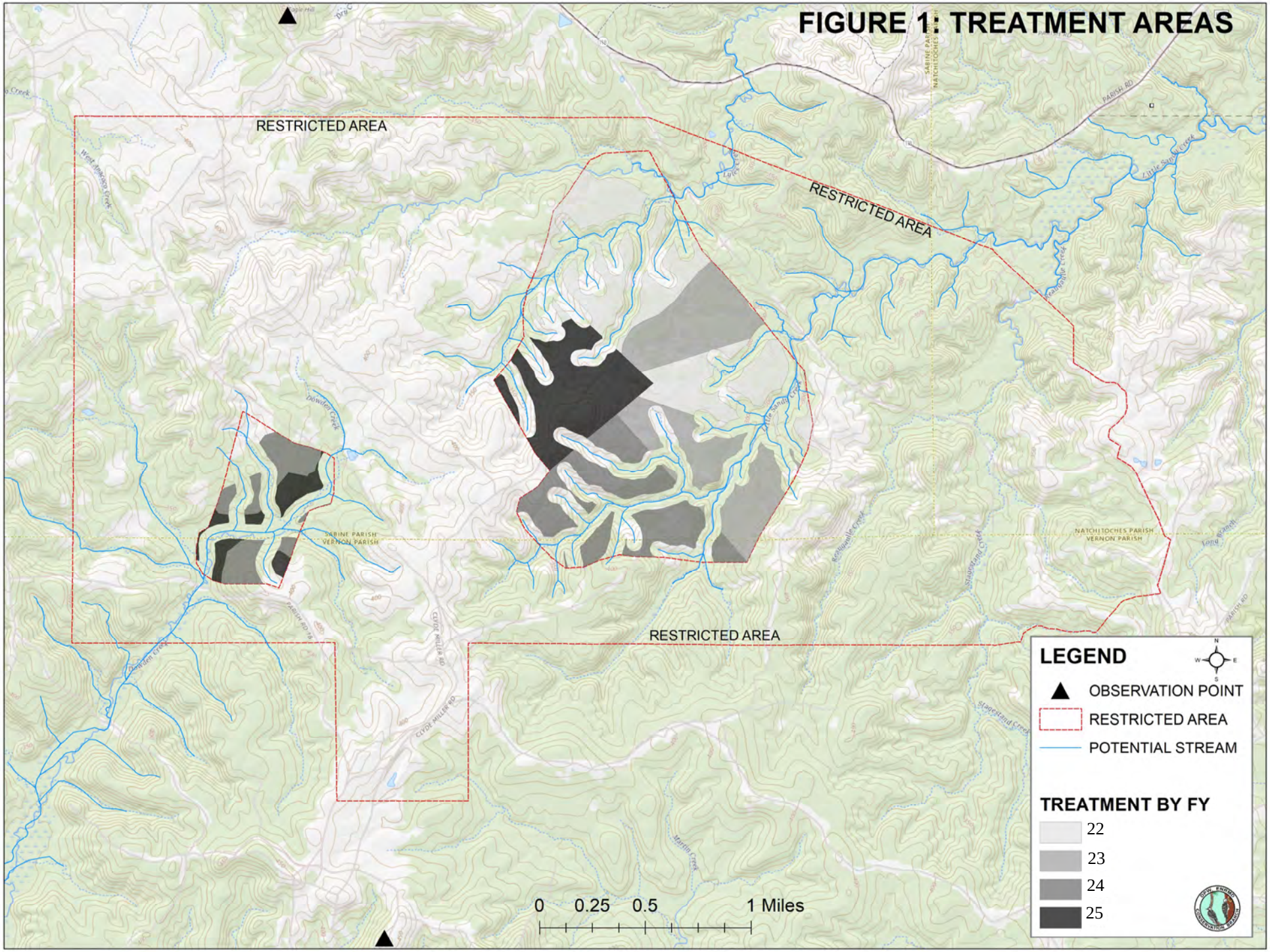


FIGURE 1: TREATMENT AREAS
RESTRICTED AREA
RESTRICTED AREA
RESTRICTED AREA
SABINE PARISH
VERNON PARISH
NATCHITOCHES PARISH
VERNON PARISH
CLYDE MILLER RD
PARISH RD
0 0.25 0.5 1 Miles
LEGEND
OBSERVATION POINT
RESTRICTED AREA
POTENTIAL STREAM
TREATMENT BY FY
22
23
24
25

shape files of the treated area within ArcGIS and designed to provide the pilot with swath and directional guidance, such as a Trimble Ag GPS TrimFlight3 system).

The planned approach is to treat 398 acres in FY22, 261 in FY23, 298 in FY24 and 276 in FY25 (Table 1) and as needed thereafter to maintain LoS. Streamside Management Zones (SMZs)—buffer zones along streams—of 200 feet will not be treated with herbicides. Figure 2 shows the soil types and watersheds for the areas to be treated in each year.

Table 1 - Treatment Areas

Treatment Year	Treatment Areas	Acres	RCW Cavities*
FY22	4	398	6
FY23	3	261	4
FY24	2	298	4
FY25	2	276	4
	11	1233	18

*Required by USFWS BO

In addition to aerial broadcast of the herbicide mixture, mitigation effectiveness monitoring [32 CFR Part 651 Appendix C, 40 CFR 1505.2 (c)] will be conducted to confirm no potential adverse effects associated with the project occur. Monitoring will be conducted downstream from the treatment areas at three sites (Lyles Creek, Little Sandy Creek and Dowden Creek), as well as a control—Prairie Creek. Monitoring will take place twice a year; in January and July (Appendix A). Monitoring results will be considered in development of subsequent aerial herbicide broadcast applications to provide and/or maintain clear LoS to target arrays from observation points.

2.5.3 Alternative 3: Fixed-wing Aerial Herbicide Application

Under this alternative, LoS would be completed and maintained. However, this would be accomplished using aerial broadcast from a fixed-wing aircraft with specialized spraying equipment (crop duster). In all other respects, this alternative is the same as Alternative 2.

2.6 Actions Common to Alternatives 2 and 3

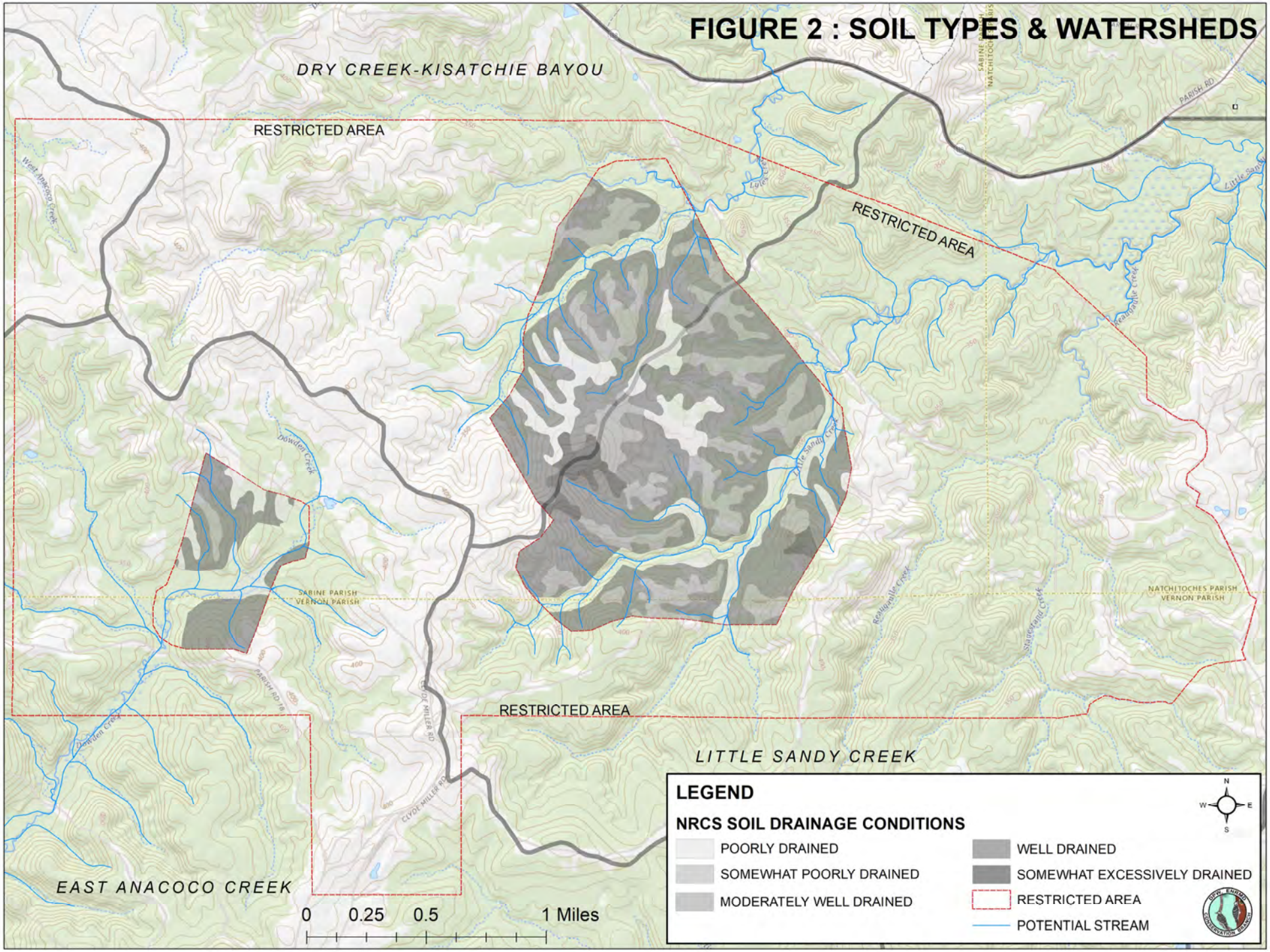
2.6.1 Timing

The general timing is based on vegetative growth season (15 June thru 15 July), while specific timing of the proposed action would be determined by local biological, logistical and safety considerations including weather, to ensure safety for project personnel, the general public and to ensure success of the project.

2.6.2 Aerial Herbicide Application

In each of the action alternatives proposed, LoS would be achieved by aerial herbicide application of the herbicide mixture (224 oz. Accord XRT II, a.i. 53.6% glyphosate /16 oz. Arsenal

FIGURE 2 : SOIL TYPES & WATERSHEDS



AC, a.i. 53.1% imazapyr /2 oz. Detail, a.i. 29.74% saflufenacil) with 19 oz. of Elite Supreme (an adjuvant) and water sprayed at 15 gallons per acre.

2.6.3 Protection of Species Listed Under the Endangered Species Act

With regard to RCW the USFWS has concurred that "the amount of habitat loss due to the proposed project would result in a total of 12 adult RCWs (4 groups) and 12 nestlings (4 nests) incidentally taken. The level of incidental take authorized (27 adult RCWs and 27 nestlings) by the 2012 INRMP/ESMC BO (available upon request) would not be exceeded and is, therefore, compliant with the Terms and Conditions (numbers 5 and 6; 2012 BO) relevant to incidental take authorization. In compliance with the Service's 2012 BO, the Army would install 3 artificial nesting cavities within suitable unoccupied habitat for every 200 acres of potential RCW habitat removed from within the impact areas; prior to the project implementation if possible. Thus, 12 artificial nesting cavities should be installed as a result of the proposed LoS maintenance project." (Appendix B)

With regard to LPS the USFWS determined that "The herbicide's main effect would be on trees and, to a lesser extent, shrubs and herbaceous vegetation. Reduction of tree canopy and shrub vegetation would potentially allow greater sunlight to enhance herbaceous vegetation growth, providing more forage for the pocket gopher. Accordingly, effects to the LPS would be temporary, insignificant and discountable. Therefore, the Service concurs with your determination that the proposed project is not likely to adversely affect the LPS." (Appendix B)

2.6.4 Water Quality Protection

Project proponents will implement appropriate mitigation to prevent herbicide sprayed into the surface waters of JRTC and Fort Polk. These include:

•Aerial herbicide application will be carried out by a pilot certified in aerial application of pesticides.

•The helicopter or crop duster will be fitted with an onboard differential GPS and computer to monitor and document the application.

•A 200' 'no aerial spray' buffer zone will be established around surface water features, such as streams, to ensure herbicides would not be sprayed into them.

•Aerial herbicide application will only occur during appropriate weather to reduce the chance of spray drift to areas not targeted and ensure efficacy.

2.6.5 Mitigation Effectiveness Monitoring

To ensure that the environmental impacts are below the criteria for significance, a mitigation effectiveness monitoring program will be developed and implemented. Monitoring will be conducted to ensure that any potential negative environmental effects of implementing the alternative are avoided or minimized. Evaluation of monitoring results will determine whether further mitigation actions are needed and/or to alter mitigation strategy and/or continue with proposed management action.

The objective is to monitor the effectiveness of mitigation measures [32 CFR Part 651 Appendix C, 40 CFR 1505.2 (c)]. Monitoring actions include: 1) Determine the presence and concentrations of glyphosate, imazapyr and saflufenacil herbicides in soil, stream sediment, mussels and fish at selected monitoring sites, 2) Evaluate potential impacts on aquatic life by comparing concentrations with the US EPA benchmarks and 3) Assess trends in pesticide concentrations over time.

Monitoring will be conducted twice a year in January and July over the four year period of the project at four established stream monitoring sites. Soil, sediment, aquatic macroinvertebrate (mussels) and aquatic vertebrate (fish) samples will be collected during each sampling event for laboratory analysis and comparison to EPA standards.

Mitigation effectiveness monitoring results that lead to a major modification of the proposed project could require a supplemental environmental analysis. The supplemental analysis and subsequent decision might need to be prepared prior to resumption of activities. A supplemental assessment is necessary when substantial new information is discovered and/or when a change of activities results in substantial change in environmental effects that were not previously analyzed in the EA.

2.7 Alternatives Considered but Rejected

During the scoping process, a number of alternatives were identified in addition to those considered for implementation. These alternatives were considered but rejected because they were not feasible to implement or they could not meet the project purpose and need.

2.7.1 Mechanical Clearing of LoS

The mechanical clearing of trees blocking LoS was deemed not feasible to implement. The need for aerial broadcast herbicide application is due to the presence of unexploded ordinance (UXO) and the safety and cost issues associated with clearing the timber with a typical ground-based mechanical approach.

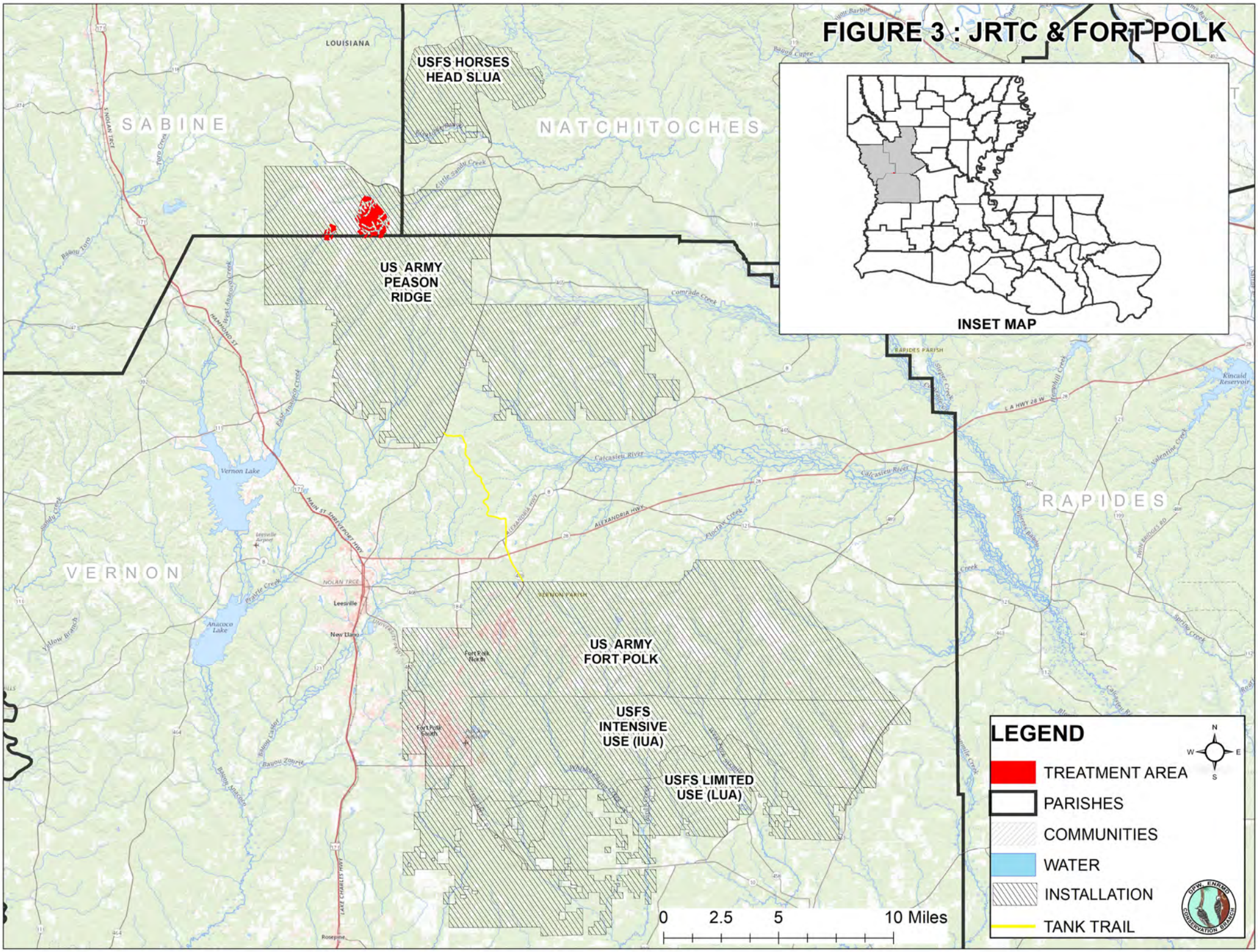
2.7.2 Development of New Impact Area

Land area limitations, high-cost prohibitive, extensive time required and a DoD-wide moratorium on new permanent dud-producing impact areas preclude the development of a new impact area. In addition, eventually, the same issue would arise.

Chapter 3: Affected Environment

Information for below sections were adapted from the Integrated Natural Resources Management Plan (Fort Polk 2020) and the final EIS for the JRTC and Fort Polk Land Acquisition Program (2010). More specific references are indicated.

FIGURE 3 : JRTC & FORT POLK



3.1 Physical Environment

3.1.1 Setting

The Joint Readiness Training Center and Fort Polk is located on the Western Gulf Coastal Plain in west-central Louisiana (Figure 3). Topography of the area is characterized by flat to gently rolling plains in the southern portion and gently rolling to rolling plains elsewhere. Narrow floodplains occur along major drainages. Elevations range from 180 to 443 feet on the Main Post and from 250 to 483 feet at Peason Ridge (U.S. Army Corps of Engineers 1992).

JRTC/Fort Polk is east of Louisiana Highway 171, near the communities of Leesville (seven miles northwest of Fort Polk) and DeRidder (18 miles south of Fort Polk). The installation is about 55 miles west of Alexandria and 60 miles north of Lake Charles. The installation consists of two separate land areas, the Main Post and Peason Ridge.

3.1.2 Installation and Land Ownership

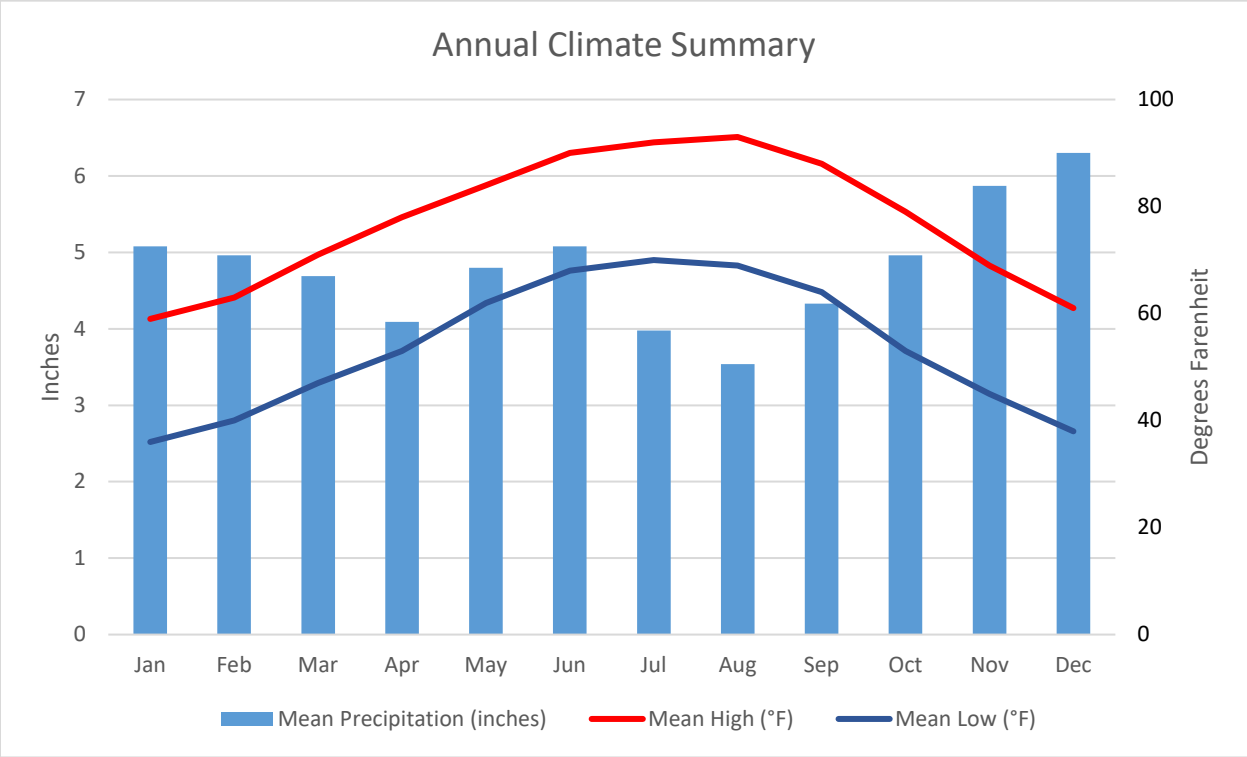
JRTC/Fort Polk is comprised of Department of Defense (DoD) and U.S. Forest Service (USFS) permitted land totaling approximately 243,964 acres. DoD-owned lands are divided into two primary areas, Fort Polk and Peason Ridge. USFS permitted lands are divided into three separate areas—the Intensive Use Area (IUA), the Limited Use Area (LUA) and the Special Limited Used Area (SLUA).

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 JRTC and Fort Polk Land Acquisition Program Final Environmental Impact Statement. 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 reflected above in the new acreage amount for Peason Ridge.

3.1.3 Climate

Fort Polk lies within the humid, subtropical climatic region and has long, hot summers and mild winters. The average annual summer temperature is 82° Fahrenheit (F), and the average annual winter temperature is 54° F (United States Department of Agriculture 1990a). Prevailing winds are from the south. Northerly winds accompany cold fronts as they move through the installation during winter. Severe local storms, such as hailstorms and tornadoes, may occur over small areas during any season, but they are most frequent during spring. The hurricane season is from 1 June through 31 October, with peak months being June and September (U.S. Army Corps of Engineers 1995). Rainfall in the Fort Polk area is generally heavy with yearly precipitation averaging 53 inches. Rainfall is most abundant during winter and spring when monthly averages are 4-6 inches (U.S. Army Corps of Engineers 1995). The average length of the growing season is about 260 days (U.S. Army Corps of Engineers 1992). Long-term mean

monthly climate parameters collected by the U.S. National Weather Service (www.weather.gov) for Leesville are shown below.



3.1.4 Geology

The Western Gulf Coastal Plain consists of massive sedimentary deposits over a layer of Paleozoic and Precambrian rock. Both geologically young Quaternary and geologically older Tertiary sediments are exposed at the surface at both the Main Post and Peason Ridge (Snead and McCulloch 1984, Welch 1942 in Hart and Lester 1993). Tertiary strata are capped by Quaternary deposits of varying thickness. The Main Post is located on the Blounts Creek and Castor Creek members of the Fleming Formation. Peason Ridge is located on the Carnahan Bayou Member of the Fleming Formation. Blounts Creek is fluvial in origin whereas Castor Creek is brackish in origin. The calcareous Hollywood Series developed from this formation. The Carnahan Bayou Member is the oldest exposed member of the Fleming Formation and is fluvial in origin. More recent Quaternary strata are referred to locally as Pleistocene High Terraces (Snead and McCulloch 1984 in Hart and Lester 1993). Pleistocene High Terraces are extensive on the Main Post. They are comprised of a few feet to more than 300 feet of highly weathered chert gravel, sand, silt and clay (Autin et al. 1991 in Hart and Lester 1993), most of which has been removed by erosion.

3.1.5 Air Quality

Air quality is regulated at the national level through regulations promulgated under the Clean Air Act of 1970 and its subsequent amendments. The Clean Air Act requires state or local governments to monitor ambient levels of pollutants that have federal standards. Both the

Louisiana Department of Environmental Quality (LDEQ) and U.S. Environmental Protection Agency (US EPA) regulate emissions of hazardous air pollutants at Fort Polk.

Fort Polk is located in National Air Quality Region 106, which has been determined to have air quality equal to or better than National Ambient Air Quality Standards. The US EPA conducted an air quality study, which concluded that concentrations of sulfur dioxide, oxides of nitrogen, carbon monoxide and particulate matter were well below relevant air quality standards. Non-methane hydrocarbons and ozone concentrations were found to exceed air quality standards. These results, however, are thought to be due to natural background levels for the area or to unknown sources off the installation (U.S. Army Environmental Hygiene Agency 1976 in U.S. Army Corps of Engineers 1992). Therefore, Fort Polk was found to be in an attainment area for all primary pollutants. In general, emissions of criteria air pollutants have been decreasing on the installation since 1991 (Freese and Nichols, Inc. 2001).

Most air pollutants generated at Fort Polk are a result of nonstationary sources, such as vehicular engine emissions, aircraft engine emissions, decomposition products of propellants, explosives and emissions from prescribed burning and wildfires. In 1989 Fort Polk received an exemption for air emissions associated with training exercises conducted within Fort Polk and Peason Ridge. Exempted emissions include fugitive dust from vehicles, smoke from burning fog oil and unserviceable tires and decomposition products of explosives. Fort Polk is designated as a major stationary source of air pollutants and operates under Part 70 Operating Permit No. 2960-00010-V1, issued by the Louisiana Department of Environmental Quality on October 26, 1999.

3.1.6 Water Resources

Water quality improved with reforestation following the procurement of the land by the Army in 1940 through 1941. During 1965-1985 two conflicting factors probably affected water quality. Major efforts were made to control cattle grazing, which improved water quality; however, military training degraded the land and added to erosion and stream sediment loading. It is suspected that overall water quality declined as mechanized training denuded the land through the early 1990s.

Overall trends in water quality are somewhat speculative due to a lack of consistent water quality monitoring. However, recent water quality monitoring indicates two current conditions: groundwater is high quality and surface water is good quality. All parameters, however, have not been tested. Surface water quality at Fort Polk is within criteria established by the State of Louisiana. Potential threats to surface water quality include silt deposition due to mechanized training, forestry management and construction activities.

The Texas Regional Institute for Environmental Studies (McCullough et al. 1997) studied water quality of streams on Fort Polk. The study concluded, *"There is some variation among the creeks on Fort Polk, but none of them seem to be unusually stressed environmentally as compared to the reference creek. None of the creeks sampled during this study on Fort Polk*

seem to reflect any negative impact due to the military activities taking place in their watersheds".

Bryan and Bryan (2001) prepared a Historical Review of Diatoms in the Periphyton of Fort Polk Streams to develop a very sensitive biological monitoring system using periphyton algae to detect impacts from increased development and other human activities on aquatic ecosystems. Twenty-five genera of diatoms were detected in eight streams. The study concluded that, *"Fort Polk was in harmony with positive environmental practices and, other than sewage effluent stresses, land-use practices at Fort Polk seemed to generally result in better water quality than normally expected of comparable agricultural drainages"*.

Williams and Bonner (2003) studied the biotic integrity of Peason Ridge Streams. During a two-year seasonal study they found no evidence that current military training activities were adversely affecting stream biota assemblages.

Most of the Main Post is within the Calcasieu River watershed, except Bayou Zourie, which drains a portion of the northwestern corner of the installation to the Sabine Basin. Most streams originate near the northern border and flow to the south off of the installation. Several of these streams are associated with the state scenic stream system. Ouiska-Chitto, West Fork Sixmile and East Fork Sixmile creeks are designated as state scenic rivers beginning south of the Intensive Use Area.

Fort Polk is the headwaters of several scenic rivers. The Kisatchie Bayou becomes officially "scenic" after leaving the northern boundary of Peason Ridge, and Sixmile and Ouiska-Chitto creeks become scenic rivers at the point where they exit the USFS Limited Use Area. The Louisiana Scenic Rivers Act of 1988 and its implementing regulations (Title 76, Part IX of the LDWF Rules) regulate these scenic rivers.

Ouiska-Chitto Creek flows in a southeasterly direction until it reaches the confluence of the Calcasieu River. Big Branch, Mill Creek, Bee Branch and numerous other tributaries form the drainage area of the watershed. Birds Creek flows in a southeasterly direction until it reaches the confluence of Ouiska-Chitto Creek below the watershed and above its confluence with the Calcasieu River (U.S. Department of Agriculture 1990a). Tenmile Creek flows in a southeasterly to southern direction until it reaches the confluence of Ouiska-Chitto Creek below the watershed and above its confluence with the Calcasieu River (U.S. Department of Agriculture 1990b). Brushy Creek flows in a southeasterly to southern direction until it reaches the confluence of Sixmile Creek (U.S. Department of Agriculture 1990c).

Peason Ridge is within the Little Sandy Creek, East Anacoco and Dry Creek-Kisatchie Bayou watershed systems (Figure 2) with limited drainage in the eastern portion of the Comrade Creek-Calcasieu River system. Kisatchie Creek flows west, then east, and then north until it reaches Old River. Odom Creek, Tiger Creek, Sandy Creek, Long Branch, Reaugaulle Creek, Little Sandy Creek, Kisatchie Creek, Lyles Creek, Stageland Creek and numerous other tributaries form the drainage area of the watershed (U.S. Department of Agriculture 1990d).

There are many surface water impoundments within the Main Post and Peason Ridge. The two Marion Bonner Lakes, Engineer Lake, Artillery, Armor, Infantry, Catfish Cove and Alligator Lake are managed fisheries lakes.

Freshwater aquifers in the Fort Polk area are in saturated sand and gravel beds found near the ground surface under water table conditions, or at considerable depth under artesian conditions. Recharge is by precipitation on outcrops and infiltration from adjacent saturated deposits. At least four water-bearing zones have been identified in the main cantonment area, the shallowest of which is at a depth of about 400 feet. At Peason Ridge, fresh water occurs in the saturated sand of the Miocene formation and is confined by impervious clay beds above and by sand below (U.S. Army Corps of Engineers 1992).

Groundwater supplies potable water for JRTC and Fort Polk via 12 active wells (Freese and Nichols, Inc. 2001). A U.S. Geological Survey Report (McWreath and Smoot 1989) summarizes hydrogeologic characteristics of aquifers used by the JRTC and Fort Polk for its water supply.

3.1.7 Soils

Twenty different soil series occur on Fort Polk (Main Post, Intensive Use Area and Peason Ridge). The extent and locations of the soil series on Fort Polk are mapped and available from the Fort Polk Geographic Information System database.

Dominant soil series on the Main Post (and impact area) are Ruston, Briley and Susquehanna. Dominant soils at Peason Ridge are Mayhew and a Kisatchie -Rayburn association. The Hollywood series is located on the Main Post and is associated with the Castor Creek Member of the Fleming Formation. Hollywood soils are of limited extent on the installation and occur in discrete patches. This series supports calcareous prairie (Castor Prairie), which is very rare in the state and is considered a very significant remnant vegetation for the installation (Hart and Lester 1993).

The Natural Resources Conservation Service classifies Fort Polk soils as highly erodible. Soils unprotected by vegetation are susceptible to water erosion from the moderate and intense storms. The most prevalent type of erosion is gullying, but sheet and rill erosion may precede this (U.S. Army Corps of Engineers 1992).

Trends in soil productivity at Fort Polk are unknown. It is theorized that rapid regrowth of young forests following acquisition of the land in 1940 and 1941 probably decreased soil productivity. The slower growth of more mature forests today is probably reversing that trend. Erosion should have decreased due to reforestation programs on the 1940s and 1950s, as well as the reduction of cattle grazing in 1965 and elimination of cattle grazing on the Main Post in 1985. However, mechanized training added to soil loss. Soil losses have dropped in the 1990s due to soils management programs and reduced heavy mechanized training.

3.2 Biological Resources

3.2.1 Flora

A report entitled Natural Community and Sensitive Species Assessment on Fort Polk Military Reservation, Louisiana identified community types that historically occurred on the installation and community types that now occupy the area (Hart and Lester 1993). Based on this report, Fort Polk consisted of western Gulf Coastal Plain upland longleaf pine forests and their associated natural communities (hillside bogs, wooded seeps, baygalls and sandy woodlands). As Fort Polk and the surrounding land were developed, dominant longleaf pine (*Pinus palustris*) forests were converted to forests more desirable to the timber industry (loblolly and slash pine) or succumbed to invasive species. Currently, Fort Polk and the Kisatchie National Forest support most upland longleaf pine forests remaining in Louisiana (Hart and Lester 1993).

Currently, the Fort Polk INRMP Program maintains a working list of all plant taxa recorded for Fort Polk and staff botanists revisit and document new locations of rare species. In addition, staff botanists have expanded the list of natural vegetation communities found across the Installation. These communities are now divided into 23 major types: (1) Longleaf Pine Forest, (2) Loblolly Pine Forest, (3) Shortleaf Pine Forest, (4) Mixed Pine Forest, (5) Mixed Pine/Hardwood Forest, (6) Savannah, (7) Sandy Woodland, (8) Baygall, (9) Sandy Riparian, (10) Clay Riparian, (11) Pitcher Plant Bog, (12) Swamp, (13) Calcareous Prairies, (14) Fleming Calcareous Forest, (15) Sandstone Glade, (16) Loblolly Pine Plantation, (17) Slash Pine Plantation, (18) Pine/Oak Scrub, (19) Cutover/Slash, (20) Artificial Prairies, (21) Open Water, (22) Urban Development, (23) Non-Natural Areas.

Downslope from the sandy woodlands and on the tops of less dry hills, the vegetation that develops is the **longleaf pine forest**. Longleaf pine forest is characterized by scattered large individual longleaf pine trees or small clumps of younger smaller trees creating a fairly open vegetation type. The dominant over story species is longleaf pine (*Pinus palustris*) with patches of loblolly pine (*Pinus taeda*) scattered in many stands. A number of hardwoods can be in the over story but hardwoods usually form a subcanopy or midstory layer. Many of the hardwoods are oaks such as southern red (*Quercus falcata*), post (*Quercus stellata*), blackjack (*Quercus marilandica*), sandjack (*Quercus incana*), runner (*Quercus margarettiae*), water (*Quercus nigra*) or Darlington's (*Quercus hemisphaerica*). Other hardwoods in the top layers include sweet gum (*Liquidambar styraciflua*), black gum (*Nyssa sylvatica*), flowering dogwood (*Cornus florida*), red maple (*Acer rubrum* var. *rubrum*), mockernut hickory (*Carya alba*) or black hickory (*Carya texana*). Shrubs usually occur in patches with some of the common species including yaupon (*Ilex vomitoria*), deerberry (*Vaccinium stamineum*), Elliott's blueberry (*Vaccinium elliottii*), tree huckleberry (*Vaccinium arboreum*), waxmyrtle (*Morella cerifera*) and winged sumac (*Rhus copallinum*). There are many herbaceous species but the most common two are bracken fern (*Pteridium aquilinum*) and little bluestem (*Schizachyrium scoparium*). A typical example of longleaf pine can be found along Artillery Road in section 26 T2S R7W and also in the Longleaf

Scenic Area southwest of the intersection of Forest Service Roads 421 and 444 in sections 1 & 12 T1S R8W and sections 6 & 7 T1S R7W.

The **loblolly pine forest** vegetation type is found across Fort Polk and is usually artificially created by the natural re-seeding of this species into areas that have been cut or thinned. It is difficult to determine just how much of this forest actually existed in the landscape in the past but is now fairly common.

The **shortleaf pine forest** vegetation type is found in the Castor and northern Slagle training areas on Fort Polk. It is often associated with the fleming calcareous forests and the calcareous prairies. The area of this community type has been reduced as many areas have been converted to loblolly pine forests. The dominant pine is shortleaf (*Pinus echinata*) but loblolly (*Pinus taeda*) and longleaf pine (*Pinus palustris*) are often also found in limited amounts within the forest. The hardwood trees and shrubs are similar to the list for the fleming calcareous forest and the clay riparian forest. The herbaceous plant list is similar to the calcareous prairie plus the fleming calcareous forest and the clay riparian forest.

The **mixed pine forest** vegetation type is scattered across the Fort and encompasses those stands of pine forests with combinations (two or three species) of the three pine species: longleaf (*Pinus palustris*), loblolly (*Pinus taeda*) and shortleaf (*Pinus echinata*). The combination can be all three or two of the species and neither of the three or two is dominant. In the New Lands, the understory of these stands are often dense and dominated by yaupon (*Ilex vomitoria*) and wax myrtle (*Morella cerifera*). These areas would be ideal for stand improvement activities such as understory removal and prescribed fire.

In the more mesic, less dry hillside sites and also in cutover longleaf areas, the **mixed pine-hardwood forest** develops. This vegetation type is highly variable ranging from almost 100% pine to as little as 50% or even less pine. The stands with more pine usually are younger and are characterized by a very dense canopy. As the stands mature, the numbers of pines decrease and the canopy becomes more open. The most common pine is loblolly (*Pinus taeda*) but most stands contain a few longleaf (*Pinus palustris*) and others can contain shortleaf (*Pinus echinata*) and in a few areas, slash pines (*Pinus elliottii*) are found. In older stands and in openings in the pines in younger stands, hardwoods can become a part of the canopy. Hardwood species are similar to those of the longleaf pine forest but sandjack oak (*Quercus incana*), blackjack oak (*Quercus marilandica*) and runner oaks (*Quercus margarettiae*) are not commonly observed. Yaupon (*Ilex vomitoria*), Elliott's blueberry (*Vaccinium elliottii*), tree huckleberry (*Vaccinium arboreum*), American beautyberry (*Callicarpa americana*) and winged sumac (*Rhus copallinum*) are common shrubs. Saplings of flowering dogwood (*Cornus florida*), sassafras (*Sassafras albidum*) and persimmon (*Diospyros virginiana*) are often found in the shrub layer. A good example of this can be found along the west side of Bird's Creek just upstream from Lookout Road in section 35 T1N R7W and also along the east side of the gravel road that runs north off of Forest Service Road 443 in section 14 T1S R7W.

The **savannah** vegetation type can be found in small patches or strips throughout the northern part of the area in flat and wet areas along streams. A large area of savannah vegetation occurs in the flat southwestern part of the area. Savannah is characterized by a very open canopy of scattered pine trees. In the northern area, most trees are longleaf (*Pinus palustris*), but many slash pines (*Pinus elliottii*) have been planted in the southern region. In very wet areas, clumps of hardwood trees often produce a subcanopy or midstory clump layer. Common species of these clumps include swamp black gum (*Nyssa biflora*), white bay (*Magnolia virginiana*) and Drummond red maple (*Acer rubrum* var. *drummondii*). The shrub layer is also open with scattered clumps of shrubs or saplings. Some shrub species usually found are red bay (*Persea palustris*), white bay (*Magnolia virginiana*), large gallberry (*Ilex coriacea*), chokecherry (*Aronia arbutifolia*) and alder (*Alnus serrulata*). Lowland bamboo vine (*Smilax laurifolia*) is often twining on top of the shrubs. A dense layer of grasses-sedges and other herbaceous plants layer fills the space between clumps of shrubs. Common grasses are toothache (*Ctenium aromaticum*), switch (*Panicum virgatum*) and several species of three-awns (*Aristida* spp.). Sedges include many species of nutsedge (*Cyperus* spp.) and especially beaksedge (*Rhynchospora* spp.). Other herbaceous plants are often pitcher plants (*Sarracenia* alata), sundews (*Drosera* spp.) and other plants usually found in bogs. A good example of the savannah vegetation in strips can be found downslope from the longleaf pine forest in the southern part of section 4 T1S R8W south of Forest Service Road 421. A good example of the large savannah vegetation type can be observed along La 463 in sections 15, 16 and 21 T1N R5W and another can be found north of Forest Service Road 450 in section 36 T1S R8W.

The higher and dryer sites on Fort Polk are occupied by the **sandy woodland** vegetation type. This vegetation type is scattered throughout and is most common in the northeastern part of the base. In its natural condition, the over story in sandy woodlands is primarily a mixture of oaks: sandjack (*Quercus incana*), blackjack (*Quercus marilandica*) and runner oaks (*Quercus margarettiae*) and pines: loblolly pine (*Pinus taeda*), shortleaf pine (*Pinus echinata*) and longleaf pine (*Pinus palustris*). The subcanopy and shrub layer are sparse with a few clumps of the genus *Vaccinium*: deerberry (*Vaccinium stamineum*), Elliott's blueberry (*Vaccinium elliottii*) or tree huckleberry (*Vaccinium arboreum*). The floor is mostly bare, with occasional clumps of goat's rue (*Tephrosia virginiana*), puccoon (*Lithospermum carolinense*), large bull nettle (*Cnidoscolus texanus*) and other herbaceous species. In areas, clumps of poison oak (*Toxicodendron pubescens*) form dense clumps along the floor. Lichen patches, mostly of the genus *Cladonia*, are also often scattered across the floor. On Fort Polk, this vegetation type is developed mostly on Betis or Briley Loamy Fine Sand. The best examples of this vegetation type on the Fort can be found in the northeast corner along Artillery Road in sections 19, 20 and 21 T2N R6W. Another example of this vegetation type can be seen near the intersections of Forest Service Roads 400 and 471, just south of Little Cypress Recreation Area in the southeast corner of section 11 T1S R8W. On Ft Polk, this vegetation type is developed mostly on Betis Loamy Fine Sand.

The **baygall** vegetation type is a forested type that develops along edges of smaller streams. Larger baygalls change into savannahs upslope or bogs in open areas. Very narrow baygalls may grade upslope to longleaf pine forests or even sandy woodlands. In larger streams, baygall vegetation changes into riparian vegetation downstream. Baygall vegetation is mostly a short tree or tall shrub type, but in some baygalls, a taller canopy is found. Most trees or shrubs are evergreen and include red bay (*Persea palustris*), white bay (*Magnolia virginiana*), large gall berry (*Ilex coriacea*), alder (*Alnus serrulata*) and swamp black gum (*Nyssa biflora*). Lowland bamboo vine (*Smilax laurifolia*) is found in almost all baygalls. Most common herbaceous plants are ferns, including royal (*Osmunda regalis* var. *spectabilis*), cinnamon (*Osmunda cinnamomea*), southern lady (*Athyrium felix-femina*), sensitive (*Onoclea sensibilis*), netted chain (*Woodwardia areolata*) and Virginia chain (*Woodwardia virginica*). Peat moss (*Sphagnum sp*.) is found in scattered patches on the floor of most baygalls. Three baygalls studied by Allen (1988, 1990b) include one just south of Lookout Road and Range 8 in section 36 T1N R8W, one along a small stream draining into Whiskey Chitto just south of EOD in section 34 T1N R7W and one along a small stream north of Artillery Road near Firing Point 712 in section 6 T1N R7W. Another good example of a baygall can be found along the small stream that drains into Drake's Creek on the east bank just south of Forest Service Road 421 section 1 T1S R8W.

The **sandy riparian** vegetation is a large tree vegetation type that develops in well-drained, sandy soil areas along sides of larger streams (Birds and Ouiska Chitto) in the southern and eastern parts of Fort Polk. This vegetation type has a distinct canopy of hardwood trees plus a subcanopy or midstory layer. Shrub and herb layers are often poorly developed. Common canopy species include American beech (*Fagus grandifolia*), white oak (*Quercus alba*), sweet gum (*Liquidambar styraciflua*), winged elm (*Ulmus alata*) and southern magnolia (*Magnolia grandiflora*). Species usually found in the subcanopy layer are blue beech (*Carpinus caroliniana*), hop hornbeam (*Ostrya virginiana*) and flowering dogwood (*Cornus florida*). Common shrubs include arrowwood (*Viburnum dentatum*), silver bell (*Halesia diptera*), big snowbell (*Styrax grandifolia*), horsesugar (*Symplocos tinctoria*), sweet azalea (*Rhododendron canescens*) and Virginia willow (*Itea virginica*). Herbaceous plants are usually scattered, and common species include inland seaoats (*Chasmanthium latifolium*), Christmas fern (*Polystichum acrostichoides*), partridge berry (*Mitchella repens*), elephant's foot (*Elephantopus* spp.) and many species of *Carex*. Two locations for typical riparian vegetation are just downstream from Lookout Road along the banks of the Whiskey Chitto Creek (section 3 T1S R7W) and Bird's Creek (section 35 T1N R7W.

The **clay riparian** vegetation is very similar in species composition to the sandy riparian vegetation but differs in location (northwestern portion of Fort Polk) and soil type (mostly Eastwood silt loam) and is located mostly along narrow, often intermittent streams, mostly downstream from Hornbeck Clay or other high clay content soil. It is the vegetation type along the upper narrow portion of Ouiska-Chitto Creek and along Bayou Zourie, a fairly large stream. It is also found along a tributary of Comrade Creek in Cold Springs. The canopy in this vegetation is dominated by American beech (*Fagus grandifolia*), white oak (*Quercus alba*),

sweet gum (*Liquidambar styraciflua*) and white ash (*Fraxinus americana*). A small tree/shrub layer is often present, which consists of many hawthorns (*Crataegus spp*.), sugar maple (*Acer saccharum*), Elliott's blueberry (*Vaccinium elliottii*), tree huckleberry (*Vaccinium arboreum*), toothache tree (*Zanthoxylum clava-herculis*) and rusty black haw (*Viburnum rufidulum*). The herbaceous layer is usually sparse but does include species listed for the sand riparian plus long-awned wood grass (*Brachyelytrum erectum)*, pasture heliotrope (*Heliotropium tenellum)*, wood betony (*Pedicularis canadensis)*, Indian pink (*Spigelia marilandica*) and yellow lady's slipper (*Cypripedium kentuckiense*). Good examples of this vegetation type can be found along the upper reaches of the Whiskey Chitto Creek north of North Fort Polk in sections 24 and 25 T2N R8W, along the small creek north of Entrance Road in section 34 T2N R8W, along Liberty Creek in section 22 T2N R8W and along a small creek off La 467 south of the northwestern campus in section 7 T1N R8W. A detailed listing of species can be found in Allen (1993). It is also found along Martin's Creek in the Cold Springs training area and Indian Creek in the Kurthwood training area.

The **pitcher plant bog** vegetation type occurs in open areas in baygalls and savannahs. The area occupied by each bog is small, but there are many scattered across Fort Polk. Fort Polk probably contains the most bogs and the most acreage of bogs in the state. Bog plants are predominantly herbaceous with pitcher plants (*Sarracenia alata*) being the most distinctive. To a lesser extent, woody plants are also found in most bogs, including any that are typically found in baygalls and savannahs. Bogs are wet and almost all include a layer of peat moss (*Sphagnum*) at soil level. Soils are typically quite sandy and very acid (ph 4.5-5.0). They are underlain by an impervious sandstone or clay layer that, where conditions are right, causes ground water to constantly seep to the soil surface. Many obvious plants throughout the year in bogs are carnivorous, including pitcher plants (*Sarracenia flava*), sundews (*Drosera sp*.), butterworts (*Pinguicula lutea*) and bladderworts (*Utricularia spp*.). Seasonally, other plants become obvious, including orchids, especially members of the genus *Platanthera*, and members of the lily, carrot and aster families. Less obvious, but perhaps more dominant, are grasses and sedges, especially beaksedges. There are many bogs of varying sizes in the central and eastern portions of Fort Polk. An excellent bog can be found north of Range 8 and Lookout Road in section 36 T1N R8W and another south of Forest Service Road 400 in section 13 T1S R8W.

The **swamp** vegetation develops in slow or nonmoving backwater areas along streams. It is a forest vegetation type that always has swamp black gum (*Nyssa biflora*) and usually also contains bald cypress (*Taxodium distichum*) and one or more oaks (e.g., cow, water, willow, overcup, laurel). Crowns of these trees are usually very long vertically, so the canopy is very distinct. Very few shrubs are found, but the most common species is Virginia willow (*Itea virginica*). In less wet portions of swamp, a distinct layer of herbaceous plants often develops. Common species include aster, broadleaf uniola (*Chasmanthium latifolium*) and many species of the genus *Carex*. There are no large areas of swamp vegetation on Fort Polk, but small isolated patches are in old stream beds along major streams. A good example can be found just

north of Lookout Road and west of Bird's Creek in section 35 T1N R7W. Another swamp can be observed along Bundick's Creek off Forest Service Road 403 section 16 T1S R8W.

Calcareous prairies are developed on clay soils in the northwestern part of the base. Allen in 1994 and 1995 researched prairies at Fort Polk. He found that most prairies in this area are on Hollywood Clay soils. This ecosystem consists of small scattered patches of forest ecosystems. Calcareous prairies are surrounded by and grade into the fleming calcareous forest. This is also called the Castor Prairie or Anacoco Prairie. Allen found that little bluestem (*Schizachyrium scoparium*) was observed in almost all calcareous prairies but many species were found in just a few prairies. Each small patch of calcareous prairie seems to have its own set of species. The best calcareous prairies on Fort Polk are the two located east of LA 467 and south of the Northwestern State University Campus in the south central portion of section 6 and the north central portion of Sec 7 T1N R8W. A north-south road is located near the western boundary. The area is approximately 200 acres and has two openings; the southern opening is approximately 450 feet long by 120 feet wide and the northwest opening is approximately 300 feet by 200 feet. These two areas are the castor prairie site of Hart and Lester (1993). This is also the area that has been studied the most and five rare plant species are known from this site (*Carex microdonta*, *Echinacea purpurea*, *Heliotropium tenellum*, *Panicum flexile* and *Rudbeckia missouriensis*). However, the prairies in northwest portion of Cold Springs are located on soils that are mapped as Kisatchie-Rayburn fine sandy loam, Mayhew silt loam and Carrigan fine sandy loam. During site visits, these soils appeared to have higher clay content then would be expected based on the soil types they were mapped as being.

The **fleming calcareous forest** develops on clay soils in the northwestern part of the base and often surrounds calcareous prairies. This forest is characterized by small trees, shrubs and stunted larger trees. There is a dense canopy and a very limited number of herbaceous species except in openings. The common trees include white ash (*Fraxinus americana*), sweet gum (*Liquidambar styraciflua*) and shortleaf pine (*Pinus echinata*). Small trees and shrubs include parsley hawthorn (*Crataegus marshallii*), cockspur hawthorn (*Craraegus crus-galli*), littlehip hawthorn (*Crataegus spathulata*), gum bumelia (*Sideroxylon lanuginosum*), rusty blackhaw (*Viburnum rufidulum*) and roughleaf dogwood (*Cornus drummondii*). The common vine is rattan (*Berchemia scandens*). Most fleming calcareous forest are located adjacent to calcareous prairies so good examples can be found in section 7 T1N R8W. Another good example of this forest can be found north of Entrance Road and the baseball field in section 27 T2N R8W.

The **sandstone glade** vegetation is very small, usually much less than an acre in size and is located on the tops of sandstone outcroppings. The vegetation is sparse and mostly herbaceous but an occasional shortleaf pine (*Pinus echinata*) or tree huckleberry (*Vaccinium arboreum*) may be found. Woody plants in the sandstone glade vegetation are usually stunted. The most consistent species in this vegetation type are rayless goldenrod (*Bigelowia nudata*) and largeflower fameflower (*Talinum calycinum*). Lichens are often common on the exposed

rock surfaces. The best sandstone glade that has been identified on Fort Polk is NE of the Northwestern State University campus and east of the tower in the north portion of section 32 T2N R8W. Other sandstone glades can be found at Peason Ridge.

Loblolly pine plantation is by far the most dominant vegetation type present on the new lands. This habitat type is dominated by loblolly pine *(Pinus taeda*) with a variety of woody shrubs and vines present in the understory. Those understory species often include salt bush (*Baccharis halimifolia*), American beautyberry (*Callicarpa americana*), wax myrtle (*Morella cerifera*), blackberry (*Rubus sp.*) and greenbrier (*Smilax sp.*). Depending on the openness of the canopy in these stands, a limited herbaceous layer can begin to develop.

Like most plantations, the **slash pine plantation** has low overall species diversity. One area of slash pine (*Pinus elliottii*) is currently known on the property, and is located in the northwest corner of Cold Springs. This is a young stand with a tightly closed canopy, resulting in little to no shrub or herbaceous layers.

The **pine/oak scrub** vegetation type is a successional vegetation type that develops usually on sandy sites. In most cases, these areas were once pine plantation, but have been cut over and were not replanted in pine. Typically these have a dense understory and are dominated by a mix of young pine and oak species, as well as several species of vines. Common woody tree species present include loblolly pine (*Pinus taeda*), southern red oak *(Quercus falcata*), black jack oak (*Quercus marilandica*) and sand post oak or runner oak (*Quercus margaretta*). Vines commonly found at these sites include greenbrier (*Smilax* sp.), Virginia creeper (*Parthenocissus quinquefolia*), poison ivy (*Toxicodendron radica*ns), poison oak *(Toxicodendron pubescens*) and blackberries (*Rubus sp.*). Shrub species include yaupon (*Ilex vomitoria*), American beautyberry (*Callicarpa americana*), winter huckle berry (*Vaccinium arboreum*) and Elliott's blueberry (*Vaccinium elliottii)*.

Cutover/slash areas are another early successional habitat type that have been recently cutover and not replanted. In general there is little new woody plant growth in these areas, often with a significant amount of bare ground and scattered woody debris. Herbaceous vegetation often includes various species of grasses including beaksedges (*Rhynchospora sp.*) and various grass species such as crabgrass (*Digitaria sp.*) and bluestems (*Andropogon* and *Schizachyrium sp.*).

Artificial prairies are produced and maintained by frequent mowing and is found in drop zones, ranges, roadsides, pipelines and power lines. The vegetation is usually similar to the adjacent vegetation community type but with a dominance of herbaceous species, especially grasses. In some areas, species that are usually found in disturbed areas can also be seen in the artificial prairie including the nonnative ones. Commonly encountered species are crabgrass (*Digitaria sp*.), johnsongrass (*Sorghum halepense*), Pensacola bahiagrass, ragweeds (*Ambrosia sp*.), spurges (*Euphorbia sp*.), horseweed (*Conyza canadensis*), dog fennel (*Eupatorium capillifolium*), bitterweed (*Hymenoxys odorata*), morning glory (*Ipomoea sp*.), clovers (*Trifolium sp*.), horse

nettle (*Solanum carolinense*), curly dock (*Rumex crispus*) and common goldenrod (*Solidago canadensis*). Artificial prairies in forested and other natural areas are small and if not disturbed, rapidly undergo succession toward one of the native vegetation types.

There are a few **open water** areas on Fort Polk, including the larger streams, larger back stream areas, beaver ponds, lakes and some manmade ponds. Bur-reed (*Sparganium americanum*) and pond weeds are often in the water itself while along the edges round fruit hedge hyssop (*Gratiola virginiana*) and many species of *Juncus* are often found. A limited number of other aquatics such as water lily (*Nymphaea sp*.) are sporadically distributed throughout. A good example of the moving water vegetation can be found in West Fork Six Mile Creek upstream and downstream from Lookout Road (section 29 T1N R6W). Alligator Lake in section 23 T2N R8W and Fullerton Lake in section 4 T1S R6W are manmade bodies of water and are examples of the nonmoving open water habitat in the Limited Use Area. An interesting beaver pond can be observed near Range 8 just north of Lookout Road in section 36 T1N R8W.

Urban development denotes building and construction areas on Fort Polk including sidewalks, roadways and parking lots.

Non-natural areas are a temporary community type located only in the northern training areas and is a combination of the artificial prairies and urban development community types.

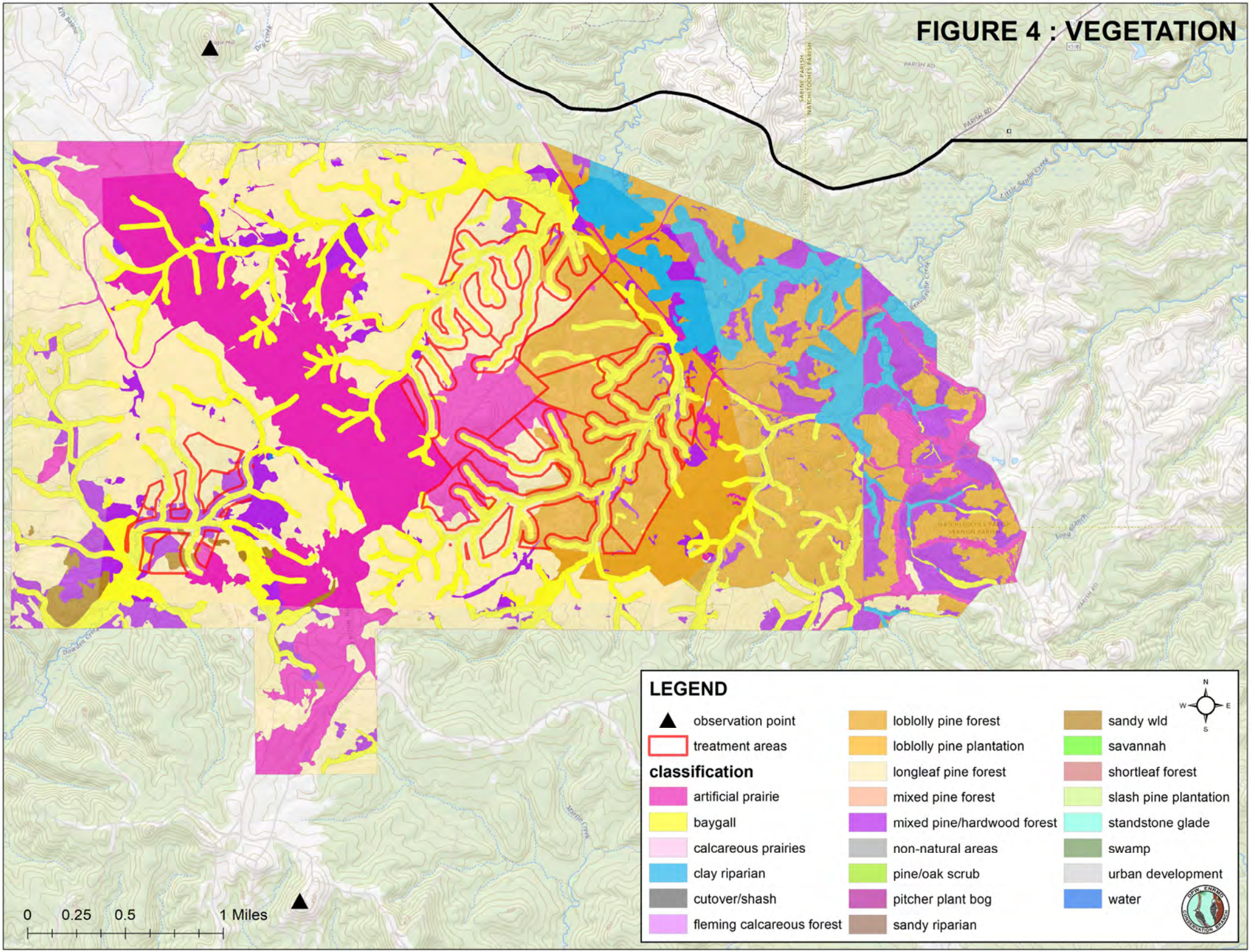
Approximately 80% of Fort Polk and Peason Ridge is wooded, and about 95% of the two areas are covered by some sort of vegetation. Fort Polk main post encompasses 66,550 acres and Peason Ridge is 76,144 acres, which includes 42,653 acres recently purchased in 2012-2016. Of the total 142,694 acres owned by the US Army, forest management is conducted on 123,121 acres of forest. Areas exempt/excluded from forest management practices are the 5,590-acre Fort Polk Redleg impact area, 847-acre Fort Polk restricted area and 7,533-acre Peason Ridge restricted area. Figure 4 shows the vegetative community types projected for the Peason restricted and impact areas addressed in this EA.

A sensitive species survey covering the entire military lands (Main Post, Peason Ridge and USFS Intensive Use Areas) was completed in 1993 by the Louisiana Natural Heritage Program (Hart and Lester 1993). This survey identified 25 federal candidate species known to occur on the installation. Currently, the Fort Polk INRMP Program documents a total of 54 global and/or state rare plant species; however, there are no known federal-listed plant species on the Installation.

3.2.2 Fauna

Fort Polk's wildlife species include most animals indigenous to the southwestern Louisiana pinelands region. Currently, the Fort Polk INRMP Program maintains a working list of all resident, migratory and invasive species occurring on and/or around Installation properties. Staff biologists have documented a total of 242 species of birds, 72 species of reptiles and

FIGURE 4 : VEGETATION



amphibians, 44 species of mammals, 35 species of fish, 8 species of freshwater mussels (Ford 2018) and 70 species of butterflies.

The JRTC/Fort Polk provides suitable habitat for multiple mammal species. Frequently encountered small mammal species on the Installation are fulvous harvest mouse (*Reithrodontomys fulvescens*), white-footed mouse (*Peromyscus leucopus*) and hispid cotton rat (*Sigmodon hispidus*). Large mammals that are frequently encountered on the Installation are white-tailed deer (*Odocoileus virginianus*), feral hogs (*Sus scrofa*) and coyote (*Canis latrans*).

The most common bird species found throughout all of Fort Polk and Peason Ridge are American crow (*Corvus brachyrhynchos*), American robin (*Turdus migratorius*), Carolina wren (*Thryothorus ludovicianus*), pine warbler (*Setophaga pinus*) and northern cardinal (*Cardinalis cardinalis*). Bird species common to Fort Polk vegetation community types, such as, artificial prairie, pine/oak scrub and non-natural areas include eastern meadowlark (*Sturnella magna*), cattle egret (*Bubulcus ibis*), American goldfinch (*Spinus tristis*), chipping sparrow (*Spizella passerina*) and mourning dove (*Zenaida macroura*).

Birds commonly found in baygall, sandy riparian, clay riparian and swamps are blue jay (*Cyanocitta cristata*), tufted titmouse (*Baeolophus bicolor*), Carolina chickadee (*Poecile carolinensis*), red-bellied woodpecker (*Melanerpes carolinus*) and red-eyed vireo (*Vireo olivaceus*).

Birds commonly found in mixed pine and hardwood forests and sandy woodlands are chipping sparrow (*Spizella passerina*), blue jay (*Cyanocitta cristata*), pileated woodpecker (*Dryocopus pileatus*), brown-headed nuthatch (*Sitta pusilla*) and white-eyed vireo (*Vireo griseus*).

Birds commonly found in longleaf pine, loblolly pine, shortleaf pine and mixed pine forests are cedar waxwing (*Bombycilla cedrorum*), blue jay (*Cyanocitta cristata*), brown-headed nuthatch (*Sitta pusilla*), Bachman's sparrow (*Peucaea aestivalis*) and pileated woodpecker (*Dryocopus pileatus*).

Birds that are commonly observed in or near larger streams, beaver ponds, lakes and man-made ponds are blue jay (*Cyanocitta cristata*), American goldfinch (*Spinus tristis*), yellow-rumped warbler (*Setophaga coronata*), Carolina chickadee (*Poecile carolinensis*) and red-bellied woodpecker (*Melanerpes carolinus*).

Reptiles frequently encountered throughout the Installation include cottonmouth (*Agkistrodon piscivorus*), green anole (*Anolis carolinensis*), six-lined racerunner (*Aspidoscelis sexlineata)*, common five-lined skink (*Plestiodon fasciatus)*, prairie lizard (*Sceloporus consobrinus)*, common ground skink (*Scincella lateralis)*, common snapping turtle (*Chelydra serpentine)* and red-eared slider (*Trachemys scripta)*.

The alligator snapping turtle (*Macrochelys temminckii,* AST) is a resident species primarily found in streams located on both Fort Polk and Peason Ridge. In July 2012, the US Fish and Wildlife Service (USFWS) received a petition requesting the AST be listed as endangered or threatened

and critical habitat be designated under the Endangered Species Act (ESA). Petitioned species are those plants and animals for which the USFWS has received a formal request to list as endangered or threatened under the ESA. The USFWS is required to make and publish findings on the petition within 90 days of receiving the petition as to whether there is "substantial information" indicating that the petitioned action may be warranted. In June 2015, it was determined that there was substantial scientific information to initiate a review of the AST (80 FR 37568- 37579). A draft Species Status Assessment is currently being prepared by the USFWS. Publication of the listing decision for the AST was set for 30 September 2020, but this date has passed and USFWS does not currently know how long an extension may be granted.

Common amphibians in the area include Blanchard's cricket frog (*Acris blanchardi)*, fowler's toad (*Anaxyrus fowleri)*, green frog (*Lithobates clamitans)*, southern leopard frog (*Lithobates sphenocephalus*), spring peeper (*Pseudacris crucifer*), Cajun chorus frog (*Pseudacris fouquettei)*, marbled salamander (*Ambystoma opacum*) and dwarf salamander (*Eurycea quadridigitata)*.

Fish inhabitants of small streams in the region include blackspot shiner (*Notropis atrocaudalis*), creek chubsucker (*Erimyzon oblongus*), longear sunfish (*Lepomis megalotis*), red-spotted sunfish (*L. miniatus*), blackspotted topminnow (*Fundulus olivaceous*), blacktail redhorse (*Moxostoma poecilurum*), redfin shiner (*Lythrurus umbratilis*), blacktail shiner (*Cyprinella venusta*), pirate perch (*Apherododerus sayanus*), yellow bullhead (*Ictalurus natalis*), creek chub (*Semotilus atromaculatus*), redfin pickerel (*Esox americanus*), warmouth (*Chaeobryttus gulosus*) and dusky darter (*Percina sciera*).

Fish species likely to be found in large streams include mosquitofish (*Gambusia affinis*), striped shiner (*Luxilis chrysocephalus*), bluegill (*Lepomis macrochirus*), green sunfish (*L. cyanellus*) and spotted bass (*Micropterus punctulatus*). Darters that might be present include the bluntnose (*Etheostoma chlorosomum*), redspot (*E. artesiae*), slough (*E. gracile*), dusky (*Percina sciera*) and scaly sand (*Ammocrypta vivax*). Other common resident species include the freckled madtom (*Noturus nocturnes*), tadpole madtom (*N. gyrinus*) and spotted sucker (*Minytrema melanops*).

Crayfish species that are commonly found on the Installation in ditches, sloughs and/or intermittent streams are digger crayfish (*Creaserinus fodiens*), ditch fencing crayfish (*Faxonella clypeata*), red swamp crawfish (*Procambarus clarkia*) and the southern white river crayfish (*Procambarus zonangulus*). Crayfish species found in installation perennial streams are white river crayfish (*Procambarus acutus*), southwestern creek crayfish (*Procambarus dupratzi*), free-state chimney crayfish (*Procambarus kensleyi*) and Calcasieu creek crayfish (*Procambarus pentastylus*).

The Kisatchie painted crayfish (*Orconectes maleate,* KPC) is a resident of all Red River tributaries located on Peason Ridge (Williams 2019). In April 2010, the USFWS received a petition requesting the KPC be listed as endangered or threatened and critical habitat be designated under the Endangered Species Act (ESA). In September 2011, it was determined that there was

substantial scientific information to initiate a review of the KPC (76 FR 59835). A final decision is pending completion of a status review of the species.

Freshwater mussels and snails are found in many of the streams at Fort Polk and Peason Ridge. The Louisiana fatmucket (*Lampsilis hydiana*) and little spectacle case (*Villosa lienosa*) are commonly found mussel species and the pointed campeloma (*Campeloma decisum*) is the most abundant aquatic snail. The southern hickorynut mussel (*Obovaria arkansasensis*) found in Birds Creek and the creeper mussel (*Strophitus undulatus*) found in Drakes Creek are less common (Ford 2018).

Nuisance and invasive animal species in the area include feral hogs, trespass horses and nutria (*Myocastor coypus*). Fort Polk controls nuisance and invasive animal populations through various methods in coordination with Conservation Law Enforcement, Range Operations and ENRMD; including hunting, periodic trapping efforts and other direct take measures (Stout, 2004a). Direct take of trespass horses, however, is not permitted.

The red cockaded woodpecker (RCW, *Picoides borealis*) and the Louisiana pine snake (LPS, *Pituophis ruthveni*) are the only Federally-listed species at JRTC/Fort Polk.

The RCW has historically resided within the area; however, past and current logging operations along with suppression of fire has substantially reduced the regional availability of suitable habitat for this species. The RCW requires mature, open-canopy, frequently burned longleaf pine forests for nesting, roosting and foraging habitat. Fort Polk contains 31,564 acres of current or potential RCW habitat, 25,564 acres of which are of higher quality (i.e., mature open-canopy longleaf pine forests) and 6,000 acres of which are lower quality (i.e., younger pine/mixed hardwood stands). Peason Ridge contains 18,968 acres of current or potential RCW habitat. Forest clearing and land development have fragmented the habitat surrounding the Peason Ridge RCW population (Stout, 2003). Fort Polk's management strategy for the RCW, outlined in its ESMC, includes the protection of existing clusters on the installation and expansion into unoccupied suitable habitat. Although Fort Polk and Peason Ridge are two different HMUs, the sites have similar habitat management objectives for maintaining and restoring open, mature longleaf pine forests through frequent prescribed burning and silvicultural practices. The mission compatible goals have been established as 133 active clusters on Fort Polk and 68 active clusters on Peason Ridge (Stout, 2003).

The LPS, has experienced population declines due to the loss and fragmentation of native longleaf and shortleaf pine forests in recent decades. Historic and current threats to the LPS include decline in quality and quantity of longleaf pine habitat due to logging, suppression of fire and short-rotation silviculture, as well as vehicle-related mortality on roads and off road trails. The Louisiana pine snake spends most of its time underground and is generally associated with open pine forest habitat with an herbaceous understory and sandy, well-drained soils. The Baird's pocket gopher comprises an essential component of Louisiana pine snake habitat. Up to 90 percent of snake telemetry locations have shown snakes in or adjacent

to pocket gopher burrows and movement patterns are typically from one pocket gopher burrow system to another. Additionally, the Baird's pocket gopher is thought to be the snake's primary prey item (Stout, 2004a). The HMU currently contains 22,882 on Fort Polk and 5,641 acres on Peason Ridge.

3.3 Human Uses and Values

3.3.1 Cultural Resources

The land comprising Fort Polk has been used by humans for at least 12,000 years. Evidence of human activity dating to the Paleoindian period (12,500-10,000 years before present), the earliest period of prehistory in North America, has been recovered from a number of archeological sites on the installation. A notable occurrence within the lower Mississippi Valley during the late Mississippian Period (1,200 - 300 years Before Present) was the emergence of complex chiefdoms with regional ceremonial centers. On the basis of numerous archeological finds from this period, archeologists have determined that the Fort Polk region was on the fringes of two distinct cultural groups, the Caddoan and the Atakapa. Initial European contact in the Fort Polk area occurred in 1542, when surviving members of the De Soto party, searching for an overland route to Mexico, appear to have encountered Caddoan groups in the general northwestern Louisiana area (Anderson and Smith 1999).

Fort Polk is rich in archaeological resources. Nearly 100 percent of the accessible terrain on the installation (approximately 197,144 acres) has been intensively surveyed for archeological sites. Of the more than 4,000 archeological sites identified on the installation, 370 of them are protected and classified as eligible or potentially eligible for listing on the National Register of Historic Places.

Fort Polk also has a large deposit of Miocene fossils uncovered during earth-moving activities. Since there was no precedent for managing such resources at Fort Polk, the ENRMD has integrated Miocene fossils into cultural resources management even though they are considered to be natural rather than cultural resources. Although there are separate laws protecting paleontological and archeological resources, their management and curation requirements are essentially identical.

3.3.2 Outdoor Recreation

The United States Army, State of Louisiana and the US Fish and Wildlife Service jointly manage about 140,000 acres on Fort Polk and Peason Ridge as wildlife management areas. These areas are open to the public when not conflicting with the military mission. During JRTC training, 75-90% of these areas may be closed to the public. Also, areas containing unexploded ordnance or sensitive equipment are permanently closed for hunting and fishing.

Hunting is the principle natural resources-based outdoor recreation program at Fort Polk. The popularity of the sport can be attributed to Fort Polk's quality game management. The installation has over 10,000 person-days of hunting each year. Deer hunting comprises the

majority of hunting trips afield. White-tailed deer, turkey and squirrel are the most popular species to hunt. Bobwhite quail, dove and feral hog hunting are also popular; while rabbit, woodcock and duck are of minor interest. Data on permits issued and hunter trips are kept by the ENRMD. Information is taken from written reports of the Game Enforcement Branch.

There are approximately 2,000 person-days of fishing per year. For serious anglers, the large lake afforded by the Fort Polk Toledo Bend Recreation Area is more appealing. Fishing activities on the installation focus particularly on streams, Alligator Lake, Catfish Cove and the two Marion Bonner Lakes. The installation has nine ponds and lakes available for fishing (67 acres). Engineer Lake, Marion Bonner Lakes, Catfish Cove and Alligator Lake are specifically managed for fishing, although all other lakes are stocked regularly. Largemouth bass, bluegill and channel catfish are stocked and maintained through standard fisheries management techniques. ENRMD determines harvest guidelines based on survey data.

Other recreational activities include hiking, photography, jogging, gathering forest products, nature study and outdoor recreational vehicle use. These activities are conducted on a limited and seasonal basis. An Outdoor Recreation Plan (Gene Stout and Associates 2003) emphasizes these other activities.

Chapter 4: Environmental Consequences and Mitigation

4.1 Introduction

This chapter analyzes the environmental consequences of implementing each alternative described in chapter two. The environmental consequences, or environmental impacts, will be categorized into three broad areas: direct, indirect and cumulative. These "effect" categories will form the basis of the effects analysis in this chapter.

Direct effects, as defined by the Council on Environmental Quality, are those that are caused by the action and occur at the same time and place. Indirect effects are those which are caused by the action and are later in time or farther removed in distance. Cumulative effects are those that result from the incremental impact of the action when added to other past, present and reasonably foreseeable future actions. Cumulative impacts can result from individually minor but collective actions taking place over a period of time.

The objective of the JRTC and Fort Polk's natural resource management is to support the military mission by providing for the sustained use of its land; protecting valuable natural resources for future generations; meeting all legal requirements and promoting compatible multiple use of those resources.

The effects analysis area consists of Peason Ridge impact area, where treatments would be implemented, as well as adjacent lands since treatments can have an indirect and cumulative effects on nearby and downstream areas (e.g., spray drift, erosion and runoff into streams, mobile species moving in and out of the area, etc.). The temporal scale of analysis is the next

10 years since that is the anticipated length of time for which a decision based on this analysis would be relevant.

Peason Ridge restricted area (8,250 acres) is used for large caliber live-fire exercises and is off limits to natural resource management and public recreation due to unexploded ordinance (UXO). As a result of this intended use, any natural resources within the area are at risk from the hazards associated with the training mission.

A summary of the potential environmental consequences by alternative can be found in Table 2. A summary of mitigation actions that would be implemented can be found in Table 3.

4.2 Alternative 1 – No Action Alternative

Under the no action alternative, obstructed LoS would be allowed to persist at Peason Ridge training area, and continue to worsen. There would be no use of herbicides to remove trees at Peason Ridge impact area. With no action the obstructing trees would not be removed, and LoS would not be achieved. Adoption of the no action alternative would not meet the objective of achieving and maintaining LoS in the Peason Ridge training area; which would have negative effects on the JRTC and Fort Polk training mission.

4.2.1 Valued Environmental Components

There would be no change in effects on soil and water resources, nontarget species or human health and safety under this alternative. The no action alternative is the status quo, or the current state of the affected environment discussed in the previous chapter, and the baseline for determining the effects associated with the action alternatives described below.

4.3 Alternative 2 (preferred) – Rotary-wing Aerial Herbicide Application

Herbicides would be applied aerially using a rotary-wing aircraft to remove trees at Peason Ridge impact area. Use of aerially applied herbicides is required due to human safety hazards associated with UXO within the impact area; where the trees are obstructing LoS. Rotary-wing aircraft application is preferred because this allows greater precision and control, due to GPS and maneuverability, of where the herbicides are applied; including avoiding streamside management zone (SMZ) buffers around streams.

Under this alternative, LoS would be accomplished and maintained at Peason Ridge impact area. With this action the obstructing trees would be removed, and LoS would be achieved. Adoption of this action alternative would meet the objective of achieving and maintaining LoS in the Peason Ridge training area; which would enhance and support the JRTC and Fort Polk training mission.

4.3.1 Valued Environmental Components

4.3.1.1 Soil and Water

This section includes potential effects associated with the soil, wetland and water resources collectively referred to in this analysis as the soil and hydrologic environment.

Table 2 - Impact Summary

Issues		Alternative 1: No Action	Alternative 2 (preferred): Rotary-wing Aerial Herbicide Application*	Alternative 3: Fixed-Wing Aerial Herbicide Application
Achieve and Maintain LOS		Does not meet purpose and need	Effectively meets purpose and need	Effectively meets purpose and need
Nontarget Species Impacts	T&E Species	No net change	Insignificant	Insignificant
	Mammals	No net change	Potential minor impacts	Potential minor impacts
	Birds	No net change	Insignificant	Insignificant
	Fish	No net change	Potential moderate impacts	Potential moderate impacts
	Amphibians	No net change	Potential moderate impacts	Potential moderate impacts
	Aquatic Invertebrates	No net change	Potential moderate impacts	Potential moderate impacts
	Plants	No net change	Potential moderate impacts	Potential moderate impacts
Surface Water Contamination		No net change	Potential minor impacts	Potential moderate impacts
Soil Erosion		No net change	Potential minor impacts	Potential moderate impacts
Human Health and Safety Impacts		No net change	Insignificant	Insignificant
Cultural Resources Impacts		No net change	Insignificant	Insignificant
Overall		No net change	Minor impacts	Moderate impacts

*with mitigation measures

Table 3 - Mitigation Summary

Issues		Alternative 1: No Action	Alternative 2 (preferred): Rotary-wing Aerial Herbicide Application	Alternative 3: Fixed-Wing Aerial Herbicide Application
Nontarget Species Impacts	T&E Species	Not Applicable	Timing	Timing
	Mammals	Not Applicable	Timing	Timing
	Birds	Not Applicable	Timing	Timing
	Fish	Not Applicable	200' SMZ Buffers, avoid drift (e.g., wind speed less than 8 miles per hour, no low level inversion conditions, proper spray equipment, etc.--as indicated on the herbicide labels), timing	Attempt 200' SMZ Buffers, avoid drift (e.g., wind speed less than 8 miles per hour, no low level inversion conditions, proper spray equipment, etc.--as indicated on the herbicide labels), timing
	Amphibians	Not Applicable	200' SMZ Buffers, avoid drift (e.g., wind speed less than 8 miles per hour, no low level inversion conditions, proper spray equipment, etc.--as indicated on the herbicide labels), timing	Attempt 200' SMZ Buffers, avoid drift (e.g., wind speed less than 8 miles per hour, no low level inversion conditions, proper spray equipment, etc.--as indicated on the herbicide labels), timing
	Aquatic Invertebrates	Not Applicable	200' SMZ Buffers, avoid drift (e.g., wind speed less than 8 miles per hour, no low level inversion conditions, proper spray equipment, etc.--as indicated on the herbicide labels), timing	Attempt 200' SMZ Buffers, avoid drift (e.g., wind speed less than 8 miles per hour, no low level inversion conditions, proper spray equipment, etc.--as indicated on the herbicide labels), timing
	Plants	Not Applicable	200' SMZ Buffers, avoid drift (e.g., wind speed less than 8 miles per hour, no low level inversion conditions, proper spray equipment, etc.--as indicated on the herbicide labels), timing	Attempt 200' SMZ Buffers, avoid drift (e.g., wind speed less than 8 miles per hour, no low level inversion conditions, proper spray equipment, etc.--as indicated on the herbicide labels), timing
Surface Water Contamination		Not Applicable	200' SMZ Buffers, avoid drift (e.g., wind speed less than 8 miles per hour, no low level inversion conditions, proper spray equipment, etc.--as indicated on the herbicide labels), timing	Attempt 200' SMZ Buffers, avoid drift (e.g., wind speed less than 8 miles per hour, no low level inversion conditions, proper spray equipment, etc.--as indicated on the herbicide labels), timing
Soil Erosion		Not Applicable	200' SMZ Buffers, avoid drift (e.g., wind speed less than 8 miles per hour, no low level inversion conditions, proper spray equipment, etc.--as indicated on the herbicide labels), timing	Attempt 200' SMZ Buffers, avoid drift (e.g., wind speed less than 8 miles per hour, no low level inversion conditions, proper spray equipment, etc.--as indicated on the herbicide labels), timing
Human Health and Safety Impacts		Not Applicable	Certified applicator	Certified applicator
Cultural Resources Impacts		Not Applicable	Not Applicable	Not Applicable

The discharge of pesticides into or near State water bodies is regulated by the National Pollutant Discharge Elimination System (NPDES) under the Clean Water Act (CWA), which is administered by the Louisiana Department of Environmental Quality (LDEQ) for the US Environmental Protection Agency (US EPA). This requires that such activities be covered by a permit from LDEQ. The Office of the Staff Judge Advocate for JRTC and Fort Polk has made the determination that the proposed action is not covered by the General Permit process and requires authorization under the LDEQ's Individual Permit process (Appendix C).

Spraying herbicides inevitably results in the deposition of herbicide residues in soil. Once in the soil, herbicides can migrate via gravity, leaching and surface runoff to other soils, groundwater or surface water. To determine the level of risk from the accumulation of herbicide residues in soils, information such as persistence, residue mobility and mechanisms for degradation were reviewed. Factors influencing herbicide persistence include pH, leaching potential, soil moisture content, amount of organic matter in the soil, microorganisms present in the soil and molecular binding of chemicals to organic and soil particles.

The persistence of herbicides is defined by the length of time that residues from an application remain active in the soil. A concept known as degradation half-life time (DT50) is commonly used to measure persistence. DT50 is the period of time it takes for 50 percent of an applied herbicide to degrade to relatively harmless components. With degradation half-life times of: 1. Glyphosate – 100 to 1,000 days, 2. Imazapyr – 250 to 2,975 days and Saflufenacil – 15 to 80 days the three herbicides proposed for use on Peason Ridge impact area have substantial persistence in soil (Borggaard and Gimsing 2008, Camargo et al. 2013, Vereecken 2005 and Vizantinopoulos and Lolos 1994). Soil microbes, chemical reactions triggered by sunlight, water and air degrade each of the herbicides proposed for use.

Glyphosate is a broad-spectrum, nonselective, post-emergent systemic herbicide used to control a variety of grasses, broadleaf weeds, vines and brush species. Glyphosate can bind to soil particles under favorable conditions, limiting its movement in the environment. Favorable conditions for adsorption include: high aluminum and iron oxide content, low pH, high nonsilicate clay content and low phosphate content (Borggaard and Gimsing 2008). These conditions are common for the soil series (Corrigan and Kisatchie series) generally found within the Peason Ridge impact area. If bound to soil particles, glyphosate is less likely to enter ground or surface water through runoff, except when the soil itself is washed away through erosion. Once bound to soil, glyphosate degrades much more slowly (Borggaard and Gimsing 2008). Glyphosate is degraded primarily by microbial metabolism, and the primary factor effecting degradation time in soil is microbial activity. Peason Ridge soils commonly have low soil microbe activity. The main metabolite (degradation product) is a nontoxic acid. The half-life of glyphosate in soils is highly variable, but the minimum DT50s in soils similar to Peason Ridge range from 12-18 months. There is very little information suggesting that glyphosate would be harmful to soil organisms under field conditions, and some information indicates that glyphosate is likely to have no effect on soil microorganisms.

Imazapyr is a broad-spectrum, nonselective, pre- and post-emergent systemic herbicide used to control a variety of grasses, broadleaf weeds, vines and brush species. The adsorption properties of imazapyr are similar to those of glyphosate detailed above. High aluminum and iron oxide content, low pH, high nonsilicate clay content and low phosphate content all contribute to high adsorption and reduced degradation rates. However imazapyr is considerably more persistent than glyphosate. Microbial metabolism is also the main mechanism of degradation for imazapyr.

Saflufenacil, a more recently developed herbicide, is a more selective pre- and post-emergent systemic herbicide used to control a variety of broadleaf weed species. Because it is relatively new and still subject to patent protection there have been few independent studies and therefore less is known about this compound than either of the other two herbicides proposed for use. The adsorption properties of saflufenacil are somewhat different than those of glyphosate and imazapyr detailed above. Primarily high organic and humic matter, and secondarily low pH and high clay content contribute to high adsorption and reduced degradation rates. Saflufenacil is considerably less persistent than both glyphosate and imazapyr. However, microbial metabolism is also the main mechanism of degradation for saflufenacil.

Due to the soil properties of the treatment area previously discussed, there is a low risk of the herbicides migrating to surface or groundwater. The primary concern is soil erosion associated with the loss of vegetation. In order to mitigate for this concern, stream buffers where herbicides will not be sprayed will be established and maintained. These buffers will remain vegetated and therefore trap any contaminated soil erosion that might occur during heavy precipitation events, reducing entry into streams and decreasing downstream movement.

Over the short-term, direct and indirect impacts of the proposed action in this alternative would have low negative effects on soil and water resources. Any impacts of the proposed action on soil and water at this site is expected to be relatively short in duration and of low magnitude.

The area of cumulative effects analysis are the two west-central Louisiana parishes that contain the Peason Ridge training area: Vernon and Sabine. This includes watersheds downstream from the proposed action treatment area. The temporal scale of analysis is five years previous and 10 years into the future from this decision. Five years in the past coincides with the point in time at which LoS management became a higher priority on Peason Ridge impact area; 10 years into the future is the anticipated length of time for which a decision based on this analysis would be relevant.

For alternative 2 (the preferred action with mitigation measures) application conditions (e.g., weather, stream buffers), season of application (June 15-July 15) and operator training would be carefully controlled to reduce any negative impacts on soil and water resources.

The negative effects are expected to be low, and thus would have little or no incremental effect when combined with the impacts of other past, present and reasonably foreseeable future activities.

4.3.1.2 Plants and Plant Communities

All of the herbicides proposed in this alternative are capable of killing or injuring plants. Over long-term use herbicides do leave residues in the soil. For all herbicides proposed, residual soil contamination appears to have minimal impacts to soil biota (Borggaard and Gimsing 2008, Camargo et. al. 2013); however, for imazapyr and saflufenacil there can be residual toxicity to plants especially in dry areas with high clay content where soil microbes are primarily responsible for breaking down the residues. This is not likely to be a concern except in some of the driest, high clay content soil types.

Five factors can greatly influence the degree to which herbicides can harm nontarget plants: 1) application method, 2) application conditions, 3) season of application, 4) choice of herbicide (based on selectivity) and 5) operator training.

1) Aerial broadcast spraying is the least selective application method, and involves some drift. In order to safely treat these areas this application method is required. Herbicide labels provide chemical specific application requirements regarding wind and rain, which limit impacts due to drift and runoff.
2) Weather conditions can affect the potential for herbicides to impact nontarget plants. Windy days increase spray drift, and heavy rainfall can wash herbicides off treated plants and carry them in surface runoff to nontarget plants. Further, weather conditions can also affect the effectiveness of herbicides. Herbicide labels provide chemical-specific application requirements regarding wind and rain, and applicators are required by law to follow the requirements on the herbicide label. These requirements are intended to minimize the risk of drift and runoff via wind and water. However, following the label does not eliminate drift, and some herbicides and equipment are more prone to drift than others, particularly when using the aerial broadcast spray method.
3) Applying herbicide during the growing season can kill or injure nontarget plants if the application method and compounds are not highly selective. Additionally, the effectiveness of the herbicide in killing the target species is also affected by the season of application.
4) Some herbicides are more selective than others. Selection of herbicides that are effective against target species, but have limited effects on nontarget species is a common mitigation practice to reduce the negative impacts of herbicide use. Application of selective herbicides would leave more of the nontarget, native vegetation unaffected than non-specific herbicides such as glyphosate and imazapyr. Herbicide selection is of particular importance for aerial broadcast spraying, which presents a greater risk of impacts to nontarget vegetation through drift than other types of

application. The herbicides proposed for use include glyphosate and imazapyr, which are non-selective; and saflufenacil which targets broad-leaved plants. Mitigation measures including the strict adherence to herbicide label directions and streamside management zone (SMZ) buffers are expected to keep the terrestrial application of herbicides out of water. As a result, no direct or indirect effects to aquatic vegetation are expected.

5) All herbicide applicators would be licensed pesticide applicators. All licensed applicators will have the appropriate state-issued pesticide certifications and/or licenses.

Over the short-term, direct and indirect impacts of the proposed action in this alternative will have significant effects on the diversity of plant communities and their functioning within the impact area. In this case target and nontarget plant species will be impacted and many will be killed as a result. With herbicide label requirements and mitigation measures (surface water buffer zones) aerial broadcast spraying would have direct impacts on plant species limited to the treatment area. Indirect effects would result from the transition of the plant community from a forested area to an open field and eventually a scrub/shrub community. Any impacts of the proposed action on plant communities at the application site is not likely to affect species viability, the abundance or distribution of suitable habitat or community diversity within the local or regional area. Therefore, the overall medium to longer term (3-10 years) negative effects are expected to be minimal.

The area of cumulative effects analysis are the two west-central Louisiana parishes that contain the Peason Ridge training area: Vernon and Sabine. This includes watersheds downstream from the proposed action treatment area. The temporal scale of analysis is five years previous and 10 years into the future from this decision. Five years in the past coincides with the point in time at which LoS management became a higher priority on Peason Ridge impact area; 10 years into the future is the anticipated length of time for which a decision based on this analysis would be relevant.

For alternative 2 (the preferred action with mitigation measures) application conditions (e.g., weather, surface water buffers), season of application (June 15-July 15) and operator training would be carefully controlled to reduce any negative impacts on nontarget plants and natural communities.

The overall medium to longer term (3-10 years) negative effects are expected to be minimal, and thus would have little or no incremental effect when combined with the impacts of other past, present and reasonably foreseeable future activities.

4.3.1.3 Wildlife

It is important to provide the effects of the proposed action on wildlife because there is general concern that the use of herbicides can cause negative impacts to wildlife such as game species, fish, birds, beneficial insects (e.g. pollinators) and herptofauna; including T&E species. For this

reason, this section includes an assessment of the potential effects of the proposed action on wildlife within and around the Peason Ridge impact area.

The measurement indicator selected to address the issues related to herbicides impacts on wildlife includes the level of risk based on a quantified risk assessment using a hazard quotient (HQ). The HQ is calculated as the level of exposure (dosage) divided by the no observed adverse effect level (NOAEL) toxicity values, or some other reference dose (RfD) of interest; such as the no observed effects level (NOEL), lethal dosage to 50% of the test population (LD50), ect. (USEPA/OPP 1993a, b). The level of concern (LoC) threshold is a hazard quotient (HQ) of 1, indicating the exposure level equals the NOAEL. A HQ of 2 indicates the exposure level is twice the NOAEL, and so on. A HQ less than 1 indicates the exposure to the herbicide is less than the NOAEL and therefore would pose a low risk and thus an acceptable level of concern (Tables 4-7).

Aerial broadcast applications of herbicides could expose wildlife to chemicals through direct contact (absorbed through the skin) with herbicide spray, recently treated foliage or other species. Wildlife could be orally exposed to herbicides by ingesting treated foliage, insects or other prey in sprayed areas or drinking water from aquatic sites contaminated with herbicides thru drift or runoff. Chemical specific quantitative risk assessments indicate that there is a low to moderate probability of these types of exposure causing measurable adverse effects. Most central expected environmental concentration (EEC) exposure HQs are below the threshold LoC (less than 1) except for aquatic species and some insects. In other cases little data exists to determine HQs (imazapyr with some aquatic species and saflufenacil for all groups of animals). In both of these instances, proper procedures would be followed to minimize any negative effects caused by project implementation. In the case of LoC threshold exceedance, project implementation requires safety measures to be followed as well as adherence to product label directions (herbicide use mitigation measures, Table 3). In the case where there is minimal data, not enough information currently exists to provide an accurate HQ for NOAEL and thus disclosure of negative impacts. Based upon the lack of information and investigation into the negative effects associated with these EPA registered chemical herbicides, it can be implied that limited application of these chemicals would have a similarly limited negative impact on wildlife populations within the Peason Ridge impact area.

Herbicide toxicity data are presented in Tables 4-7 for aquatic, avian and terrestrial invertebrate species, as well as mammalian species. The data suggest that the herbicides proposed for use generally pose low risk to mammals, birds and other wildlife if used in accordance with the manufacturer label and with mitigation measures. None of the proposed herbicides are cholinesterase inhibitors, such as organophosphate or carbamate insecticides (or chemically related to such insecticides) that are highly toxic to wildlife, especially insects and other invertebrates. None of the proposed herbicides are chemically related to the chlorinated hydrocarbon insecticides such as DDT (Dichlorodiphenyltrichloroethane) that are highly

Table 4 - Summary of Hazard Quotients (Toxicity) for Mammals

Accord XRT II (glyphosate)

Application Rate:	7 lb a.e./acre			
Scenario / Receptor	Hazard Quotients*			Toxicity Value**
	Central	Lower	Upper	
Non-Accidental Acute Exposures				
Ingest Contaminated Vegetation				
Sm. Mammal	0.6	0.2	1.6	175
Lg. Mammal	0.7	0.3	**2.1**	175
Ingest Contaminated Insects				
Sm. Mammal	0.9	0.3	**2.8**	175
Ingest Contaminated Sm. Mammal				
Carnivore	0.08	0.08	0.08	175
Chronic/Longer Term Exposures				
Ingest Contaminated Vegetation				
Sm. Mammal	0.0008	0.0002	0.003	175
Lg. Mammal	0.04	0.004	0.3	175

*Level of Concern (LoC) = 1

**NOAEL (in mg a.e./kg bw for acute exposures and mg a.e./kg bw/day for chronic exposures) from US EPA/OPP 2008.

Arsenal AC (imazapyr)

Application Rate:	0.5 lb a.e./acre			
Scenario / Receptor	Hazard Quotients*			Toxicity Value**
	Central	Lower	Upper	
Non-Accidental Acute Exposures				
Ingest Contaminated Vegetation				
Sm. Mammal	0.1	0.01	0.5	738
Lg. Mammal	0.01	0.001	0.1	738
Ingest Contaminated Insects				
Sm. Mammal	0.01	0.001	0.1	738
Ingest Contaminated Sm. Mammal				
Carnivore	0.005	0.005	0.005	250
Chronic/Longer Term Exposures				
Ingest Contaminated Vegetation				
Sm. Mammal	0.04	0.002	0.2	738
Lg. Mammal	0.005	0.0003	0.03	738

*Level of Concern (LoC) = 1

**NOAEL (in mg a.e./kg bw for acute exposures and mg a.e./kg bw/day for chronic exposures) from US EPA/OPP 2007.

Table 5 - Summary of Hazard Quotients (Toxicity) for Birds

Accord XRT II (glyphosate)

Application Rate:	7 lb a.e./acre			
Scenario	Receptor	Hazard Quotients*			Toxicity Value**
		Central	Lower	Upper	
Non-Accidental Acute Exposures					
Ingest Contaminated Vegetation					
	Lg. Bird	0.4	0.1	1.1	540
Ingest Contaminated Insects					
	Sm. Bird	0.5	0.2	1.5	540
Ingest Contaminated Sm. Mammal					
	Carnivore	0.04	0.04	0.04	540
Chronic/Longer Term Exposures					
Ingest Contaminated Vegetation					
	Lg. Bird	0.2	0.03	**2.2**	43

*Level of Concern (LoC) = 1

*NOAEL (in mg a.e./kg bw for acute exposures and mg a.e./kg bw/day for chronic exposures) from USDA/Forest Service 2011.

Arsenal AC (imazapyr)

Application Rate:	0.5 lb a.e./acre			
Scenario	Receptor	Hazard Quotients*			Toxicity Value**
		Central	Lower	Upper	
Non-Accidental Acute Exposures					
Ingest Contaminated Vegetation					
	Lg. Bird	0.008	0.0009	0.04	2510
Ingest Contaminated Insects					
	Sm. Bird	0.009	0.0009	0.04	2510
Ingest Contaminated Sm. Mammal					
	Carnivore	0.0006	0.0006	0.0006	2510
Chronic/Longer Term Exposures					
Ingest Contaminated Vegetation					
	Sm. Bird	0.01	0.007	0.7	610

*Level of Concern (LoC) = 1

*NOAEL (in mg a.e./kg bw for acute exposures and mg a.e./kg bw/day for chronic exposures) from US EPA/OPP 2007.

Table 6 - Summary of Hazard Quotients (Toxicity) for Aquatic Species

Accord XRT II (glyphosate)

Application Rate:	7	lb a.e./acre		
Exposures		**Concentrations** (mg/L)		
	Scenario	**Central**	**Lower**	**Upper**
	Peak EEC	0.077	0.009	0.581
	Chronic	0.0013	0.0006	0.0406

Receptor	**Hazard Quotients***			**Toxicity Value****
	Central	**Lower**	**Upper**	
Non-Accidental Acute Exposures				
Fish	1.6	0.2	**12**	0.048
Amphibian	1.9	0.2	**15**	0.04
Invertebrate	1.0	0.1	**7.7**	0.075
Macrophyte	0.9	0.1	**7.1**	0.082
Algae	0.9	0.1	**7.1**	0.082
Chronic/Longer Term Exposures				
Fish	0.03	0.01	0.8	0.048
Amphibian	0.03	0.02	1.0	0.04
Invertebrate	0.02	0.008	0.5	0.075
Macrophyte	0.02	0.008	0.5	0.082
Algae	0.02	0.008	0.5	0.082

*Level of Concern (LoC) = 1

**NOAEC (in mg a.e./L for acute and chronic exposures) from USDA/Forest Service 2011a.

Arsenal AC (imazapyr)

Application Rate:	0.5	lb a.e./acre		
Exposures		**Concentrations** (mg/L)		
	Scenario	**Central**	**Lower**	**Upper**
	Peak EEC	0.01	0.000005	0.13
	Chronic	0.004	0.000002	0.06

Receptor	**Hazard Quotients***			**Toxicity Value****
	Central	**Lower**	**Upper**	
Non-Accidental Acute Exposures				
Fish	0.001	0.0000004	0.01	10.4
Amphibian		No Data		n/a
Invertebrate		No Data		n/a
Macrophyte	**3**	0.002	**43**	0.003
Algae	0.001	0.000001	0.02	7.6
Chronic/Longer Term Exposures				
Fish	0.001	0.0000004	0.02	4
Amphibian		No Data		n/a
Invertebrate		No Data		n/a
Macrophyte	1	0.0005	**20**	0.003
Algae	0.001	0.0000002	0.001	7.6

*Level of Concern (LoC) = 1

**NOAEC (in mg a.e./L for acute and chronic exposures) from USDA/Forest Service 2011b.

Table 7 - Summary of Hazard Quotients (Toxicity) for Insects

Accord XRT II (glyphosate)

Application Rate:	7 lb a.e./acre				
Food Item	Receptor	Hazard Quotients*			Toxicity Value**
		Central	Lower	Upper	
Acute Exposures					
Fruit/Large Insects	Insect	0.2	0.03	0.5	430
Broadleaf/Small Insects	Insect	1	0.2	**4.8**	430
Short Grass	Insect	1.8	0.3	**8.6**	430
Long Grass	Insect	0.8	0.1	**3.9**	430

*Level of Concern (LoC) = 1

**NOAEL (in mg a.e./kg bw for acute exposures) from USDA/Forest Service 2011a.

Arsenal AC (imazapyr)

Application Rate:	0.5 lb a.e./acre				
Food Item	Receptor	Hazard Quotients*			Toxicity Value**
		Central	Lower	Upper	
Acute Exposures					
Fruit/Large Insects	Insect	0.01	0.001	0.02	860
Broadleaf/Small Insects	Insect	0.03	0.01	0.2	860
Short Grass	Insect	0.1	0.01	0.3	860
Long Grass	Insect	0.03	0.004	0.1	860

*Level of Concern (LoC) = 1

**NOAEL (in mg a.e./kg bw for acute exposures) from USDA/Forest Service 2011b.

persistent in the environment and known for causing eggshell thinning of raptors (birds of prey) such as bald eagles, peregrine falcons and goshawks.

Even for herbicide formulations regarded as posing toxicological and environmental risk, proper application in strict accordance with the manufacturer label and using mitigation measures is critical to minimize environmental effects (herbicide use mitigation measures, Table 3). Herbicide solutions would be mixed at appropriate locations to eliminate the potential for spills in natural areas. Spray equipment would be inspected prior to use to minimize the potential for leaks or misapplication due to malfunctions. Adjuvants would only be used as specified by herbicide label directions.

For prior projects in Redleg impact area (Appendix C), due to the presence of threatened and endangered species, a Biological Evaluation that determined the project was not likely to adversely affect either RCW or LPS was submitted to the USFWS. The USFWS concurred with this decision for treatments during FYs 2017-2020. During and after these projects personnel documented that the methods and materials used successfully killed most of the target species (mature pine trees); while no obvious adverse effects were observed. However no formal monitoring plan or herbicide residue analysis was implemented.

This section summarizes key findings and determinations of the Peason Ridge aerial herbicide Biological Assessment/Biological Evaluation (Appendix B) for endangered species within Peason Ridge impact area. The Endangered Species Act (ESA) requires that each federal agency insure that agency action is not likely to jeopardize the continued existence of any endangered or threatened species or will not result in the destruction or adverse modification of the species' critical habitat (ESA 1536 (a) (2)). Likewise, the JRTC and Fort Polk Endangered Species Management Plan requires review of programs and activities as part of the NEPA process through a biological evaluation, to determine their potential effect on listed species (AR 200-2 and AR 200-3 section 11-2 (a-e)). The Biological Evaluation (BE) presents the analysis of potential effects of the proposed action on threatened or endangered (T&E) species and other sensitive species, which is a DoD/Army designation meant to identify and conserve habitats for rare species in order to avoid federal listing as threatened or endangered. Additional details on these species are also located in the BE conducted for the INRMP Plan and the ESMC.

The project BE assessed potential effects to two federally listed T&E species under the ESA for the JRTC and Fort Polk: red-cockaded woodpecker (RCW, *Picoides borealis*), and the Louisiana pine snake (LPS, *Pituophis ruthveni*). RCW and LPS are known to occur on and in the vicinity of, the JRTC and Fort Polk.

The treated trees would die, likely rendering them unsuitable for nesting, and they would eventually fall and be removed from the forest canopy structure. The effects, while slow to take action, would be similar to those occurring from training-related fires or munition explosions. Therefore, the effects, while additive, would be similar to the effects described in

the ESMC BA and FWS 2012 BO and will be addressed according to the BO. That BO assumed that all of the RCW in the impact areas could be taken due to training related activities. According to the 2012 BO, the Service anticipated incidental take of 27 adult RCWs (9 groups), and 27 nestlings (9 nests). According to the BO, within impact areas, each time there is the removal or destruction of 200 acres of potential RCW habitat, the incidental taking of 3 RCW adults (1 group) and 3 RCW nestlings/eggs (1 corresponding nest) will be documented. Take is assumed to occur in form of harm due to cavity tree or foraging habitat damage/destruction due to munitions explosions and resulting fires.

Since the time of the 2012 FWS BO for the 2011 ESMC, there has been no known take of RCWs within the Peason Ridge Impact area based on the assumed rate of 27 adult RCWs (9 groups), and 27 nestlings (9 nests) taken per 200 acres of potential habitat destroyed. According to the 2012 BO, the Service anticipated incidental take of 27 adult RCWs (9 groups), and 27 nestlings (9 nests). Therefore the level of incidental take expected has not been exceeded.

Based on current detailed GIS analysis of the two Impact Areas, 1145 acres of RCW habitat will be removed from the spraying. Based on the 200 acre formula found in the 2012 BO a total of 18 adult RCWs (6 groups) and 18 nestlings are expected to be incidentally taken. The level of incidental take allowed by the 2012 BO would not be exceeded and is therefore compliant with the Terms and Conditions (numbers 5, 6; 2012 BO) relevant to incidental take authorization. In compliance with the FWS 2012 BO, the Army will install 3 artificial nesting cavities within suitable unoccupied habitat for every 200 acres of potential RCW habitat removed from within the impact areas.

The effects of the proposed aerial herbicide spraying have not been addressed regarding the Louisiana pine snake in the evaluation of the 2011 ESMC or the similar 2020 ESMC or the 2016 LPS CO.

The area being treated is located on land with suitable, preferred and unsuitable soil. Forest areas of a few hundred acres each year over a four year period would be treated by aerial herbicide spraying. The canopy trees, midstory trees, shrubs and understory vegetation would be affected. Reduction of tree canopy would likely allow more light to reach the forest floor. This would potentially enhance the growth of the remaining understory and mitigate the temporary loss of that vegetation community. The Louisiana pine snake is dependent upon the Baird's pocket gopher (BPG) as a primary prey item. The BPG forages on herbaceous vegetation in the forest understory. Because the treatments will be conducted over four years, the herbaceous vegetation will have time to regrow in the treated areas as subsequent areas are treated. This loss of herbaceous vegetation would be temporary and there would be suitable habitat for the BPG and the LPS nearby because the forests are being managed beneficially for the RCW and LPS.

Based on the Wagner Soil Model (Wagner et al. 2014, ESMC) for suitable soils for the BPG, the Eastern Impact Area has only 61.5 acres of suitable soils. Nearly all the suitable soil found in

the impact area is located on the boundary of the impact area (See Map). If LPS are found in these suitable areas on the spray boundary there should be no problem for the LPS to move outside the spray area.

The Western Impact Area has 32.2 acres of suitable LPS soils. As with the Eastern Impact Area most of the suitable soils are found on the boundary. There is one pocket of suitable soil found in the middle of the Impact Area, but it is located in a large creek bottom unsuitable for the LPS and will not be sprayed, because of its location.

The impacts to LPS would be minor, temporary and LPS are not likely to be present in over 90% of the project area; therefore we have determined that the project is not likely to adversely affect the LPS.

Over the short-term, direct and indirect impacts of the proposed action in this alternative would have moderate negative effects on aquatic species and minor negative effects on terrestrial wildlife communities and populations. Any impacts of the proposed action on wildlife communities at this site is not likely to affect species viability, the abundance or distribution of wildlife or natural community diversity within the regional area.

The area of cumulative effects analysis are the two west-central Louisiana parishes that contain the Peason Ridge training area: Vernon and Sabine. This includes watersheds downstream from the proposed action treatment area. The temporal scale of analysis is five years previous and 10 years into the future from this decision. Five years in the past coincides with the point in time at which LoS management became a higher priority on Peason Ridge impact area; 10 years into the future is the anticipated length of time for which a decision based on this analysis would be relevant.

For alternative 2 (the preferred action with mitigation measures) application conditions (e.g., weather, surface water buffers), season of application (June 15-July 15) and operator training would be carefully controlled to reduce any negative impacts on wildlife communities and populations.

The negative effects on individuals are expected to be low, and thus would have little or no incremental effect when combined with the impacts of other past, present and reasonably foreseeable future activities.

4.3.1.4 Human Health and Safety Impacts

The Peason Ridge impact area is a restricted area, off limits to anyone except approved military personnel in coordination with explosive ordinance disposal (EOD) professionals. The primary reason for seeking approval for aerial spraying of herbicides to establish and maintain LoS to target arrays; is due to the extreme danger associated with ground-based activities within the area.

Given that the impact area is off limits, direct exposure of the general public to herbicides associated with the project is very low. This includes exposure to direct spray or spray drift and

contact with exposed vegetation (which has been sprayed) shortly after herbicides are applied, as well as the ingestion of vegetation, fruits or animals that have been exposed to herbicides via these routes.

The most likely, though still remote, potential for human exposure is thru contaminated water. Precipitation shortly after herbicides are applied could potentially carry herbicides into surface waters and downstream from the treatment site where people could theoretically be exposed thru contact or ingestion. As discussed above, the soils predominately found in the area are highly conducive to adsorption of the herbicides proposed for use. This makes them far less likely to be mobile in water and would require the movement of the soil by erosion to transport them into surface waters. Streamside buffer zones would greatly reduce or eliminate soil erosion from entering streams and moving downstream.

Risk assessments conducted by the US Department of Agriculture (USDA 2011a, USDA 2011b) for the US Forest Service use of herbicides, including glyphosate and imazapyr, concluded the risk to workers and the general public was minimal. Those assessments were conducted for herbicide use in areas where the general public are expected to have access to areas treated with herbicides. Given the risk to people were minimal in areas with public access, it can be surmised that the risk to people from herbicide application in Peason Ridge impact area—with no public access—would be even lower or nonexistant.

4.3.1.5 Cultural Resources Impacts

No impacts on cultural resources are anticipated.

4.4 Alternative 3 – Fixed-wing Aerial Herbicide Application

Herbicides would be applied aerially using a fixed-wing aircraft to remove trees at Peason Ridge Impact Area. Use of aerially applied herbicides is required due to human safety hazards associated with unexploded ordinance within the impact area; where the trees are obstructing LoS. Fixed-wing aircraft application is not preferred because there is far less precision and control of where the herbicides are applied; including no herbicide application buffer zones around surface waters.

Under this alternative, LoS would be achieved and maintained at Peason Ridge training area. With this action the obstructing trees would be removed, and LoS would be accomplished. Adoption of this action alternative would meet the objective of achieving and maintaining LoS in the Peason Ridge training area; which would support the JRTC and Fort Polk training mission.

4.4.1 Valued Environmental Components

The environmental consequences on soil and water resources, plants and wildlife species, human health and safety or cultural resources under this alternative would be similar in nature to those discussed above for the preferred alternative, but somewhat greater in magnitude. Because fixed-wing aerial herbicide application allows less precision and control of where the herbicides are applied, it is more likely that factors which contribute to negative impacts (e.g.,

direct application to surface water, spray drift, reduced or eliminated no herbicide application buffer zones) will occur.

4.5 Cumulative Impacts

Cumulative impacts to the environment are those that result from the incremental impact of an action when added to other past, present and reasonably foreseeable future actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

The issue of potential hazards to nontarget species, surface water contamination, soil erosion, human health and safety and cultural resources from the aerial application of herbicides is discussed below. However, no significant cumulative impacts were identified for the proposed action and none are anticipated.

Hazard Associated with Cumulative Exposure of Nontarget Species to Other (Non-project) Sources of Herbicides

4.5.1 Alternative 1: No Action Alternative

Under this alternative no management would occur. Because herbicides would not be applied, cumulative herbicide exposure is not an issue under this alternative.

4.5.2 Alternatives 2 and 3: Aerial Herbicide Application

Any nontarget species that are exposed to herbicides within Peason Ridge impact area would not likely be exposed to herbicides elsewhere on adjacent lands, or over time. Nontarget species peak exposure to herbicides within Peason Ridge impact area would be for a short period of time (from application until first major rainfall) and longer term exposures would be at low levels. After herbicides have degraded, there is little likelihood they would receive cumulative exposure on adjacent land. No known large scale broadcast use of herbicides is actively occurring on nearby lands. Field applications of herbicides nearby are generally limited to ground-based forestry and small scale home owner use, which reduce the risk of exposure to nontarget animals. Thus, nontarget species would not likely receive a cumulatively toxic dose after exposure within Peason Ridge impact area.

Conclusion

Mitigation measures have been included as part of this analysis of the proposed action. In addition, careful adherence to federal, state, military and local environmental regulations; installation processes, including spill contingency plans and pollution prevention plans; mitigation measures and mitigation effectiveness monitoring should preclude any potential regional or local significant environmental impacts associated with execution of the proposed action: aerial application of herbicides to achieve and maintain LoS.

The environmental impacts related to the proposed action are typical of aerial application of herbicides. It is expected that minimal impacts to water quality, soil resources, biological

resources, human health and safety and cultural resources could potentially occur at Peason Ridge impact area. However, these impacts would be temporary because activities would be limited in duration and area in each year of the project.

Table 3 qualitatively summarizes the impacts to each VEC of specific interest to this analysis. The impact categories are defined as follows:

• Insignificant: Impacts that occur as a result of the proposed action, however represent benign alteration of the ecosystem, local environment, community socioeconomics and do NOT impart short or long term effects on human health.

• Minor: Impacts that occur at the biologically individual or local physical environment scale and are temporary or may be easily restored or naturally remediated and do NOT present or promote change to ecosystem functions, the local and surrounding environments, community socioeconomics and human or animal health.

• Moderate: Impacts that occur at the biologically local population or physical environmental scale and are temporary or may be restored or naturally remediated and do NOT present or promote long term change to ecosystem functions, the local and surrounding environments, community socioeconomics and human or animal health.

• Significant: Impacts that directly impart long term change to the ecosystem or environment; or cause indirect or cumulative effects to the ecologically supporting populations, environment and/or economy; or present hazards to human health or ecological functions.

Based upon this analysis, it is determined that the potential impacts to the VECs would be minimal and temporary. The proposed action would not have a significant impact upon the regional environment. As a result, the preparation of an EIS is not required, and a Finding of No Significant Impact (FoNSI) has been prepared.

Agencies Consulted

United States Department of the Interior, FISH AND WILDLIFE SERVICE, 200 Dulles Drive, Lafayette, Louisiana 70506

Louisiana Department of Environmental Quality, 602 North Fifth Street, Baton Rouge, LA 70802

References

Borggaard O.K. and Gimsing A.L. 2008. Fate of glyphosate in soil and the possibility of leaching to ground and surface waters: a review. Pest Management Science 64:441-456.

Camargo E.R., Senseman S.A., Haney R.L., Guice J.B. and McCauley G.N. 2013. Soil residue analysis and degradation of saflufenacil as affected by moisture content and soil characteristics. Pest Management Science 69:1291-1297.

Department of Defense, Army. Federal Register / Vol. 67, No. 61 / Friday, March 29, 2002. 32 CFR Part 651 -- Environmental Analysis of Army Actions; Final Rule.

Federal Register Vol. 85, No. 77. Tuesday, April 21, 2020. Rules and Regulations -- The Navigable Waters Protection Rule: Definition of ‘‘Waters of the United States’’.

U.S. Environmental Protection Agency/Office of Pesticide Programs. 1993a. Reregistration Eligibility Decision (RED) for Glyphosate. EPA 738-R-93-014.

U.S. Environmental Protection Agency/Office of Pesticide Programs. 1993b. Health Effects Division's Chapter of the Reregistration Eligibility Document (RED) for Glyphosate, Case #0178.

U.S. Environmental Protection Agency/Office of Pesticide Programs. 2006. Reregistration Eligibility Decision (RED) for Imazapyr. EPA 738-R-06-007, OPP-2005-0495.

U.S. Department of Agriculture/Forest Service. 2011a. Glyphosate Human Health and Ecological Risk Assessment.

U.S. Department of Agriculture /Forest Service. 2011b. Imazapyr Human Health and Ecological Risk Assessment.

Vereecken H. 2005. Mobility and leaching of glyphosate: a review. Pest Management Science 61:1139-1122.

Vizantinopoulos S. and Lolos P. 1994. Persistence and leaching of the herbicide imazapyr in soil. Bulletin of Environmental Contamination and Toxicology 52:404-410.

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Peason Impact Area Aerial Herbicide Broadcast
Mitigation Effectiveness Monitoring Plan

Introduction
This monitoring plan was developed to evaluate potential environmental impacts related to the proposed management actions within Peason Ridge Impact Area. These management actions include: 1) Removal of vegetation obstructing Line of Site (LOS) via aerial herbicide application and 2) Ongoing maintenance of vegetation obstructing Line of Site (LOS) via aerial herbicide application. Results of this monitoring plan will inform decision makers of potential hazards regarding subsequent herbicide broadcast events and associated mitigation measures to safeguard surface water, aquatic wildlife and downstream human health and safety.

Objectives
The overarching objective of this monitoring plan is to monitor and quantify the effectiveness of mitigation measures (32 CFR Part 651 Appendix C) put in place following the Peason impact area aerial herbicide broadcast. Monitoring actions include: 1) Determine the presence and concentrations of glyphosate, imazapyr and saflufenacil herbicides in stream water and sediment,) at selected monitoring sites, 2) Evaluate potential impacts on human health by comparing concentrations to maximum contaminant levels for drinking water, as indicated by US EPA, 3) Evaluate potential impacts on aquatic life by comparing concentrations with the US EPA Aquatic Life benchmarks for fish and aquatic invertebrates and 3) Assess trends in pesticide concentrations derived from abiotic and biotic monitoring results.

Monitoring Plan
Monitoring will be conducted in Peason 6 and Cold Springs 5 training areas twice a year in January and July over the four year period of the project at four established stream monitoring sites located downstream of broadcast spray areas. Streams to be monitored are Lyles, Little Sandy, Dowden and Prairie (Control). Lyles, Little Sandy and Dowden all have potential exposure to broadcast spray chemicals whereas Prairie Creek, located outside of the spray area, represents a control site. Including a control site will allow comparison of mitigation metrics between exposed sites and non-exposed control sites. Sample frequency and location are shown within *Table 1* below.

Table 1. Sample stream name, location, and sample frequency.

Stream Name	Location (MGRS)	Sample Month(s)	Sample Year(s)
Red River Drainage			
Little Sandy	15RVQ7658071554	January and July	1, 2, 3, 4
Lyles	15RVQ7570872634	January and July	1, 2, 3, 4
Sabine River Drainage			
Dowden	15RVQ7033766483	January and July	3 & 4
Prairie (Control)	15RVQ7668257755	January and July	1, 2, 3, 4

Water and sediment samples will be collected for laboratory analysis using most current EPA approved protocols and approved laboratories for analysis. Samples will be analyzed to determine concentration of glyphosate, imazapyr and saflufenacil. Sample results will be compared to EPA

benchmarks for drinking water and aquatic health (*Table 2*). Number of samples to be collected and cost estimates provided in *Table 3* below.

Table 2. EPA Benchmarks for evaluating potential impacts of focal pesticides on human health (drinking water) and aquatic life.

Pesticide	Sediment (MCL*, mg/kg)	Water (MCL**; mg/L)	Fish‡ (µg/L)		Invertebrates‡ (µg/L)	
			Acute	Chronic	Acute	Chronic
Glyphosate	3.1	0.70	21500	25700	26600	49900
Glyphosate degradate aminomethyl phosphoric acid (AMPA)			249500		341500	
Glyphosate isopropylamine salt			34700			
Imazapyr			>50000	43100	>50000	97100
Saflufenacil			>54000	997	4250	1330

*Water MCL – Maximum contaminant level from EPA National Primary Drinking Water Regulations (https://www.epa.gov/ground-water-and-drinking-water/national-primary-drinking-water-regulations#one)

** Sediment MCL – Maximum contaminant level from EPA Soil to Groundwater – Protection of Groundwater Benchmarks [https://semspub.epa.gov/work/HQ/200059.pdf].

‡ Aquatic life benchmark for freshwater species allows comparison of pesticide in water to aquatic life benchmark. The benchmark = toxicity value x LOC. [https://www.epa.gov/pesticide-science-and-assessing-pesticide-risks/aquatic-life-benchmarks-and-ecological-risk].

Table 3. Estimated laboratory sample analysis and equipment costs.

Year	Sample type	Samples per site	Sample events	Number sites	Total samples	Analysis type	Cost per analysis	Total cost per year
1	Sediment	1	2	3	6	glyphosate	$ 615.00	$ 7,950.00
						imazapyr	$ 425.00	
						saflufenacil	$ 285.00	
	Water	1	2	3	6	glyphosate	$ 265.00	$ 5,520.00
						imazapyr	$ 390.00	
						saflufenacil	$ 265.00	
								$ 13,470.00
2	Sediment	1	2	3	6	glyphosate	$ 615.00	$ 7,950.00
						imazapyr	$ 425.00	
						saflufenacil	$ 285.00	

Year	Sample type	Samples per site	Sample events	Number sites	Total samples	Analysis type	Cost per analysis	Total cost per year
	Water	1	2	3	6	glyphosate	$ 265.00	$ 5,520.00
						imazapyr	$ 390.00	
						saflufenacil	$ 265.00	
								$ 13,470.00
	Sediment	1	2	4	8	glyphosate	$ 615.00	$ 10,600.00
						imazapyr	$ 425.00	
						saflufenacil	$ 285.00	
3	Water	1	2	4	8	glyphosate	$ 265.00	$ 7,360.00
						imazapyr	$ 390.00	
						saflufenacil	$ 265.00	
								$ 17,960.00
	Sediment	1	2	4	8	glyphosate	$ 615.00	$ 10,600.00
						imazapyr	$ 425.00	
						saflufenacil	$ 285.00	
3	Water	1	2	4	8	glyphosate	$ 265.00	$ 7,360.00
						imazapyr	$ 390.00	
						saflufenacil	$ 265.00	
								$ 17,960.00
							Total project cost all analysis	
							Equipment cost	$ 1200.00
								$ 62,860.00

Sample Collection, Preservation and Shipment

Prior to sampling; coordination with lab(s) will be necessary to ensure the appropriate procedures are followed for the collection, labeling, preservation, transport and shipment of all samples.

Three sediment samples (at least 30 g) from the top 2-cm bed layer at each sampling location will be collected into 8 oz. glass jars with teflon coated lids. Sediment will be sieved through a 2-mm sieve (to remove gravel and plant material), consolidated and homogenized. Samples will be collected from locations at each sample site with the highest suspected potential contaminant concentrations (presumably as close to herbicide treatment areas as safety will allow), in order to establish if any potential risk to surface water or downstream impacts exist. Samples will be stored and transported on wet ice or refrigerated at 4° C until analyzed.

Water samples will be collected, preserved and shipped using EPA standard methods. Water samples will be collected using a 1 liter, amber-tinted glass, wide-mouth bottle with a cap. Water will be collected while facing upstream. The sample container must be vertically submerged for the water to flow freely inside. Samples will be preserved on ice, kept inside of a cooler, and shipped on ice for analysis.

Appendix B

Determination of the effects of Aerial Spraying of Herbicide on the Red-cockaded Woodpecker (RCW) and Louisiana Pinesnake (LPS) on Peason Ridge Impact Areas.

This document discloses the anticipated effects to the endangered Red-cockaded Woodpecker (*Picoides borealis,* RCW) and Louisiana Pinesnake (*Pituophis ruthveni*, LPS), a species listed as threatened under the Endangered Species Act, from aerial herbicide spraying of Impact Areas located on Peason Ridge. There is no evidence that either one of the species is currently living in the Impact Areas. Analysis will be based on habitat conditions inside the Impact Areas and other factors that may affect the ability of either species occupying the Impact Areas. The plan outlined in the draft Environmental Assessment is to herbicide a total of 1233 acres, treating 398 acres in FY 21, 261 in FY22, 298 in FY23 and 276 in FY 24. Streamside Management Zones of 200 feet wide will not be treated with herbicides.

Previous Consultation

The effects of aerial herbicide spraying were not addressed specifically in the 2011 Endangered Species Management Component (ESMC) Biological Assessment (BA), and, therefore not included in the FWS 2012 Biological Opinion (BO) for the 2011 ESMC. The 2020 ESMC for the Joint Readiness training Center (JRTC) Fort Polk and Peason Ridge was not substantially different from the 2011 ESMC; effects to Threatened and Endangered Species remained the same and there was no change in expected incidental take due to the ESMC activities evaluated. Therefore, no BA was done for the 2020 ESMC. The effects of aerial herbicide spraying were also not specifically addressed in the 2016 Conference Opinion (CO) (adopted unchanged as BO after the snake was listed) for the Louisiana pinesnake.

Description of Impact Areas

Herbicide spraying will occur on two different impact areas, designated Eastern Area (See Veg Map) and Western Area (See Veg Map). Each Impact Area is broken down by vegetation type. Streamside zones will not be sprayed and are not included in the acreage that will be treated.

The Eastern Impact Area has a total of 641 acres of Pine/Hardwood that could support RCWs. The Impact Area has a total of 61.5 acres of a soil type that would support gophers based on the Wagner Model (See Soil Map for the Eastern impact Area) The Western Impact Area has 124 acres of pine that could support the RCW. The Western Impact Area is estimated to have 32 acres of soil type that would support gophers (See Western Area Soil Map).

Effects

The effects of aerial herbicide spraying would kill trees and some of the lower vegetation. A total of 993 acres of forest land would be sprayed in the Eastern Impact Area and 152 acres in the Western Impact Area. Total acres of sprayed forested land would be 1145 acres.

RCW

The treated trees would die likely rendering them unsuitable for nesting and they would eventually fall and be removed from the forest canopy structure. The effects, while slower to take action, would be similar to those occurring from training-related fires or munition explosions. Therefore, the effects, while additive, would be similar to the effects described in the ESMC BA and FWS 2012 BO and will be

addressed according to the BO. That BO assumed that all of the RCW in the impact and areas could be taken due to training related activities According to the 2012 BO, the Service anticipated incidental take of 27 adult RCWs(9 groups), and 27 nestlings (9 nests). According to the BO, within impact areas, each time there is the removal or destruction of 200 acres of potential RCW habitat, the incidental taking of 3 RCW adults (1 group) and 3 RCW nestlings/eggs (1 corresponding nest) will be documented. Take is assumed to occur in form of harm due to cavity tree or foraging habitat damage/destruction due to munitions explosions and resulting fires or in the form of kill if nest trees are destroyed or egg/pre-fledge young are killed or abandoned.

Since the time of the 2012 FWS BO for the 2011 ESMC, there has been no known take of RCWs within the Peason Ridge Impact area based on the assumed rate of 27 adult RCWs (9 groups), and 27 nestlings (9 nests) taken per 200 acres of potential habitat destroyed. According to the 2012 BO, the Service anticipated incidental take of 27 adult RCWs (9 groups), and 27 nestlings (9 nests). Therefore the level of incidental take expected has not been exceeded.

Based on current detailed GIS analysis of the two Impact Areas, 1145 acres of RCW habitat will be removed from the spraying. Based on the 200 acre formula found in the 2012 BO a total of 18 adult RCWs (6 groups) and 18 nestlings are expected to be incidentally taken. The level of incidental take allowed by the 2012 BO would not be exceeded and is therefore compliant with the Terms and Conditions (numbers 5, 6; 2012 BO) relevant to incidental take authorization. In compliance with the FWS 2012 BO, the Army will install 3 artificial nesting cavities within suitable unoccupied habitat for every 200 acres of potential RCW habitat removed from within the impact areas.

LPS

The effects of the proposed aerial herbicide spraying have not been addressed regarding the Louisiana pinsnake in the evaluation of the 2011 ESMC or the similar 2020 ESMC or the 2016 LPS CO.

The area being treated is located on land with (suitable, preferred, unsuitable soil). Forest areas of a few hundred acres each year over a four year period would be treated by aerial herbicide spraying. The canopy trees would be the most affected, but midstory trees, shrubs, and understory vegetation could also be affected to a lesser extent. Reduction of tree canopy would likely allow more light to reach the forest floor. This would potentially enhance the growth of the remaining understory and mitigate the temporary loss of that vegetation community. The Louisiana pinesnake is dependent upon the Baird's pocket gopher (BPG) as a primary prey item. The BPG forages on herbaceous vegetation in the forest understory. Because the treatments will be conducted over four years, the herbaceous vegetation will have time to regrow in the treated areas as the following areas are treated. This potential loss of herbaceous vegetation would be temporary and there would be suitable habitat for the BPG and the LPS nearby because the forests are being managed beneficially for the RCW and LPS.

Based on the Wagner Soil Model (Wagner et al. 2014, ESMC) for suitable soils for the BPG, the Eastern Impact Area has only 61.5 acres of suitable soils. Nearly all the suitable soil found in the impact area is located on the boundary of the impact area (See Map). If LPS are found in these suitable areas on the spray boundary there should be no problem for the LPS to move outside the spray area.

The Western Impact Area has 32.2 acres of suitable LPS soils. As with the Eastern Impact Area most of the suitable soils are found on the boundary. There is one packet of suitable soil found in the middle of

the Impact Area, but it is located in a large creek bottom unsuitable for the LPS and will not be sprayed, because of its location.

The impacts to LPS would be small, temporary, and the LPS is not likely to be present in over 90% of the project area; therefore we have determined that the project is not likely to adversely affect the LPS.

Prepared by: MOORE.KENNETH.R.1231109273 Digitally signed by MOORE.KENNETH.R.1231109273 Date: 2021.05.11 12:11:31 -05'00' Date: _____

Kenneth Moore

Ecologist

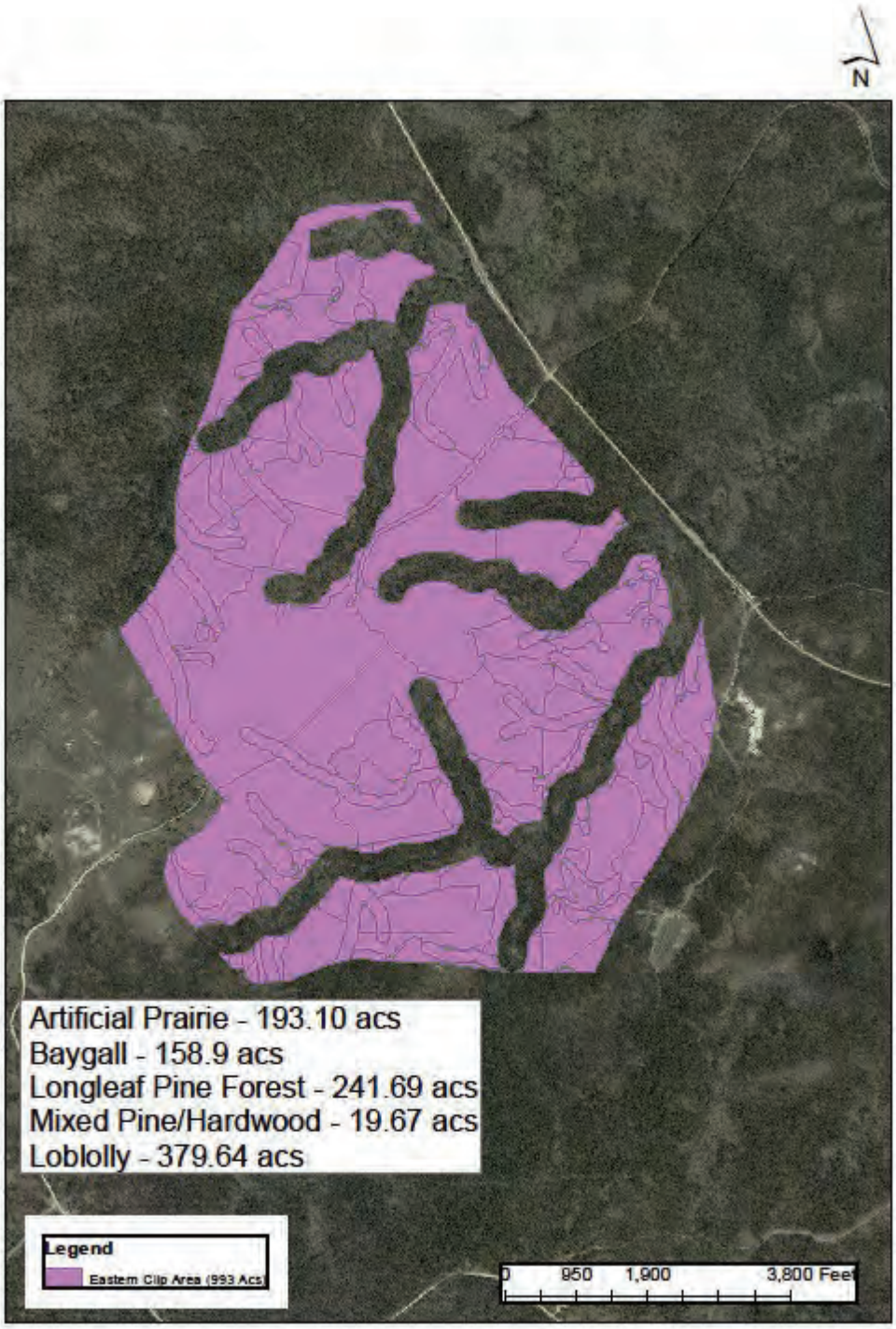
Concurrence by: WEST.JONATHAN.ALLEN.1073894405 Digitally signed by WEST.JONATHAN.ALLEN.1073894405 Date: 2021.05.11 12:26:11 -05'00' Date: _____

Jonathan West

Chief, Conservation Branch

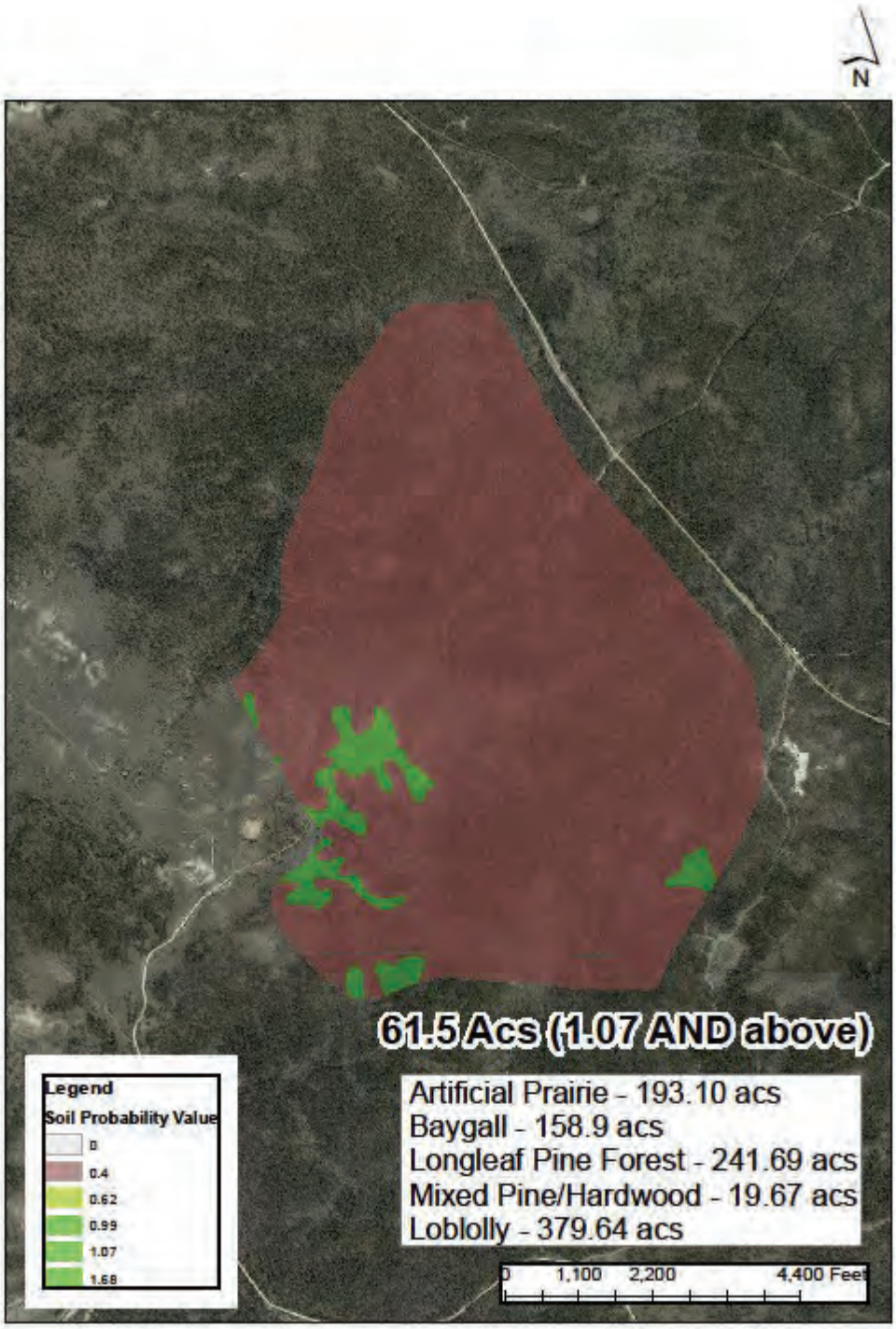
Appendix B

Eastern Impact Area Vegetation Map



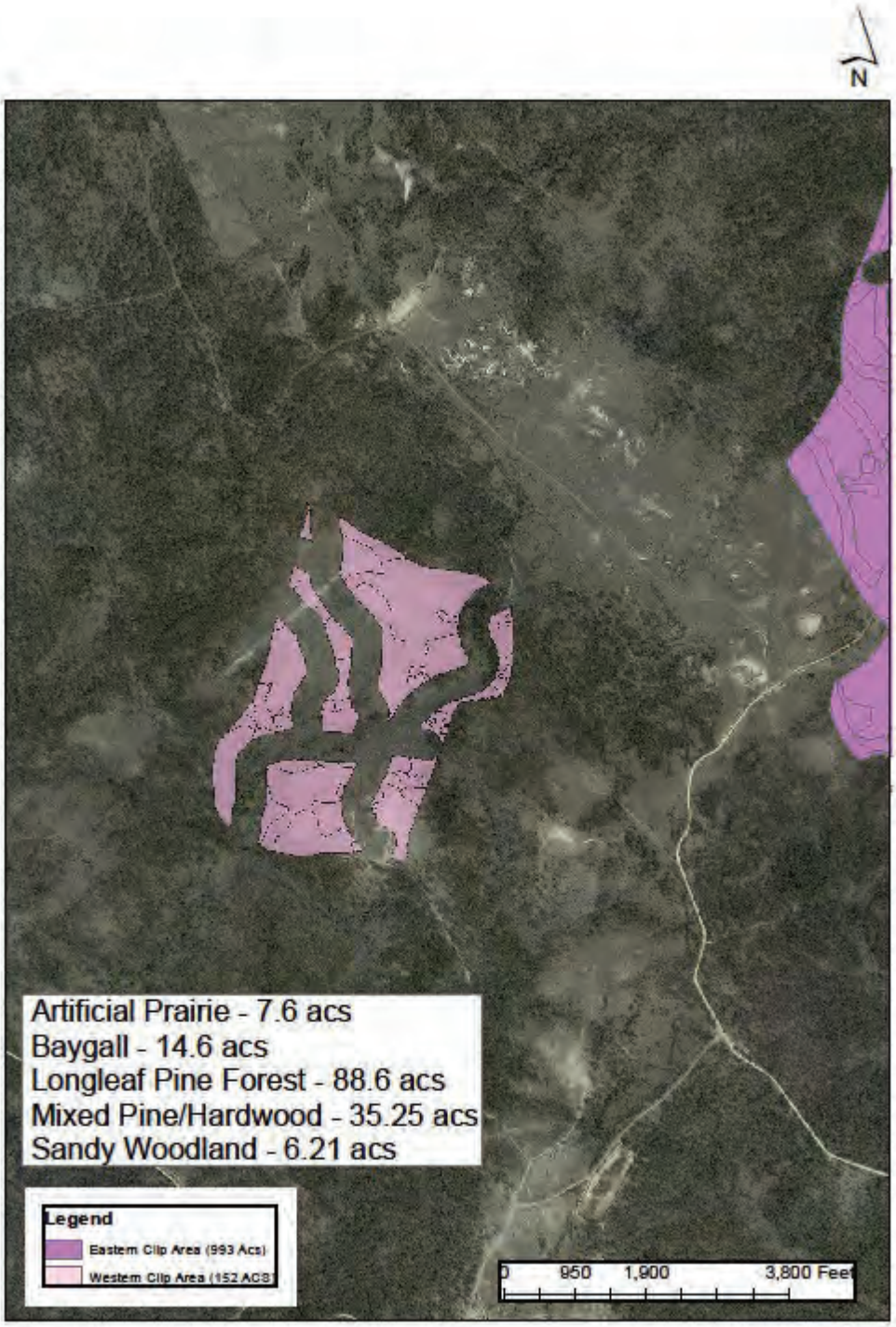
Appendix B

Eastern Impact Area Soil Suitability Map



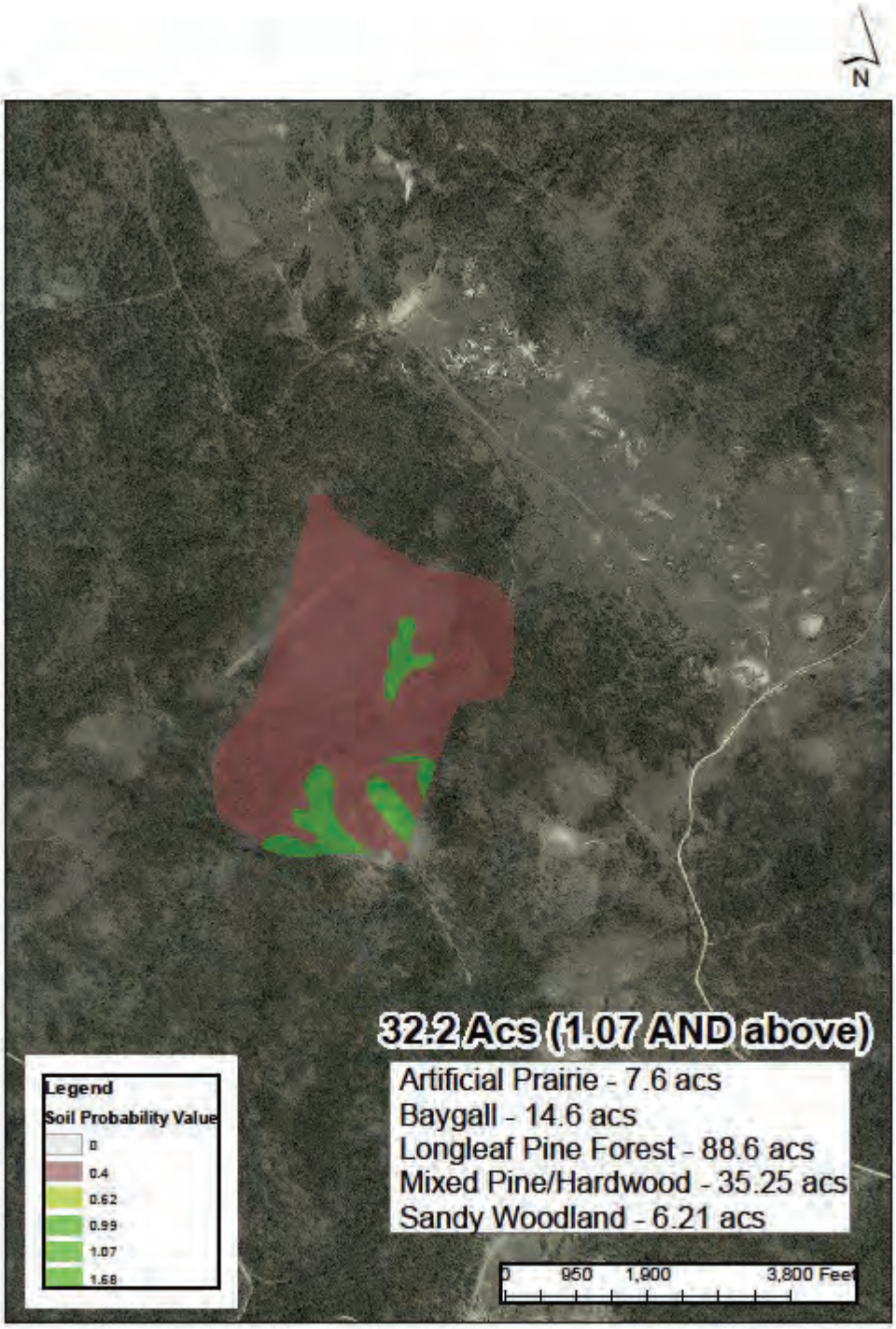
Appendix B

Western Impact Area Vegetation Map



Appendix B

Western Impact Area Soil Suitability Map



United States Department of the Interior

FISH AND WILDLIFE SERVICE
200 Dulles Drive
Lafayette, Louisiana 70506

July 2, 2021

Mr. Jon West
Conservation Branch Chief
Department of the Army
Joint Readiness Training Center and Fort Polk
Fort Polk, Louisiana 71459

Dear Mr. West:

Please reference the Department of the Army's (Army) "Establish and Maintain Line of Sight within Peason Ridge Impact Area at the Joint Readiness Training Center and Fort Polk Draft Environmental Assessment" (EA) transmitted via a December, 18, 2020, electronic message; a "Determination of the Effects of Aerial Spraying of Herbicide on the Red-cockaded Woodpecker and Louisiana Pinesnake on Peason Ridge Impact Areas" transmitted via a May 12, 2021, electronic message; a revised "Determination of the Effects of Aerial Spraying of Herbicide on the Red-cockaded Woodpecker and Louisiana Pinesnake on Peason Ridge Impact Areas" transmitted via a June 24, 2021, electronic message; and a June 28, 2021, electronic message. Those documents transmitted project information and an Endangered Species Act section 7 determination for the proposed project. The Fish and Wildlife Service (Service) has reviewed the information provided and submits the following comments pursuant to the Endangered Species Act of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.).

Proposed Action

The Joint Readiness Training Center (JRTC) and Fort Polk are required to provide a training environment capable of challenging and evaluating Brigade Combat Team operations. Currently, the capacity to conduct direct and indirect live fire training in the Peason Ridge Training Area is being impeded by the loss of "Line of Sight" (LoS) required for these exercises. The purpose of the proposed action is to achieve and thereafter maintain the LoS necessary for the capability of supporting direct and indirect live fire training requirements, which would fulfill JRTC and Fort Polk mission objectives. The effects of managing LoS requirements are consistent with the maintenance of firing lanes as described in the Army's Integrated Natural Resources Management Plan (INRMP) and associated 2011 Endangered Species Management Component (ESMC) biological assessment which were assessed in the Service's biological opinion (BO) dated April 17, 2012 (Enclosed; Service Log No: 04EL1000-2010-F-0522).

The proposed action is to remove trees blocking LoS within the impact area of the Peason Ridge Training Area using rotary-wing aerial herbicide applications to kill those trees. Due to safety and cost issues resulting from the presence of unexploded ordinance (UXO) within the impact area, traditional ground-based mechanical means of tree removal is not feasible. The plan

outlined in the draft EA is to spray an herbicide mixture (224 oz. Accord XRT II, a.i. 17 53.6% glyphosate /16 oz. Arsenal AC, a.i. 53.1% imazapyr /2 oz. Detail, a.i. 29.74% saflufenacil) with 19 oz. of Elite Supreme (an adjuvant) and water at a rate of 15 gallons per acre during the growing season (15 June thru 15 July) to kill and eventually down mature trees (primarily loblolly and long leaf pine) and establish LoS to target arrays in the Peason Ridge impact area.

During aerial broadcast application of the herbicide mixture, all appropriate measures would be taken to avoid potential drift to non-target areas (e.g., wind speed less than 8 miles per hour, no low level inversion conditions, proper spray equipment, etc., as indicated on the herbicide labels), ensure efficacy (e.g., no rainfall four hours prior to or after treatment, trees in full growth stage, etc., as indicated on the herbicide labels), and document the area treated (e.g., real time differential GPS tracking system capable of producing individual swath flight line shape files of the treated area within ArcGIS and designed to provide the pilot with swath and directional guidance, such as a Trimble Ag GPS TrimFlight3 system). According to the EA, the herbicides proposed for use generally pose low risk to mammals, birds, and other wildlife when used in accordance with the manufacturer label and with the project mitigation measures. According to the EA, herbicide treatment would only be conducted after June 15, when most of the red-cockaded woodpeckers (RCWs) at Peason Ridge have finished nesting (Kenneth Moore, personal communication). All herbicide would be applied according to the manufacturer's label directions by licensed pesticide applicators.

The application would treat a total of 1,233 acres, of which approximately 972 acres is forested land, as follows: treating 398 acres in FY22, 261 acres in FY23, 298 acres in FY24, and 276 acres in FY25. Streamside Management Zones, which are 200 feet in width, would not be treated with herbicide. Herbicide spraying would occur on two different impact areas, the Eastern Impact Area and Western Impact Area. The Eastern Impact Area has a total of 641 acres of Pine/Hardwood forest that could support RCWs and 61.5 acres of suitable/preferred soil type known to be used by Louisiana pinesnakes (LPSs). The Western Impact Area has 124 acres of pine forest that could support RCWs, and 32 acres of suitable/preferred soils known to be used by LPSs.

Louisiana pinesnake (*Pituophis ruthveni*)

The Service has previously conferred with the Army about the LPS when it was a candidate species, resulting in a February 10, 2016, conference opinion entitled, "Effects on the Louisiana Pine Snake from Ongoing Military Training at the Joint Readiness Training Center and Fort Polk, Adoption of the Revised Endangered Species Management Component, and Ongoing and Proposed Army Compatible Use Buffer Acquisitions, Louisiana". That conference opinion found that the action described in the Army's May 6, 2015, biological evaluation (BE) and its June 17, 2015, revised BE is not likely to jeopardize the continued existence of the LPS. The LPS was federally listed as a threatened species on April 6, 2018, and the conference opinion was subsequently adopted as a biological opinion. The effects of the proposed aerial herbicide spraying on the LPS were not addressed in the evaluation of the 2011 ESMC, the 2016 LPS conference opinion, the 2018 BO, or the 2020 ESMC.

According to our records, there is one LPS population located on the Peason Ridge installation, and it is known mostly from trap captures that are part of an extensive, ongoing effort to monitor

the status of the species. LPSs prefer pine forests with sandy, well-drained soils, substantial herbaceous ground cover, and a sparse midstory. The species is highly associated with Baird's pocket gopher (*Geomys breviceps*), a major food source, which is dependent on the same habitat type. The LPS is most frequently found near or within pocket gopher burrow systems and move from one burrow system to another. Threats to the LPS include the sharp decline in quality and quantity of open pine forest habitat due to changes in land use, including suppression of fire and incompatible silviculture; compromised genetic resiliency due to small populations; and vehicle-related mortality on roads and off-road trails.

According to your documentation, 61.5 acres and 32.2 acres of the Eastern and Western Impact Areas, respectively, are underlain with soils considered preferable/suitable for the LPS and its primary prey, the pocket gopher. The suitable soil areas are patchy and mostly occur on the edges of the proposed project area. There is one recorded occurrence of a LPS within 1.5 kilometers of the project area, documented in 1997. There are substantial areas of suitable habitat near the project sites.

The LPS is likely to be present only in a relatively small part of the proposed project area. The closest known occurrence of the species is 1.5 kilometers away. The herbicide spraying would be done in stages, affecting different portions each year. The herbicide's main effect would be on trees and, to a lesser extent, shrubs and herbaceous vegetation. Reduction of tree canopy and shrub vegetation would potentially allow greater sunlight to enhance herbaceous vegetation growth, providing more forage for the pocket gopher. Accordingly, effects to the LPS would be temporary, insignificant, and discountable. Therefore, the Service concurs with your determination that the proposed project is not likely to adversely affect the LPS.

Red Cockaded Woodpecker (*Picoides borealis*)
Federally listed as an endangered species, the RCW inhabits longleaf pine forest on Peason Ridge and Fort Polk. RCWs roost and forage year-round and nest seasonally (i.e., April through July) in open, park-like stands of mature pine trees that have sparse midstory and minimal hardwood component. Although not required, a well-developed herbaceous understory is often a component of longleaf pine ecosystems supporting the species. RCWs can tolerate small numbers of overstory and midstory hardwoods at low densities found naturally in many southern pine forests, but they are not tolerant of dense midstories resulting from fire suppression or from overstocking of pine. Trees selected for cavity excavation are generally at least 60 years old, although the average stand age can be younger. The collection of one or more cavity trees plus a surrounding 200-foot-wide buffer of continuous forest is known as an RCW cluster. RCW foraging habitat is located within one-half mile of the cluster and is comprised of pine and pine-hardwood stands (i.e., 50 percent or more of the dominant trees are pines) that are at least 30 years of age and have a moderately low average basal area (i.e., 40 – 80 square feet per acre is preferred).

Trees in project sites treated by aerial application of herbicide would die. Because of the safety issues that preclude survey of impact areas, the presence, location, and number of cavity trees within the areas to be sprayed are unknown; thus, it is not certain whether or how many cavity trees could be incidentally be taken during LoS maintenance. However, there is known presence of RCWs and suitable habitat within the impact area. Accordingly, this analysis assumes that

cavity trees will be present and incidentally impacted by aerial spraying in a way that they would eventually die and become unsuitable for nesting and foraging. Those effects, while slower to take action, would be consistent with the maintenance of firing lanes, and similar to those occurring from training-related fires or munition explosions. Proposed spraying would occur mostly outside the documented RCW breeding season on Peason Ridge, after such time that fledglings have left the nest. Additionally, according to the EA, the herbicide treatment as proposed poses a low risk of direct harmful effects to birds. Therefore, the effects would be similar to those described in the Army's INRMP and associated 2011 ESMC biological assessment which were assessed in the Service's 2012 BO. Accordingly, the Service has assessed the subject action in accordance with and includes this action as an amendment to that 2012 BO. The 2012 BO is attached to this letter (see Enclosure) for reference of the Reasonable and Prudent Measures and Terms and Conditions that should be followed for this subject action for the incidental take authorization.

That BO assumed that all of the RCWs in the impact areas could be taken due to training related activities, including firing lane maintenance. The BO also requires that within impact areas, each time there is the removal or destruction of 200 acres of potential RCW habitat, the incidental taking of 3 RCW adults (1 group) and 3 RCW nestlings/eggs (1 corresponding nest) will be documented. Thus, the Service anticipated incidental take of 27 adult RCWs (9 groups) and 27 nestlings (9 nests) through potential destruction of 1,800 acres of habitat in the Peason Ridge Training Area. Since the time of the Service's 2012 BO for the 2011 ESMC, there has been no known take of RCWs within the Peason Ridge impact area based on that anticipated rate of incidental take. Therefore, the level of incidental take expected in the Service's 2012 BO has not been exceeded.

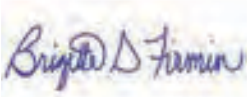
According to the Army's assessment, 765 acres of RCW habitat would be removed by the currently proposed LoS maintenance project. The 2012 BO dictates that the amount of habitat loss due to the proposed project would result in a total of 12 adult RCWs (4 groups) and 12 nestlings (4 nests) incidentally taken. The level of incidental take authorized by the 2012 BO (27 adult RCWs and 27 nestlings) would not be exceeded and is, therefore, compliant with the Terms and Conditions (numbers 5 and 6; 2012 BO) relevant to incidental take authorization. In compliance with the Service's 2012 BO, the Army would install 3 artificial nesting cavities within suitable unoccupied habitat for every 200 acres of potential RCW habitat removed from within the impact areas; prior to the project implementation if possible. Thus, 12 artificial nesting cavities should be installed as a result of the proposed LoS maintenance project.

Please note that the currently proposed LoS maintenance project would cause the take of 44 percent of the amount authorized by the 2012 BO for the Peason Ridge Training Area. Thus, given this level of take, the remaining take allowed for the Peason Ridge Training Area of the Army's implementation of their 2011 ESMC is now reduced to 15 adult RCWs (5 groups) and 15 nestlings (5 nests) (i.e., 1,000 acres of RCW habitat) for any future actions authorized by the Service's 2012 BO. If future projects in the Peason Ridge Training Area would be expected to exceed the remaining incidental take (i.e., 15 adult RCWs [5 groups] and 15 nestlings [5 nests], estimated by 1,000 acres RCW habitat) authorized by the 2012 BO, the Army should consider reinitiating consultation with the Service to avoid exceeding the incidental take limit. Accordingly, the Reinitiation Notice on page 54 of the 2012 BO remains in effect for

implementation of both the 2011 ESMC and the 2021 LoS within the impact area of the Peason Ridge Training Area.

We appreciate the opportunity to review the determination, and to work with the Army to protect listed species. If you need further assistance or have questions regarding this letter, please contact David Castellanos (337-291-3112) of this office.

Sincerely,



Brigette D. Firmin
Acting Field Supervisor
Louisiana Ecological Services Office

Enclosure

cc: Fish and Wildlife Service, Charleston, SC (Attn: Lindsey Troutman, RCW National Coordinator)
Dept. of the Army, Fort Polk, LA (Attn: Kenneth Moore)
LDWF, Wildlife Diversity Program, Baton Rouge, LA (Attn: Charles Battaglia and Eric Baka)

Appendix C

DEPARTMENT OF THE ARMY
US ARMY INSTALLATION MANAGEMENT COMMAND
HEADQUARTERS, UNITED STATES ARMY GARRISON, FORT POLK
6661 WARRIOR TRAIL, BLDG 350
FORT POLK, LOUISIANA 71459-5339

REPLY TO
ATTENTION OF:

IMPO-PLT-R

2 March 2018

MEMORANDUM FOR: DPW, ENRMD, Conservation Branch, 1647 23rd St, Fort Polk LA 71459

SUBJECT: HC00339-6P Aerial Spraying of Redleg Impact Area to Re-Establish Lines of Sight

1. Request site specific environmental evaluation for National Environmental Policy Act (NEPA) Compliance, Clean Air Act (Title V) compliance, merchantable timber, asbestos, lead, etc. as applicable for subject project.

2. Record of Environmental Consideration is enclosed for your review and concurrence. If your office concurs with the document enclosed, request a copy of REC with concurrence be returned to this office as soon as possible. The project scope is included in the REC.

3. Point of contact for this action is Milton Wayne Fariss; ITAM Coordinator; COMM 337-531-7417, DSN (863), and milton.w.fariss.civ@mail.mil.

ENCL

M Wayne Fariss
ITAM Coordinator

ENRMD Control Number CY18016

DEPARTMENT OF THE ARMY
JOINT READINESS TRAINING CENTER AND FORT POLK
FORT POLK, LOUISIANA 71459

RECORD OF ENVIRONMENTAL CONSIDERATION

To: Environmental Office

From: Fort Polk ITAM Coordinator

1. **Project Title: Aerial Spraying of Impact Areas to Re-Establish Line of Sight**

2. **Brief Description of Proposed Action**: Implement an herbicide application plan to re-establish, through a multiyear assessment and treatment plan, lines of sight in Redleg Impact Area.

   In order to reestablish lines of sight to the areas, a 5 year phased plan will be implemented in the Redleg Impact Area.

3. **Details of Proposed Action:**

   Redleg: In order to support indirect livefire requirements Redleg impact area is supported by five (5) observation points and contains seven target arrays. It is necessary to add one more target array in Redleg. This will enable observation for more locations and to separate target arrays. The new Array would be placed within the polygon depicted in Figures 2 and 3 below.

   Removal of vegetation will be accomplished by aerial spraying using a helicopter to deploy the chemical, helicopter spraying is being utilized as it minimizes the drift and allows for a more precise application of the herbicide. Due to the inherent difficulties associated with control of pine trees and the time necessary for the herbicide to be translocated throughout the tree, it will be 4-6 weeks before a mature pine tree will begin to die. However, that doesn't necessarily mean that mortality will occur within that time period. In some cases (usually with difficult to control species or individual plants that may not have been adequately treated, (primarily due to shielding from other plants/trees), a tree may have injury but will survive or perhaps struggle through until the next growing season before dying. The trees should be dropping their needles by the fall of the year, but they will stand for several years first dropping branches before the main trunk eventually falls. Accordingly, the trees will slowly transition from live to dead providing a transition time from one habitat to another while fulfilling the line of sight need. For the purposes of erosion the cover provided by the debris from the dead tree should provide ground cover until the herbaceous layer "greens up" through the winter and into the next spring, please see MFRs from 6 and 27 OCT which discuss greenup. The herbicide prescription is 7 quarts Glyphosate (Accord XRT II), 16 oz. Imazapyr (Arsenal AC), 2 oz. Saflufenacil (Detail) and 19 oz. Elite Supreme (surfactant) and is applied at 15 gallons per acre. Table 2 below shows the amount of herbicide required per year. The time frame for effective control is during the time of vigorous growth May through Mid-July. Since this timeframe overlaps with RCW breeding season, for the initial treatments in FY18-21 the spraying will be scheduled with a window from the 15st of June – the 15th of July. A multiple week window is necessary to coordinate with training activities and account for optimal weather conditions.

   Figures 2 and 3 show the contours and soils for the Redleg polygons to be treated by year. Figure 4 shows the areas of Redleg which have previously been treated for line of sight. As depicted in Table 1 below, the planned approach is to treat 483 in FY18, 559 in FY19 and 477 in FY20 for a total treatment area of 1519 acres. The wetland areas, defined in this project by Guyton soils, will only be treated if they block the line of sight after the FY18 - 20 treatments have effectively removed the encroaching vegetation in the upland – if treatment over these soils is deemed necessary a follow on notification, that provides an adequate time frame for sufficient NEPA analyses, will be made to

ENRMD/Conservation Branch.

Table 1			
Treatment Year	Number of Polygons	Acres	Number of Cavities Provided Under BO
FY18	3	483	9
FY19	2	559	9
FY20	3	477	9
FY21 (only if necessary)	*NA*	*439(152)**	*NA (hardwoods)*
Total in FY18-20		**1519**	

*note that 287 ac are in center of impact area and appear cleared and 152 are wetlands that should not need clearing, but are included so that if an assessment shows line of sight is lacking all or part of the areas would be treated.

Table 2			
Treatment Year	Glyphosate (qt)	Imazapyr (oz)	Saflufenacil (oz)
18	3382	7731	966
19	3916	8952	1119
20	3337	7628	954
21 ([1]if full area is need)	3108[1]	7104[1]	888[1]

It should be noted that a concurrence letter from the United States Fish and Wildlife Service was received for these proposed treatments (dated 22 December 2016). However, the terms and conditions of the USFWS Biological Opinion for implementation of the Joint Readiness Training Center (JRTC) and Fort Polk's proposed Endangered Species Management Component (ESMC) of the Integrated Natural Resources Management Plan on Army-owned lands (i.e., Fort Polk Main Post) in Vernon Parish, Louisiana still apply and contain these three paragraphs:

> (9) As part of the proposed action presented in Fort Polk's BA of the ESMC, Fort Polk has proposed to conduct maintenance activities that would destroy potential RCW nesting habitat in the impact areas on Fort Polk Main Post outside of the breeding season to minimize impacts to potentially nesting RCWs and their young.
>
> (10) As part of the proposed action presented in Fort Polk's BA of the ESMC, Fort Polk will conduct RCW forging analysis and consult with the Service on a case-base basis to examine the potential impacts of RCW habitat removal in the impact areas on active RCW groups found outside of the impact area but within one-half mile of the affected habitat of the respective Fort Polk Main Post impact area.
>
> (11) When possible, provision or otherwise ensure there are 3 artificial cavities with suitable unoccupied RCW habitat near the impact area (i.e., within three miles), if available, before removing 200 acres of potential RCW habitat from within the impact areas, in an effort to attract any dispersing RCWs potentially displace from the impact area due to loss of habitat. Please report completion of these activities to the Service's Louisiana Ecological Services Office, as well as the successful activation of any replacement cavities and the source of RCW individuals, if possible.

Therefore as part of the proposal and in keeping with the terms and conditions, 9 RCW cavities within 3 miles of the areas to be treated will be made available for each year of the original treatments (see Table 1).

4. Project Engineer/ Manager Determination:

Environmental Parameters	YES	NO
1. Action will require DHH approval of water system changes.		X
2. Action will require DHH approval of wastewater changes.		X
3. Project footprint between 1 and 5 acres (storm water permit).		X
4. Project footprint greater than 5 acres (storm water permit).	X*	
5. Action has the potential to disturb asbestos.		X
6. Action has the potential to disturb lead based paint.		X
7. Action is new construction (independent of existing structure).		X
8. If number 7 (above) was yes, were alternatives considered for the new construction .		
9. If number 8 (above) was yes, was the Building Constraints map utilized for development of alternatives.		
10. If number 9 (above) was yes, are the maps for three alternatives included in this Record of Environmental Consideration.		

* The project is greater than five acres but the action is maintenance of the vegetation in the existing impact area rather than construction and so it should not require a storm water permit. Furthermore, due to the unexploded ordinances in the impact area storm water BMPs cannot be emplaced

5. Purpose and Need:
The purpose which drives this implementation plan is to clear lines of sight for the trainers to see targets and observe impacts on those targets. The need to clear is derived from the warm subtropical climate at Fort Polk. When these impact areas were established, the areas were devoid of trees so line of sight was not an issue. Since then, the areas have grown up in trees and caused the current problem. The need for chemicals is derived from the nature of an impact area. In FY12 a contract was let to clear line of sight in the Redleg impact area. This very expensive endeavor, which used remote control equipment, was not successful in clearing all of the areas that required clearing due to terrain and vegetation types. So a slower but more effective method is warranted.

6. Anticipated Date and/or duration of Proposed Action:
Within the time window of 15 June – 15 July in FYs 18-21.

7. Reason for using record of environmental consideration: Action is categorically excluded under the provisions of categorical exclusion (CX) 9-1 32 CFR 651, Appendix B [and no extraordinary circumstances exist and there are no adverse affects to sensitive resources, as defined in CFR 651.29(b), 651.29(c)] because: (1) See paragraph 8 below (Effects on the Environment), showing that there are no significant environmental impacts; and (2) this proposed action satisfies the screening conditions in 32 CFR 651.29(a), and meets all screening criteria in 32 CFR 651, Appendix B, Section I. ((It is important to note that the need for clearing the impact area was identified in the current Endangered species management plan and the Biological Opinion (BO) that rendered by the service for the plan and that this plan takes into account the terms and conditions of that BO.))

8. Effects on the Environment: The proposed action was evaluated by the proponent and an ENRMD Environmental Subject Matter Expert / Evaluator using the following parameters.

Valued Environmental Components	Positive Impact	Negative Impacts	No Significant Impacts	Subject Matter Expert
Air Quality				*see attached
Indoor Air Quality				
Storm Water				
Drinking/Waste Water Systems				
Cultural Resources				
Does the property qualify as historical property under the National Historic Preservation Act (NHPA)? ____no ____yes (sign name)_____ N/A				

ENRMD Control Number CY18016

Valued Environmental Components	Positive Impact	Negative Impacts	No Significant Impacts	Subject Matter Expert
Timber				*See attached
Threatened/Endangered Species and Species of Concern				
MBTA				
Sensitive Plants or Bogs				
Wetlands				
Soils/Erosion Control				
Other Natural Resources				
Pest Management				
Noise				N/A
Asbestos				
Lead -based Paint				
Solid/ Hazardous Waste				
Environmental Justice				
Protection of Children				
Environmental Restoration/SWMU				

9. Coordination with other agencies and installation departments:

Installation Organization or Other Agency	Coordination Date	Coordinating Person
USFWS (Biological Evaluation) *See REC 16331	18 NOV 2016	Ms. Monica Sikes

10. NEPA Specialist survey report is attached as Appendix A

11. Conclusion: This proposed action has been evaluated in accordance with 32 CFR Part 651. It has been determined that this proposed action does not individually or cumulatively have significant effects on the human or natural environment. There will be no environmentally controversial changes to existing environmental conditions. There are no circumstances which would require an Environmental Assessment (EA) or an Environmental Impact Statement (EIS) under the National Environmental Policy Act (NEPA). This proposed action: (1) satisfies all screening conditions in 32 CFR 651.29(a); (2) meets all screening criteria in 32 CFR 651, Appendix B, Section I; (3) does not involve any extraordinary circumstances, as defined in 32 CFR 651.29(b), that would preclude the use of a CX; (4) will not adversely affect environmentally sensitive resources as defined in 32 CFR 651.29(c); (5) qualifies for categorical exclusion (CX) number(s) g-1 in accordance with 32 CFR 651, Appendix B, Section II.

12. Other Environmental Laws: This document does not relieve the proponent of applicable federal and state laws and regulations.

Project Proponent

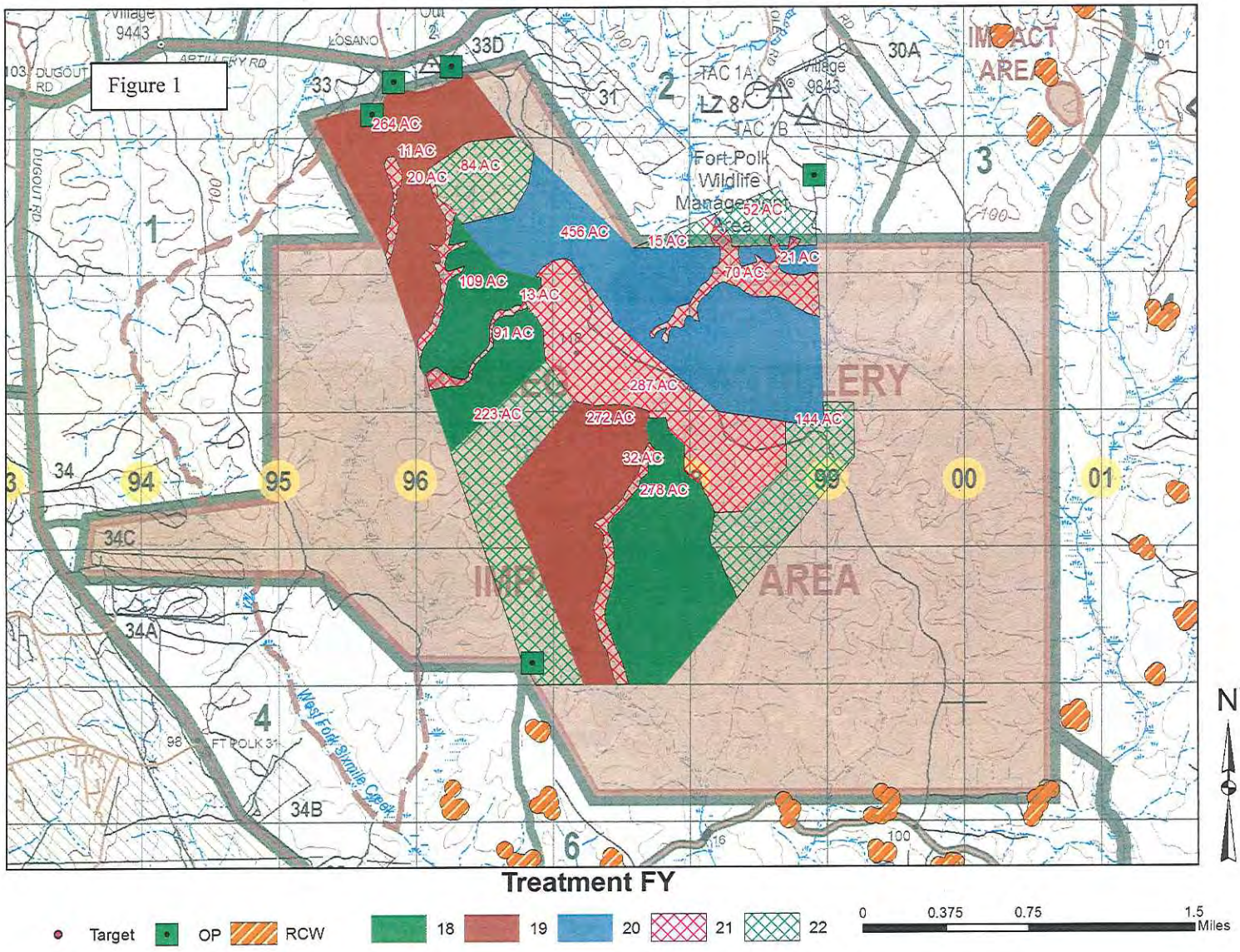
M. Wayne Fariss
ITAM Coordinator
Range Operations
Directorate of Plans, Training, Mobilization And Security
Date: 2 March 2018

Installation Environmental Coordinator Concur / Nonconcur

Jonathan A. West
Chief, Conservation Branch
Directorate of Public Works

Date: 13 March 18

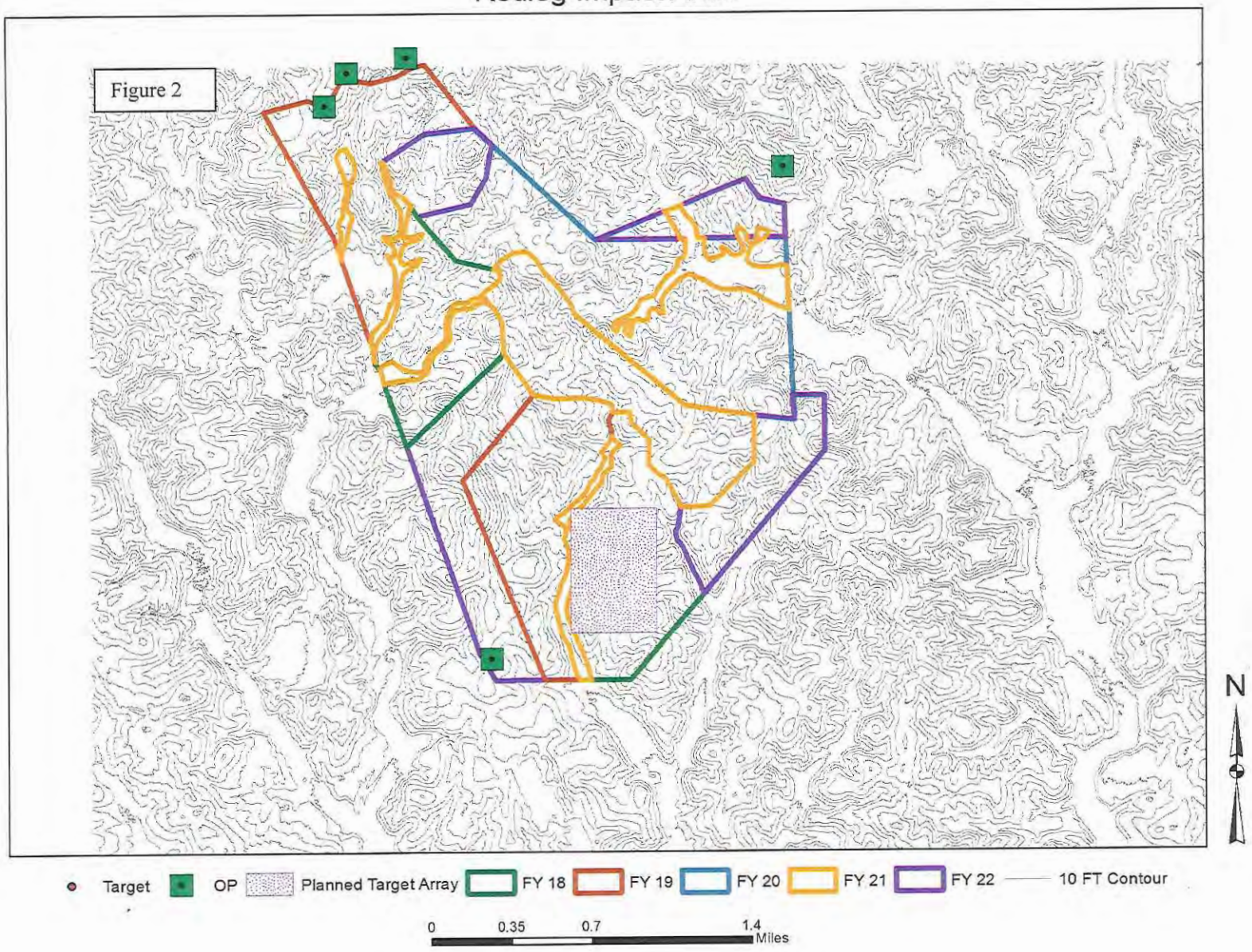
Redleg Impact Area Herbicide Plan

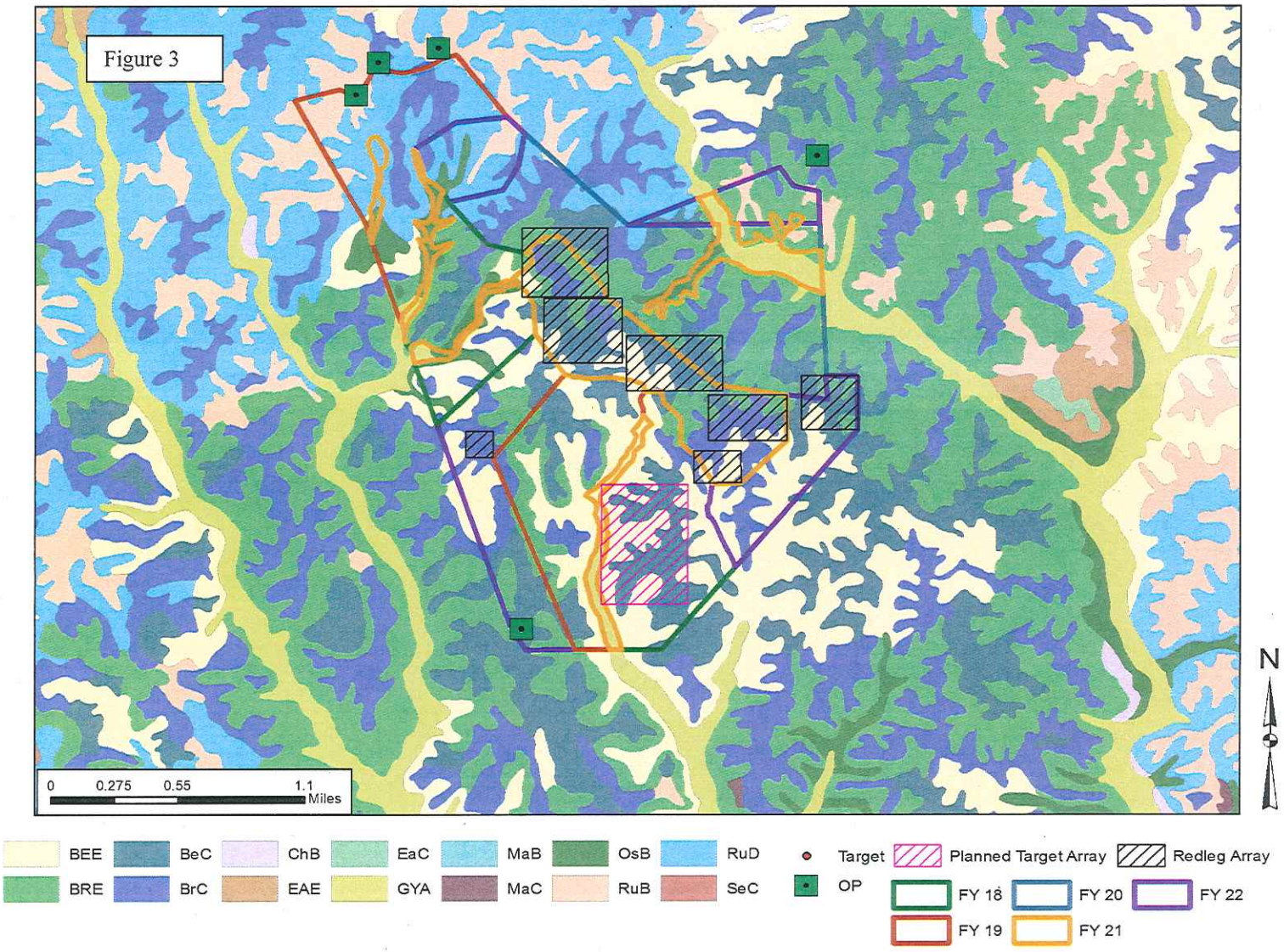


ENRMD Control Number CY18016

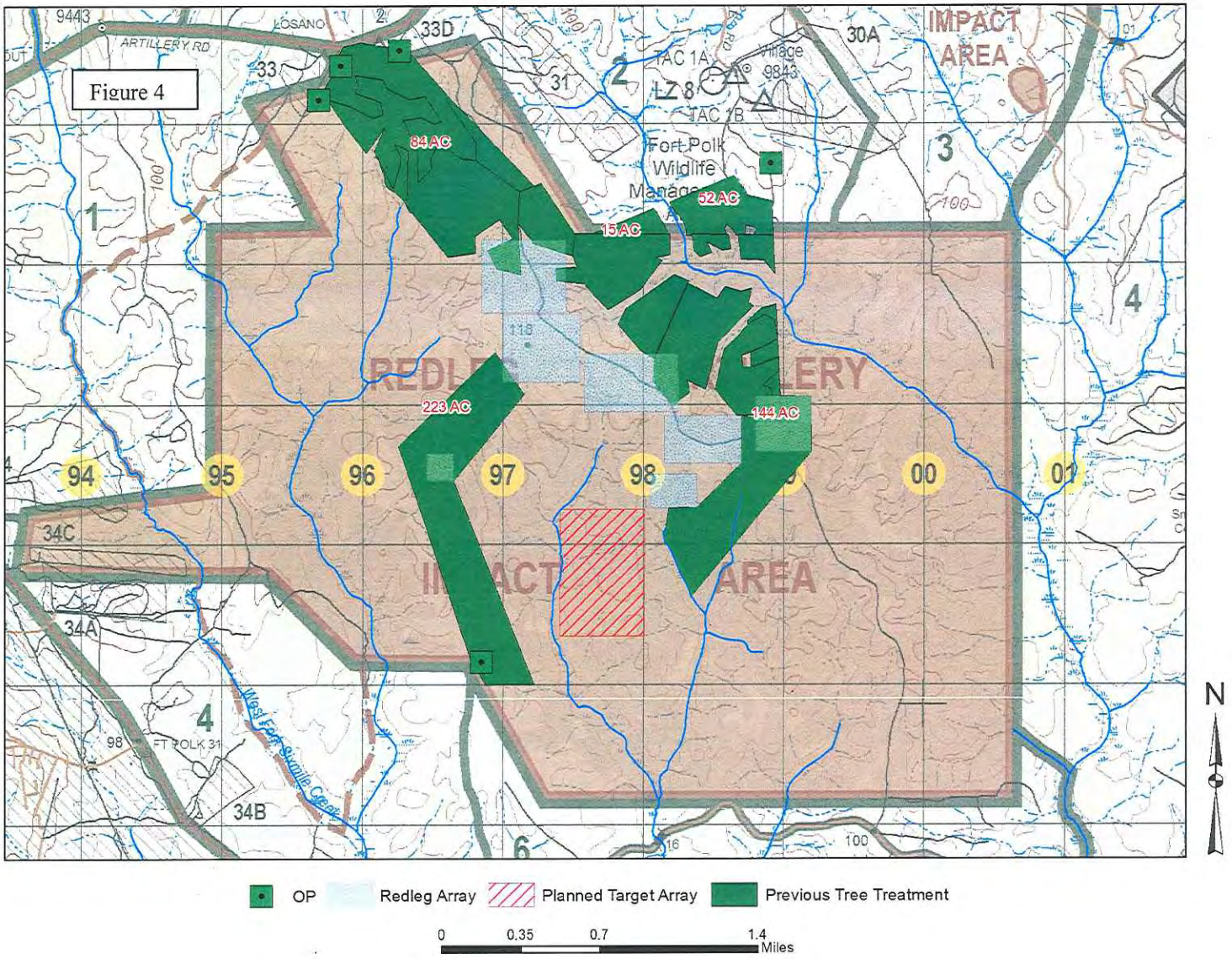
Appendix C

Redleg Impact Area





Appendix C



Appendix C

Memorandum For Record 12 Feb 18

Subject: REC CY18016 (Aerial Herbicide Application)

Initial REC CY16331

Based on available information and outcome of REC CY16331 the following information is provided in support of REC CY18016.

1) The information pertaining to Redlleg Impact area is approved for continued application. All portions pertaining to Peason Ridge shall be removed as further analysis of potential impacts to the Kisatchie Painted Crawfish must be evaluated.
2) Application within Redleg impact area is to be conducted as requested in the BE provided by USFWS. Any adjustments outside the requested application window is not permitted without written approval.
3) Application of herbicides over soils identified as Guyton shall not occur. This is to eliminate the potential application of herbicides into water or wetlands. Proponent shall insure the established buffers are adhered to.
4) REC CY16331 required surface water sampling at points along perineal streams exiting Redleg Impact Area. The samples collected demonstrated that herbicides were non-detect at all locations. Furthermore, a study was conducted to determine impacts to low level aquatic organisms (Diatoms). As in surface water, there was no impact to levels of diatoms throughout the target area. However, in order to monitor for the duration of this project, surface water samples shall continue to be collected post application annually. Given the ½ life of the chemicals being used, there is no requirement for sediment or litter sampling. Should any result show that herbicides are being detected and impacting water quality, the project shall cease until a more detailed analysis can be conducted.
5) Given that this maintenance project is potentially a long term project, the project shall be incorporated in to the Installation Pest Management Plan (IPMP). It is assumed that "spot treating" shall be required upon final initial applications within Redleg Impact Area.
6) Proponent shall coordinate with DPW/ENRMD Storm Water PM for submission of an individual LPDES Permit. LPDES General Permit only allows for treatment of Mosquito and other flying insect pest control, Aquatic Weed and Algae control, Aquatic Nuisance Animal control, and Forest Canopy Pest control.
7) USFS SUPA states that pesticides / herbicides shall not be applied to USFS lands without written prior approval. Redleg Impact Area is situated on Fort Polk property. As stated in item 4, should herbicides be detected migrating through water off of Redleg Impact Area the project shall cease.

8) Application is approved through the FY20 cycle. Upon completion of the FY20 cycle an evaluation will be made if line of sight has been established. If line of sight is established, there will not be a requirement for an FY21 application. Furthermore, the proponent shall evaluate the potential to locate the target area to the west of West Fork Six Mile Creek in the South West corner of Redleg Impact Area. This may alleviate the requirement of application to the east of West Fork Six Mile Creek.
9) This REC only covers the initial treatment of Redleg impact area. Prior to implementing the long term maintenance of Redleg Impact area, the proponent will coordinate with ENRMD/CB to determine potential residual impacts to soils. This ties the action directly back to the Installation Pest Management Plan.

Concur
Wayne Foriss
M. Wayne Foriss
ITAM Coordinator

Jonathan West
C, Conservation Branch
Jonathan.a.west6.civ@mailmil
337-531-6305

DEPARTMENT OF THE ARMY
JOINT READINESS TRAINING CENTER AND FORT POLK
FORT POLK LOUISIANA 71459
ENVIRONMENTAL ANALYSIS/FIELD SURVEY REPORT

REC CY18016 - Aerial Herbicide Broadcast to Establish Line of Sight within Redleg Impact Area

By the early 1900s most of the region that currently makes up Fort Polk and the surrounding area had been clear-cut and during the mid-1930s aerial photography shows there were no trees in or around the impact areas used for training. Over the next 80 years natural forest regeneration has occurred and now most of Fort Polk is composed of mature stands of timber—mostly conifers.

Training activities require firing at targets within the impact area and observing where ordinance impacts in relation to those targets. The proposed action has been requested to ensure clear line of sight from observation towers for trainers to see targets and observe impacts on and around those targets. The need for aerial broadcast herbicide application is due to the presence of unexploded ordinance (UXO) and the safety and cost issues associated with clearing the timber with a typical mechanical ground-based approach.

The proposed action is the aerial broadcast application of an herbicide mixture (224 oz. Accord XRT, a.i. 53.6% glyphosate /16 oz. Arsenal AC, a.i. 53.1% imazapyr /2 oz. Detail, a.i. 29.74% saflufenacil) with 19 oz. of Elite Supreme (an adjuvant) and water at 15 gallons per acre during growth season (15 June thru 15 July in FYs 2018-2020) to poison mature conifers and establish line of sight to target arrays in Redleg (1519 acres during FYs 2018-2020) impact area. Following aerial broadcast treatment, the sites will undergo prescribed burning. The controlled burning of treated areas will take place approximately six weeks after aerial broadcast application of the herbicide mixture (mid-August to mid-September).

On 24 June 2016 test strips (various locations within JRTC training areas) were treated with aerial broadcast application of the herbicide mixture to determine if the proposed action would be effective at killing mature stands of pine trees (no REC found). On 19 October 2016, 15 December 2016 and 11 January 2017 field surveys were conducted by Conservation Branch staff members. Additional herbicide application occurred in the project area on 2 July 2017 as part of FY17 treatment (see REC CY16331). Inspections and subsequent photo plots were conducted to evaluate the effectiveness of an aerial herbicide broadcast to control mature conifers and to document the effects on ground cover over time (see attachment 4). The perennial grasses and ground cover, such as bracken ferns, have been reduced or completely died off in response to the herbicide application. The green-up post herbicide application has mainly been observed to be weedy annuals. These annual plants have less root mass to hold soil in place than the well-established perennial plants they are replacing. Soil erosion (see attachment 7) and the concurrent movement of herbicides adsorbed to organic matter into surface water bodies is a potential impact of the proposed action. Mitigation for this risk is proposed below and in the attached MFR.

Due to the presence of threatened and endangered species, in 2017 prior to the first full-scale aerial herbicide broadcast operation, a Biological Evaluation (see CY16331) that determined the project was not likely to adversely affect either RCW or LPS was submitted to the USFWS. The USFWS concurred with this decision for treatments during FYs 2017-2020.

There are approximately 345 acres of wetlands and an unknown number of miles of streams and creeks within the treatment area. The notable streams nearest to the treatment areas are the East and West forks of the Six Mile Creek. These streams may contain alligator snapping turtle (*Macrochelys temminckii*) and Calcasieu crayfish (*Orconectes blacki*). Other species potentially present are triangle pigtoe mussel (*Fusconaia lananensis*) and Louisiana pigtoe mussel (*Pleurobema riddellii*). Surveys are ongoing. The USFWS has been petitioned to list these four species as endangered or threatened under the Endangered Species Act (see attachment 6). In addition, beginning at the boundary of Fort Polk with The US Forest

Service's Kisatchie National Forest, Six Mile Creek is part of Louisiana's Natural and Scenic Rivers System. On Fort Polk, the East and West forks of the Six Mile Creek are currently listed on the State of Louisiana's section 303(d) list of impaired water bodies due to high pH and levels of fecal coliform.

The discharge of pesticides into or near State water bodies is regulated by the National Pollutant Discharge Elimination System (NPDES) under the Clean Water Act (CWA), which is administered by the Louisiana Department of Environmental Quality (LDEQ) for the US Environmental Protection Agency (US EPA). This requires that such activities be covered by a permit from LDEQ. The Office of the Staff Judge Advocate for JRTC and Fort Polk has made the determination that the proposed action requires authorization under the LDEQ's Individual Permit process (Correspondence 1).

These compounds are strongly adsorbed to organic molecules and very persistent (long half-life). They are most likely to build up in forest litter, soils and wetland/stream sediments; after which they may become mobile, following large flood events. Especially in the absence of a sufficient quality and quantity of vegetative cover to hold them in place until they breakdown. Application of herbicides over soils identified as Guyton, which coincide with wetland and riparian areas, shall not occur and the proponent shall insure the established buffers (200 feet) are adhered to (see MFR). During aerial broadcast application of the herbicide mixture all appropriate measures must be taken to avoid potential drift into nontarget areas (e.g., wind speed less than 8 miles per hour, no low level inversion conditions, proper spray equipment, etc.--as indicated on the herbicide labels), ensure efficacy (e.g., no rainfall four hours prior to or after treatment, trees in full growth stage, etc.--as indicated on the herbicide labels) and document the area treated (e.g., real time differential GPS tracking system capable of producing individual swath flight line shape files of the treated area within ArcGIS and designed to provide the pilot with swath and directional guidance, such as a Trimble Ag GPS TrimFlight3 system). Monitoring will be conducted to document potential adverse effects associated with the project. Annual Monitoring Plan to include: 1. DGPS data of treatment areas, 2. Continuation, and expansion (as necessary), of photo plots and vegetation monitoring, 3. Collection and testing of surface water samples for the herbicides post application(s). Prior to treatments subsequent to FY20, the proponent will coordinate with ENRMD/CB to determine potential residual concentration of herbicides in soils and for additional NEPA documentation. Monitoring results will be considered in the development of further environmental analysis for additional aerial herbicide broadcast applications to provide clear line of site to target arrays from observation points.

The proposed action has been submitted for a Record of Environmental Consideration under categorical exclusion (CX) number (g-1), Code of Federal Regulations (CFR) Title 32 Part 651.29, CX (g-1) states – "Routine repair and maintenance of buildings, airfields, grounds, equipment and other facilities. Examples include, but are not limited to: Removal and disposal of asbestos-containing material (for example, roof material and floor tile) or lead-based paint in accordance with applicable regulations; removal of dead, diseased or damaged trees; and repair of roofs, doors, windows or fixtures (REC required for removal and disposal of asbestos-containing material and lead-based paint or work on historic structures)." In order for a CX to be used as stated in CFR Title 32 Part 651.29, a set of screening criteria must be met. Those screening criteria are listed below.

A CX may be used only when each of the following screening criteria is true:

- The action has NOT been segmented. **TRUE**
- The action does NOT have a reasonable likelihood of causing significant effects on public health, safety or the environment. **TRUE**
- This action does NOT cause an imposition of uncertain or unique environmental risks. **TRUE**
- This action is NOT of greater scope or size than is normal for this category of action. **TRUE**

- This action is NOT expected to produce reportable releases of hazardous or toxic substances as specified in 40 CFR part 302, Designation, Reportable Quantities and Notification. **TRUE**
- This action is NOT expected to produce releases of petroleum, oils, and lubricants (POL) except from a properly functioning engine or vehicle, application of pesticides and herbicides, where the proposed action results in requirement to develop or amend a Spill Prevention, Control, or Counter Measure Plan. **TRUE**
- There is NO reasonable likelihood of this action violating any federal, state or local law or requirements imposed for the protection of the environment. **TRUE**
- This action does NOT involve effects on the environment that are highly uncertain, involve unique or unknown risks or are scientifically controversial. **TRUE**
- This action does NOT establish a precedent for future actions that are reasonably likely to have a future significant effect. **TRUE**
- This action is NOT expected to potentially degrade an already existing poor environment or affect areas not already significantly modified from their natural condition. **TRUE**
- This action is NOT expected produce unresolved effects on (1) Proposed federally listed, threatened or endangered species or their designated critical habitats, (2) Properties listed or eligible for listing on the Natural Register of Historic Places, (3) Areas having special designation or recognition such as prime or unique agriculture lands; coastal zones; designated wilderness or wilderness study areas; wild and scenic rivers; National Historic Landmarks; 100-year flood plains; wetlands; sole source aquifers; National Wildlife Refuges; national Parks; areas of critical environmental concern; or other areas of high environmental sensitivity, or (4) Cultural Resources as defined in AR 200-4. **TRUE**

Conclusion of Findings

An inspection of the sites treated by aerial broadcast of the herbicide mixture at 15 gallons per acre during July 2017 (see CY16331) was conducted to evaluate the efficacy of the proposed action and as an assessment of the potential environmental impacts of the proposed project (see attachments 4, 6 and 7). A study of the diatom communities approximately 2.5 miles downstream from FY17 treatments found there was no evidence of effects on diatom/periphyton communities from the herbicide application in that year. **No samples were collected or tested for the presence or absence of the herbicides directly.** For natural resources of concern such as: air quality, indoor air quality, storm water, drinking/waste water systems, cultural resources, timber, T&E species, species of concern, MBTA, sensitive plants, wetlands, soils/erosion control, noise, asbestos, lead-based paint, solid waste, hazardous materials, toxic substances and environmental restoration/SWMU a member of the Compliance Branch, Natural Resources Management Branch, Conservation Branch or other agency conducted an evaluation. These reports will be attached to the REC as project guidance and as part of the NEPA administrative record. If there are no changes to this scope of work or the location of the proposed action, no other environmental analysis is required. The proposed action is being implemented as a Record of Environmental Consideration under categorical exclusion (g-1) CFR Title 32 Part 651.29.

Jon West
Chief, Conservation Branch
Environmental and Natural Resources Management Division
Ft. Polk, LA 71459
Ph: (337) 531-6305

From: Duck, Thomas G (Tom) CIV USARMY USAG (US)
To: Broussard, Nathan G CIV USARMY IMCOM CENTRAL (US)
Cc: Chatelain, Vincent J CIV USARMY JRTC HQ (US); Dunlevy, Peter A CIV USARMY IMCOM CENTRAL (US); Marshall, Andrew R CTR USARMY (US); Kelley, Amanda G CTR USARMY IMCOM AEC (US); Hildebrand, Douglas Allen (Doug) CTR USARMY USAG (US)
Subject: RE: CY18018 Aerial Spraying of Impact Areas to Re-Establish Line of Sight (HC-0039-6-P) (UNCLASSIFIED)
Date: Tuesday, October 31, 2017 9:03:59 AM
Attachments: IMPO-PWE_CY17188_V-1_20170711.pdf

CLASSIFICATION: UNCLASSIFIED

All,
Please comment on the attached REC. The attached work described in the attached REC applies to the following area of concern:

Water Quality

The attached work described in the attached REC does not apply to the following areas of concern:

Asbestos
Lead based paint
Air Quality
Indoor Air Quality
Water/Waste Water Systems
Cultural Resources
Noise
Solid Waste
Hazardous Material \ Waste
Toxic Substances
Environmental Restoration/SWMU

Thanks,
Tom

-----Original Message-----
From: Chatelain, Vincent J CIV USARMY JRTC HQ (US)
Sent: Monday, October 30, 2017 3:25 PM
To: Duck, Thomas G (Tom) CIV USARMY USAG (US) <thomas.g.duck.civ@mail.mil>; Hildebrand, Douglas Allen (Doug) CTR USARMY USAG (US) <douglas.a.hildebrand.ctr@mail.mil>
Cc: Dunlevy, Peter A CIV USARMY IMCOM CENTRAL (US) <peter.a.dunlevy.civ@mail.mil>; Chatelain, Vincent J CIV USARMY JRTC HQ (US) <vincent.j.chatelain.civ@mail.mil>; Kelley, Amanda G CTR USARMY IMCOM AEC (US) <amanda.g.kelley6.ctr@mail.mil>; Marshall, Andrew R CTR USARMY (US) <andrew.r.marshall8.ctr@mail.mil>
Subject: CY18018 Aerial Spraying of Impact Areas to Re-Establish Line of Sight (HC-0039-6-P)

All,

This REC has been submitted for environmental review;

CY18018- Aerial Spraying of Impact Areas to Re-Establish Line of Sight (HC-0039-6-P)

Project Evaluator is Peter Dunlevy

Please submit all comments and responses to Peter Dunlevy, Vincent Chatelain, Amanda Kelly, and Andrew Marshall

From: Hildebrand, Douglas Allen (Doug) CTR USARMY USAG (US)
To: Dunlevy, Peter A CIV USARMY IMCOM CENTRAL (US); Chatelain, Vincent J CIV USARMY JRTC HQ (US); Marshall, Andrew R CTR USARMY (US); Kelley, Amanda G CTR USARMY IMCOM AEC (US)
Cc: Broussard, Nathan G CIV USARMY IMCOM CENTRAL (US)
Subject: REC CY18016
Date: Tuesday, October 31, 2017 9:44:46 AM
Attachments: Stormwater Aerial REC Response.pdf

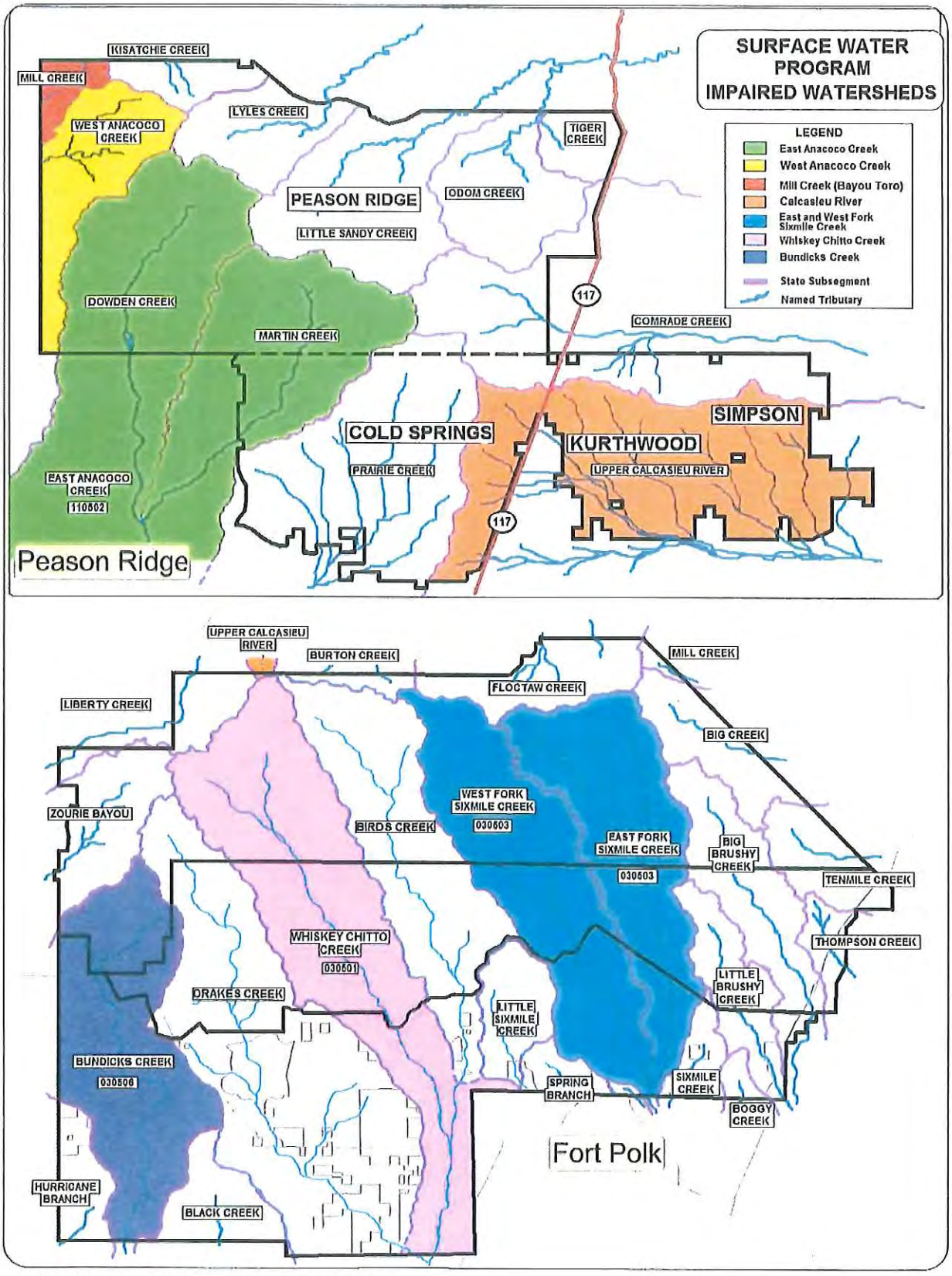
All,

Attached Is a list of watersheds on Fort Polk and Peason Ridge that have been declared impaired my LDEQ. Please ensure the application of herbicides are IAW the manufactures recommendations.

Thanks,

Douglas Hildebrand
Water Resources Program Lead
DPW, ENRMD, CMB
Artemis Advantage, LLC
1647 23rd St Bldg 2541
Fort Polk, LA 71459
O: 337-531-4013
C:337-353-3679
Fax: 337-531-8950

Figure 5-1: Impaired Watershed on Fort Polk and Peason Ridge



NOTE: Impaired Subsegment Watersheds are shown in color.

5.0 IMPAIRED FORT POLK WATERBODIES

5.1 Impaired Streams

Table 5-1 includes information about those streams in the Fort Polk area that have been declared impaired by the LDEQ. Presented in Table 5-1 are the designated usage types for each impaired Fort Polk stream. This information is derived from the impaired state subsegments report, as listed in Table 3-2. Therefore, the following subsegments that flow within the boundaries of Fort Polk-owned and/or leased lands are considered impaired in the 2016 303(d) report:

Subsegment	Name
110401	Bayou Toro (Mill Creek) Headwaters to Hwy 473.
110501	West Anacoco Creek: Headwaters to Vernon Lake.
110502	East Anacoco Creek: Headwaters to Vernon Lake & Anacoco Lake, including Dowden and Martin Creeks.
030101	Upper Calcasieu River: Headwaters to Highway 8.
030506	Bundicks Creek: Headwaters to Bundicks Lake, not including Hurricane Branch and Black Creek.
030501	Whiskey Chitto Creek: Headwaters to Southern Boundary of Fort Polk.
030503	East Fork Sixmile Creek: Headwaters to Southern Boundary of Fort Polk.
030504	West Fork Sixmile Creek: Southern Boundary of Fort Polk to Whiskey Chitto Creek.

Table 5.1 presents details of the impairments and Figure 5-1 depicts those streams at Fort Polk that have been deemed impaired by the most recent LDEQ criteria.

Table 5-1: Fort Polk Waterway Impairment Information – 2016 303(d) List

Water Body Location	Fort Polk Stream	USGS Station No.	Louisiana Subsegment Watershed	Louisiana Subsegment Watershed Number	State Sampling Points in Subseg-ment	2012			2014			2016		
						Usage	Impairment	Suspected Cause	Usage	Impairment	Suspected Cause	Usage	Impairment	Suspected Cause
Fort Polk	Bundicks Creek	3101380931-25001[3] 3102020931-15900[3] 3059280931-30600[3] 3056310931-20600[3]	Bundicks Creek: Headwaters to Bundicks Lake	030506	834[2]	PCR, SCR, FWP*	Dissolved Oxygen	Natural Sources, Rangeland Grazing, Silviculture Plantation Management	PCR, SCR, FWP*	Dissolved Oxygen; Follow up data comments – CTM Full: Lead	Natural Sources, Rangeland Grazing, Silviculture Plantation Management	PCR, SCR, FWP*	Dissolved Oxygen; Follow up data comments – CTM Full: Lead	Natural Sources, Rangeland Grazing, Silviculture Plantation Management
Fort Polk	Hurricane Creek	Not Included in the Impairment												
	Black Creek													
Fort Polk	Whiskey Chitto	08013600 3106420930-93001 3106380930-92901 08013600[3] 08013610[3] 08013660 3056570930-31000 08013720[3] 08013750[3] 08014500[3]	Whiskey Chitto Creek: Headwaters to Southern Boundary of Fort Polk	030501	548, 829[2], 3593[1,2]	PCR*, SCR, FWP	Fecal Coliform	Wildlife Other than Waterfowl	PCR, SCR, FWP	None		PCR*, SCR, FWP	Fecal Coliform	Wildlife Other than Waterfowl

(1) Sampling point added in 2008.
(2) Assessment of subsegment, not a physical assessment at a Fort Polk site.
(3) Site data may not be representative of sampling site.
(*) Highlighted use support classification is the category with the associated impairment for that year.
PCR=Primary Contact Recreation, SCR=Secondary Contact Recreation, FWP=Fish & Wildlife Propagation, ONR= Outstanding Natural Resource; AGR=Agriculture.

What Needs to be in the File Room

All original documents state and federal

Letter from EPA and LADEQ
Inspection sheet
Copies of letter going back to EPA and LDEQ
Copies of letter going to EPA and LDEQ

If original letter from the EPA or LDEQ must with project a copy must place in the file room (make a note on a post it)

Original minutes of meeting (EQCC, QRP)
Copy of Delegate of duty
Original signed of Command Policy Memo/delegate of duty

Water Body Location	Fort Polk Stream	USGS Station No.	Louisiana Subsegment Watershed	Louisiana Subsegment Watershed Number	State Sampling Points in Subsegment	2012			2014			2016		
						Usage	Impairment	Suspected Cause	Usage	Impairment	Suspected Cause	Usage	Impairment	Suspected Cause
Fort Polk	East & West Fork Sixmile Creek	08013850 3103260930-04301 3100300925-91800 3100080925-75400 08013880[3] 08013876[3] 08013877[3] 3107350925-91101 3104070925-90001 3102050925-801 3102050925-80101 3100080925-75400	East & West Forks of Sixmile Creek: Headwaters to the Southern Boundary of Fort Polk	030503 030504	551, 552, 831[2]	PCR, SCR*, FWP*	1) Low pH (2) Fecal Coliform	1) Naturally Occurring Organic Acids, Silviculture Plantation Management; 2) Natural Sources, On-site Treatment Systems (Septic Systems and Similar Decentralized Systems), Sewage Discharges in Unsewered Areas	PCR, SCR, FWP*	Fecal Coliform	Naturally Occurring Organic Acids, Silviculture Plantation Management. Natural Sources, On-site Treatment Systems (Septic Systems and Similar Decentralized Systems), Sewage Discharges in Unsewered Areas	PCR*, SCR*, FWP	1) Low pH 2) Fecal Coliform	1) Naturally Occurring Organic Acids, Silviculture Plantation Mgmt. 2) Natural Sources, On-site Treatment Systems (Septic Systems and Similar Decentralized Systems), Sewage Discharges

(1) Sampling point added in 2008.
(2) Assessment of subsegment, not a physical assessment at a Fort Polk site.
(3) Site data may not be representative of sampling site.
(*) Highlighted use support classification is the category with the associated impairment for that year.
PCR=Primary Contact Recreation, SCR=Secondary Contact Recreation, FWP=Fish & Wildlife Propagation, ONR= Outstanding Natural Resource; AGR=Agriculture.

Water Body Location	Fort Polk Stream	USGS Station No.	Louisiana Subsegment Watershed	Louisiana Subsegment Watershed Number	State Sampling Points in Subseg-ment	2012			2014			2016		
						Usage	Impairment	Suspected Cause	Usage	Impairment	Suspected Cause	Usage	Impairment	Suspected Cause
Peason Ridge	Mill Creek	08025384[2] 08025390[2]	Bayou Toro: Headwaters to Hwy 473	110401	1160[2]	PCR*, SCR, FWP*	1) Dissolved Oxygen 2) Fecal Coliform	1) Drought-related Impacts, Runoff from Forest/ Grassland/ Parkland, Rural (Residential Areas). 2) Drought-related Impacts, Runoff from Forest/ Grassland/ Parkland, Rural (Residential Areas)	PCR, SCR, FWP	None		PCR*, SCR, FWP*	1) Total Dissolved Solids 2) Fecal Coliform	1) Drought-related Impacts, Runoff from Forest/ Grassland/ Parkland, Rural (Residential Areas) and Unknown Sources
Peason Ridge	West Anacoco Creek	08026700[3]	West Anacoco Creek: Headwaters to Vernon Lake	110501	1162[2]	PCR*, SCR, FWP*	1) Dissolved Oxygen 2) Fecal Coliform	1) Managed Pasture Grazing, Natural Sources, Drought-Related Impacts. 2) Drought-Related Impacts, Runoff from Forest/ Grassland/ Parkland, Rural (Residential Areas)	PCR*, SCR, FWP*	1) Dissolved Oxygen 2) Fecal Coliform	1) Managed Pasture Grazing, Natural Sources, Drought-Related Impacts. 2) Drought-Related Impacts, Runoff from Forest/ Grassland/ Parkland, Rural (Residential Areas)	PCR*, SCR, FWP*	1) Dissolved Oxygen 2) Total Dissolved Solids 3) Fecal Coliform	1) Managed Pasture Grazing, Natural Sources,. 2) Construction Stormwater Discharge (Permitted), Silvicultural Harvesting, Site Clearance 3) Drought-Related Impacts, Runoff from Forest/ Grassland/ Parkland, Rural Residential Areas

(1) Sampling point added in 2008.
(2) Assessment of subsegment, not a physical assessment at a Fort Polk site.
(3) Site data may not be representative of sampling site.
(*) Highlighted use support classification is the category with the associated impairment for that year.
PCR=Primary Contact Recreation, SCR=Secondary Contact Recreation, FWP=Fish & Wildlife Propagation, ONR= Outstanding Natural Resource; AGR=Agriculture.

From: Prince, Rj CTR USARMY IMCOM (US)
To: Dunlevy, Peter A CIV USARMY IMCOM CENTRAL (US)
Subject: Aerial Spray
Date: Tuesday, October 31, 2017 8:16:12 AM

We are wondering if there was a REC done on the Aerial Spray beforehand. Doug says he remembers one but we cannot seem to locate it. If you have any information on the Aerial Spray REC during diatom study please let me know. Thank you.

PRINCE, R.J.
RJ Prince, Contractor (Artemis Advantage)
Water Resource Technician / DPW-ENRMD
1647 23rd Street Building 2541
Fort Polk , LA 71459-5509
Rj.prince.ctr@mail.mil
Office: 337-531-0998
Cell: 318-609-1334

From: Moore, Kenneth R CIV USARMY IMCOM (US)
To: Dunlevy, Peter A CIV USARMY IMCOM CENTRAL (US)
Subject: RE: CY18018 Aerial Spraying of Impact Areas to Re-Establish Line of Sight (HC-0039-6-P)
Date: Tuesday, October 31, 2017 8:49:41 AM

Two RCW recruitment clusters will have to be establish to conform to the ESMC BO.

Ken

Kenneth Moore
Endangered Species Ecologist
Civilian
DPW, ENRMD, CB
1697 23rd Street Building 2543
Fort Polk, LA 71459
Office: (337) 531-7078
DSN: 863-7078
kenneth.r.moore106.civ@mail.mil

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-----Original Message-----
From: Dunlevy, Peter A CIV USARMY IMCOM CENTRAL (US)
Sent: Tuesday, October 31, 2017 7:41 AM
To: Pearce, Sarah E CIV USARMY IMCOM CENTRAL (US) <sarah.e.pearce2.civ@mail.mil>; Moore, Kenneth R CIV USARMY IMCOM (US) <kenneth.r.moore106.civ@mail.mil>; Thomas, Georgia G CTR USARMY (US) <georgia.g.thomas.ctr@mail.mil>; Jones, Javance E Sr CTR USARMY JRTC HQ (US) <javance.e.jones2.ctr@mail.mil>; Ray, Christopher J CIV (US) <christopher.j.ray28.civ@mail.mil>
Subject: FW: CY18018 Aerial Spraying of Impact Areas to Re-Establish Line of Sight (HC-0039-6-P)

Please comment on the attached REC regarding your area (RCW, Sensitive Species, Botany, Soil Erosion and Pest Management). If you have any questions, please see me. Thanks

Sincerely,

Peter Dunlevy
Ecologist/CIV
DPW, ENRMD, Conservation Branch
Ft. Polk, LA 71459
(337) 531-1363 (DSN 863)

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-----Original Message-----
From: Chatelain, Vincent J CIV USARMY JRTC HQ (US)
Sent: Monday, October 30, 2017 3:25 PM
To: Duck, Thomas G (Tom) CIV USARMY USAG (US) <thomas.g.duck.civ@mail.mil>; Hildebrand, Douglas Allen (Doug) CTR USARMY USAG (US) <douglas.a.hildebrand.ctr@mail.mil>

Cc: Dunlevy, Peter A CIV USARMY IMCOM CENTRAL (US) <peter.a.dunlevy.civ@mail.mil>; Chatelain, Vincent J CIV USARMY JRTC HQ (US) <vincent.j.chatelain.civ@mail.mil>; Kelley, Amanda G CTR USARMY IMCOM AEC (US) <amanda.g.kelley6.ctr@mail.mil>; Marshall, Andrew R CTR USARMY (US) <andrew.r.marshall8.ctr@mail.mil>
Subject: CY18018 Aerial Spraying of Impact Areas to Re-Establish Line of Sight (HC-0039-6-P)

All,

This REC has been submitted for environmental review;

CY18018- Aerial Spraying of Impact Areas to Re-Establish Line of Sight (HC-0039-6-P)

Project Evaluator is Peter Dunlevy

Please submit all comments and responses to Peter Dunlevy, Vincent Chatelain, Amanda Kelly, and Andrew Marshall

Thank You

Vincent J. Chatelain, CIV
NEPA Program Manager
Ecologist, Civilian
DPW, ENRMD, Conservation Branch
1697 23rd Street. Building 2543
Ft. Polk, LA 71459
Ph: (337) 531-9919
vincent.j.chatelain.civ@mail.mil

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Dunlevy, Peter A CIV USARMY IMCOM CENTRAL (US)

From: Thomas, Georgia G CTR USARMY (US)
Sent: Tuesday, November 14, 2017 7:27 AM
To: Dunlevy, Peter A CIV USARMY IMCOM CENTRAL (US)
Cc: Pearce, Sarah E CIV USARMY IMCOM CENTRAL (US); Cedars, Allison M CIV USARMY IMCOM (US); Perry, Jaimie H CTR (US)
Subject: CY18018 Aerial Spraying of Impact Areas to Re-Establish Line of Sight (HC-0039-6-P)
Attachments: Herbicide Application Monthly Photos.pdf; Areal Herbicide Spray Test Strip Phot Plots Summary.docx

Dear Mr. Dunlevy,

While there are no known sensitive plant species, or special botany habitats in the project area, the botany program has concerns about impacts of CY18018 Aerial Spraying of Impact Areas to Re-Establish Line of Sight (HC-0039-6-P). The project area has not been surveyed due to its status as an impact area. However, there are known sensitive bog habitats, which are home to rare plants, adjacent to the impact zones and project areas. The bog habitats are fed by underground seeps and aquafers that may be negatively impacted due to the project.

Additionally, the botany crew has been observing the initial areal herbicide test plots, south of TAC 1B, for approximately 10 months. There has been a notable loss of vegetative ground cover. The perennial grasses, and ground covers, such as bracken ferns, have been reduced or completely died off in response to the rounds of herbicide application. The green up post herbicide application, discussed in the rec, has mainly been observed to be weedy annuals. These annual plants have less root mass to hold soil in place than the well-established perennial plants they are replacing. We suggest long term monitoring of this issue. Furthermore, the rec states that the debris from the dead trees should provide ground cover and erosion control. The timing of the debris fall does not support its ability to act as erosion control after the initial spray. It takes months for the trees to lose their needles and branches. A summary of our photo plot findings is attached.

Another, potential issue arising from this project is the spread of invasive plants. Invasive plants often thrive in disturbed areas and are common early successional species. The project area has the potential to become a seed source for invasive plants as they spread out of the impact zone and into the greater Fort Polk training lands. Safe observation and monitoring of this issue will be difficult due the safety restrictions in the impact area.

Attached is a summary on our photo plot findings at the test strips.

Sincerely,

Georgia G. Thomas, Cooperator
Botany Specialist
Colorado State University, CEMML
DPW, ENRMD, Conservation Branch
Ft. Polk, LA. 71459
Ph: (337) 531-7535, DSN 863-7535
Cell: (203) 641-5771
Email: Georgia.g.thomas.ctr@mail.mil

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Aerial Herbicide Spray Test Strip Phot Plots Summary

Botany Program: Georgia Thomas and Jaimie Perry

Project Summary:

The photo plots fall within a project area adjacent to the Redleg Artillery Impact Area and can be safely accessed for monitoring. Herbicide was first applied in test strips on June 24, 2016 (Figure 1). Following the herbicide application, the project area was burned during the 2016-2017 winter season as part of standard forestry practices. Additional herbicide application occurred in the project area on July 2, 2017 as part of FY17 treatment.

Photo plots were visited monthly to observe and document the effects of the aerial herbicide application on test strips south of TAC 1B in Six Mile Creek 2 training area. Findings include a loss of perennial vegetative ground cover within the areas heavily impacted by the herbicide.

Methods:

Five 3x3 meter observation plots were established on 1/11/17. An additional control plot was established on 3/15/17. The sites were revisited monthly. Photos were taken of each plot. Plant species found within the plot were observed and when possible identified to species level. To capture landscape level effects, additional photos were taken of the surrounding area and from an observation tower.

Due to drift during aerial application, plots received varying amounts of herbicide. A summary of the plots and locations can be found in Table 1.

Results:

All test plots show the effects of herbicide application including the death of longleaf/loblolly pine trees and loss of perennial plant understory. The adjacent control plot demonstrates a healthy long leaf/loblolly pine forest with a healthy perennial understory dominated by little bluestem, bracken ferns, poison oak and a variety of seasonal forbs. The herbicide impacted plots are dominated by weedy and early annual successional species including *Eupatorium capillifolium*, dogfennel, *Euphorbia pubentissima*, flowering false spurge, *Diodia teres*, *Chamaecrista fasciculate*, partridge pea, *Boltonia diffusa*, Bolts daisy, *Latuca flodidana*, Flat-top goldenrod, *Euthamia leptocephala* and *Gnaphalium obtusifolium*. The robust understory mix of perennial grasses and ground cover found in the control plot did not recover through the observed growing season. Plots 2 and 5 were in the direct line of herbicide spray during the FY17

treatment and lack a healthy understory green up as of October 2017. Photos of the plots along with more detailed monthly write ups can be found below and in the attached PowerPoint.

Concerns and Suggested Action:

If areal herbicide application is to continue on a rotational basis for the foreseeable future (as detailed in CY18016) a more detailed monitoring protocol is suggested to access the recovery of ground cover vegetation. The loss of perennial ground cover is especially concerning due to the potential of top soil loss and erosion. Additionally, the area should be monitored for invasive species.

Table 1: Photo Plot Location and Herbicide Impact

Name	**X**	**Y**	**June 24 2016: Test Strip**	**July 2, 2017: FY17 Treat.**
Plot 1	498887	3442396	Edge of Impact	Edge of Impact
Plot 2	498910	3442364	Edge of Impact	Direct Impact
Plot 3	498853	3442364	Direct Impact	Edge of Impact
Plot 4	498817	3442369	Edge of Impact	Edge of Impact
Plot 5	498827	3442409	Edge of Impact	Direct Impact
Control	498950	3442432	No Direct Impact	No Direct Impact

Figure 1.

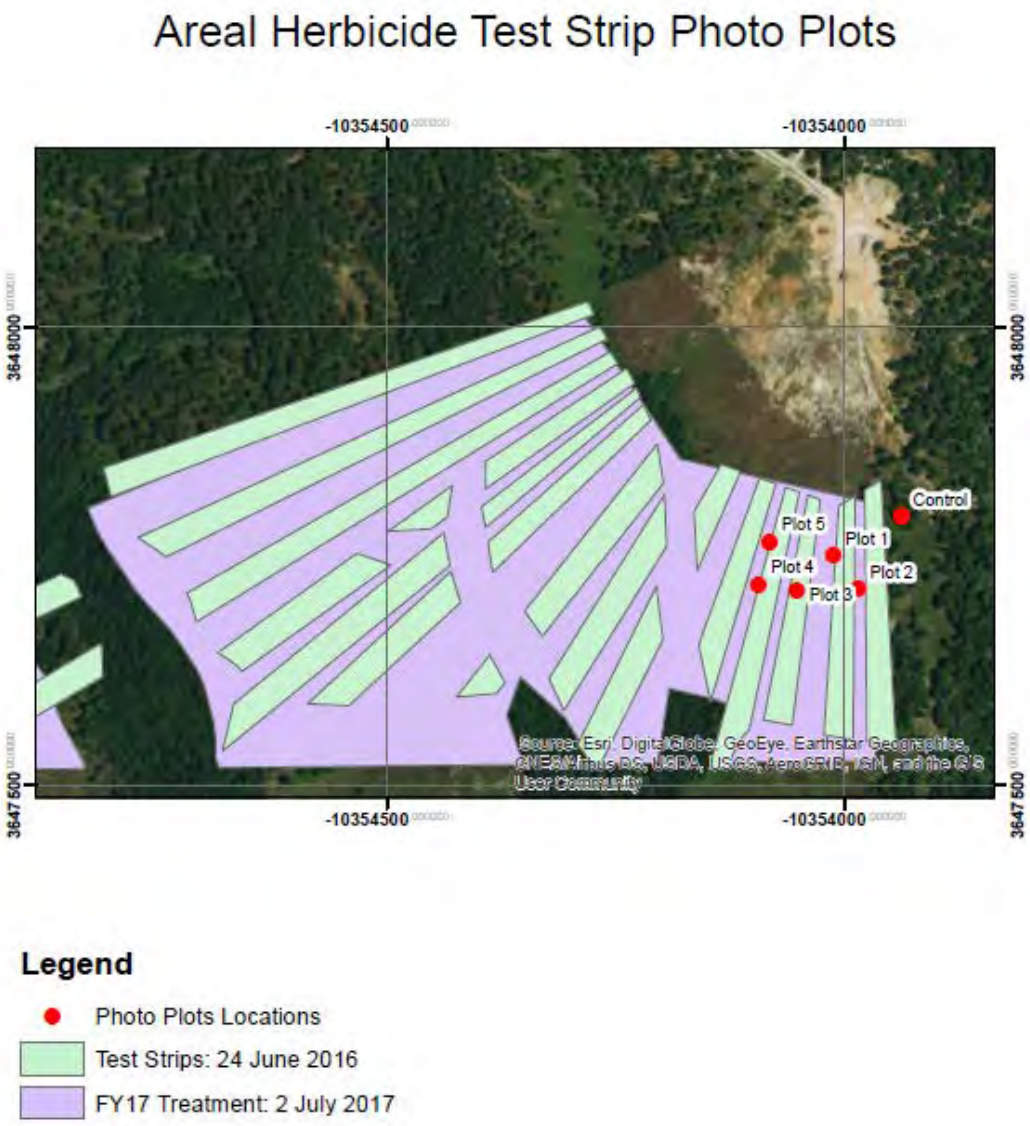


Figure 2. Aerial Photo of Project Area 7-5-17

Monthly Observations:

January: 1/11/17: Ground cover vegetation was limited. In addition to the herbicide application, vegetation was impacted by a recent burn and the winter season. A small number of grasses and forbs were starting to grow in the plots. Young forbs included *Silphium laciniatum*.

February: 2/15/17: Forb and grass cover in the plots increased during the month. Less vegetation cover was observed in the areas with herbicide application than in control areas which had not been subject to herbicide treatment but were subject to the burn. Observed species included *Nothoscordum bivalve* which was blooming in many of the plots. Trees in herbicide application zone appeared to be dying with brown needles.

March: 3/15/17: Predominate cover vegetation in the control plot included grass species and bracken fern, *Pteridium aquilinum.* Less vegetation cover was observed in the herbicide application plots. Newly observed species observed included oak seedlings, *Quercus* sp., Bluets, *Houstonia pusilla*, and blackberry seedlings, *Rubus sp*. Many of these species do well in disturbed areas.

April: 4/14/17: Predominate cover vegetation in the control plot included grass species and bracken fern, *Pteridium aquilinum.* Less vegetation cover was observed in the herbicide application plots. However, vegetation cover had increased in all plots due to the spring season. The trees hit with herbicide showed little signs of life. Vegetation cover in the experimental plots varied with the

concentration of herbicide applied (as observed from the strip edges of alive vs. dead trees). Newly observed species in the experimental plots included *Plantago sp*., Mocks Bishop's Weed, *Ptilimnium capillaceum*, *Oxalis sp., Solidago sp.* and *Veronica sp.*

May: 5/19/17: Predominate cover vegetation in the control plot included grass species, *Schizachyrium scoparium*, bracken fern, *Pteridium aquilinum* and poison oak, *Toxicodendron pubescens.* Forbs observed in the control plot included goat's rue, *Tephrosia virginiana*, spiderwort, *Tradescantia* sp., and Pinewoods lily, *Alophia drummondii*. Despite the fire all surrounding Blue Jack Oak, *Quercus incana*, and Pines are alive in the control plot. A lower percent vegetative ground cover was observed in the test plots than the control plots. However, vegetation cover continued to increase in all plots due to the approaching summer season. Pine trees surrounding Plot 1 were dead. Species in plot 1 showed a low percent cover and included many weedy species such as goat's rue, *Tephrosia virginiana*, Venus looking glass, *Triodanis biflora*, *Plantago* sp., *Oxalis* sp., *spriderwort*, *Tradescantia* sp. Some of the blue jack oak surrounding plot 2 were alive. Others were dead. Species observed in plot 2 include, *Solidago* sp., *Silphium* sp, Pinewood lilly, *Alophia drummondii*, and Partridge pea, *Chamaecrista fasciculate*. Although there was a low percent cover, the same species were observed in plot 3, 4, and 5. Additional species observed include *Panicum* sp, Flea bane, *Erigeron*, Pencil flower, *Tephrosia onobrychoides*, black eyed Susan, and poison ivy.

June: 6/19/2017: The plots have a similar species composition to our last visit. However, most plants have grown and some species like the *Plantago* are seeding and senescing. Predominate cover vegetation in the control plot included grass species, *Schizachyrium scoparium*, bracken fern, *Pteridium aquilinum* and poison oak, *Toxicodendron pubescens.* A shrub, Winged Sumac, *Rhus copallinum*, is also growing in the control plot. Forbs observed in the control plot included goat's rue, *Tephrosia virginiana*, spiderwort, *Tradescantia* sp., and black eyed Susan. Less vegetation cover was observed in the herbicide application plots. Species in plot 1 showed a low percent cover and included many weedy species such as goat's rue, *Tephrosia virginiana*, *Plantago* sp., *Oxalis* sp., *spriderwort*, *Tradescantia* sp. Species observed in plot 2 include black eyed Susan, *Solidago* sp., and Partridge pea, *Chamaecrista fasciculate,* blazing star*, Liatris sp., and* blue Jack oak*, Quercus incana*. Although there was a low percent cover, the same species were observed in plot 3, 4, and 5. Additional species observed include *Panicum* sp., Flea bane, *Erigeron*, Pencil flower, *Tephrosia onobrychoides*, black eyed Susan, and *Diodia teres*.

July: 7/12/2017: In response to a recent herbicide application, understory vegetation in plots 2 and 5 have died. Plots 1, 3, and 4 were not directly in the line of spray. However understory vegetation did experience effects from the herbicide application. Plot 3 in particular showed signs of plant death. Presumably some but not all of plot 3 received direct herbicide application. In plot 1, along the edge of the spraying, *Rhexia* sp. and *Erigeron* sp. were in bloom however vegetation is still sparse. In the control plot, the species previously reported were continuing to thrive and showed normal phonologic shifts.

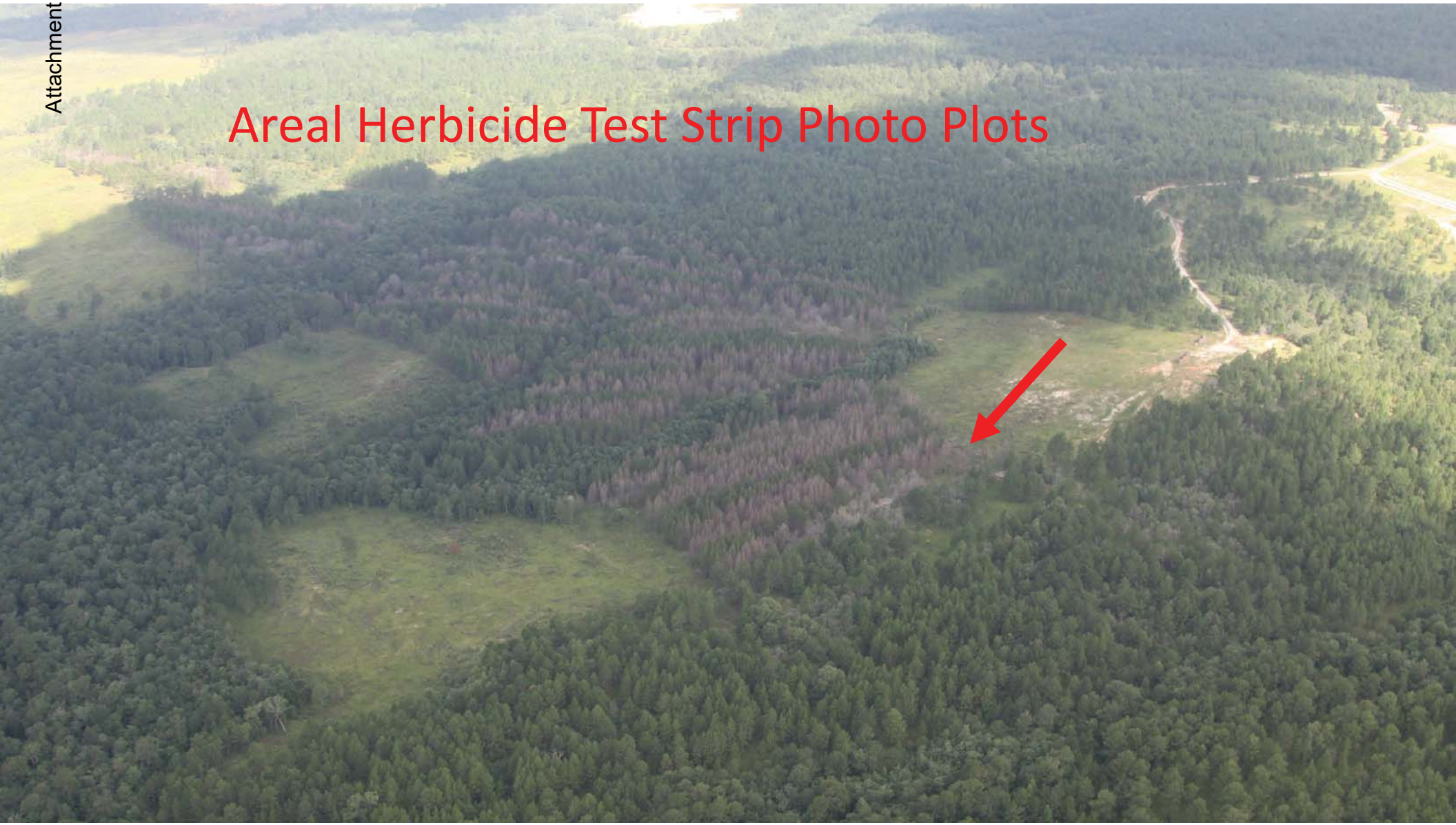
August: 8/11/17: As the summer heat continues, understory vegetation is continuing to feel the effects of the herbicide application and the increased sunlight. In the control plot, the Bracken fern is turning brown with age. Plots 1, 3, and 4 vegetation includes weedy species such as *Erigeron*, carrots, and *Hypericum*. Plots 2 and 5, more directly sprayed by the herbicide, have no living plants.

September: 9/22/17: Plots 2 and 5 show little living plant cover. Basal rosettes of *Gnaphalium obtusifolium*, rabbit tobacco, were observed in plot 5. Plots 1, 3, and 4 had a variety of weedy species and early colonizing species including, *Eupatorium capillifolium*, dogfennel, *Euphorbia pubentissima*,

flowering false spurge, *Diodia teres*, *Chamaecrista fasciculate*, partridge pea, *Erechtites hieraciifolius*, and *Chrysopisis pilosa*, golden aster. The control plot showed fall successional stages of a healthy pine forest including an understory dominated by *Schizachyrium scoparium*, little bluestem, which was going to seed.

October: 10/23/17: The control plot was dominated by *Schizachyrium scoparium*, little bluestem. None of the test plots had a high percent ground cover of perennial grasses. Loblolly and Longleaf Pine trees killed by the herbicide were beginning to lose branches and were being consumed by beetles. The test plots were dominated by weedy annuals. Plots 1, 3, and 4 contained species such as Bolts daisy, *Boltonia diffusa*, *Latuca flodidana*, Flat-top goldenrod, *Euthamia leptocephala*, and Dog fennel, *Euphorbia pubentissima.* Plot 2 was mostly bare ground. Plot 5 was covered is basal rosettes of rabbit tobacco (*Gnaphalium obtusifolium)* and candy root (*Polygala nana)*.

Attachment 4



Control

Photos taken Mar-Sep

Plot 1

Photos taken Jan-Sep

Plot 2

Photos taken Jan-Sep

Appendix C

CY18016 ENRMD Control Number

Attachment 4

Plot 3

Photos taken Jan-Sep

Appendix C

CY18016 ENRMD Control Number

Attachment 4

Plot 4

Photos taken Jan-Sep



Plot 5

Photos taken Jan-Sep






Dunlevy, Peter A CIV USARMY IMCOM CENTRAL (US)

From: Ray, Christopher J CIV (US)
Sent: Wednesday, November 15, 2017 8:51 AM
To: Dunlevy, Peter A CIV USARMY IMCOM CENTRAL (US)
Cc: Blanks, L R (Reaper) CIV USARMY IMCOM CENTRAL (US)
Subject: RE: CY18018 Aerial Spraying of Impact Areas to Re-Establish Line of Sight (HC-0039-6-P)
Signed By: christopher.j.ray28.civ@mail.mil

Pest Management has no comment.

Christopher J Ray, CIV
Installation Pest Management Coordinator
DPW, ENRMD, Conservation Branch
337-531-1645 Desk
863-1645 DSN
christopher.j.ray28.civ@mail.mil

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-----Original Message-----
From: Dunlevy, Peter A CIV USARMY IMCOM CENTRAL (US)
Sent: Tuesday, October 31, 2017 7:41 AM
To: Pearce, Sarah E CIV USARMY IMCOM CENTRAL (US) <sarah.e.pearce2.civ@mail.mil>; Moore, Kenneth R CIV USARMY IMCOM (US) <kenneth.r.moore106.civ@mail.mil>; Thomas, Georgia G CTR USARMY (US) <georgia.g.thomas.ctr@mail.mil>; Jones, Javance E Sr CTR USARMY JRTC HQ (US) <javance.e.jones2.ctr@mail.mil>; Ray, Christopher J CIV (US) <christopher.j.ray28.civ@mail.mil>
Subject: FW: CY18018 Aerial Spraying of Impact Areas to Re-Establish Line of Sight (HC-0039-6-P)

Please comment on the attached REC regarding your area (RCW, Sensitive Species, Botany, Soil Erosion and Pest Management). If you have any questions, please see me. Thanks

Sincerely,

Peter Dunlevy
Ecologist/CIV
DPW, ENRMD, Conservation Branch
Ft. Polk, LA 71459
(337) 531-1363 (DSN 863)

We are the Army's Home-Serving The Rugged Professional

-----Original Message-----
From: Chatelain, Vincent J CIV USARMY JRTC HQ (US)
Sent: Monday, October 30, 2017 3:25 PM
To: Duck, Thomas G (Tom) CIV USARMY USAG (US) <thomas.g.duck.civ@mail.mil>; Hildebrand, Douglas Allen (Doug) CTR USARMY USAG (US) <douglas.a.hildebrand.ctr@mail.mil>

CY18016 ENRMD Control Number

Cc: Dunlevy, Peter A CIV USARMY IMCOM CENTRAL (US) <peter.a.dunlevy.civ@mail.mil>; Chatelain, Vincent J CIV USARMY JRTC HQ (US) <vincent.j.chatelain.civ@mail.mil>; Kelley, Amanda G CTR USARMY IMCOM AEC (US) <amanda.g.kelley6.ctr@mail.mil>; Marshall, Andrew R CTR USARMY (US) <andrew.r.marshall8.ctr@mail.mil>
Subject: CY18018 Aerial Spraying of Impact Areas to Re-Establish Line of Sight (HC-0039-6-P)

All,

This REC has been submitted for environmental review;

CY18018- Aerial Spraying of Impact Areas to Re-Establish Line of Sight (HC-0039-6-P)

Project Evaluator is Peter Dunlevy

Please submit all comments and responses to Peter Dunlevy, Vincent Chatelain, Amanda Kelly, and Andrew Marshall

Thank You

Vincent J. Chatelain, CIV
NEPA Program Manager
Ecologist, Civilian
DPW, ENRMD, Conservation Branch
1697 23rd Street. Building 2543
Ft. Polk, LA 71459
Ph: (337) 531-9919
vincent.j.chatelain.civ@mail.mil

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Dunlevy, Peter A CIV USARMY IMCOM CENTRAL (US)

From: Pearce, Sarah E CIV USARMY IMCOM CENTRAL (US)
Sent: Friday, November 17, 2017 4:10 PM
To: Dunlevy, Peter A CIV USARMY IMCOM CENTRAL (US)
Cc: West, Jonathan A CIV USARMY IMCOM CENTRAL (US)
Subject: RE: CY18018 Aerial Spraying of Impact Areas to Re-Establish Line of Sight (HC-0039-6-P) (UNCLASSIFIED)
Attachments: Redleg Impact Area Herbicide Study Final Report.pdf
Signed By: sarah.e.pearce2.civ@mail.mil

Classification: UNCLASSIFIED

CLASSIFICATION: UNCLASSIFIED

Peter and Jon,

My response for REC CY18016 on 17 November 2017 for each area of concern in my lane is below:

MBTA: Avian species protected by the Migratory Bird Treaty Act (MBTA) are likely to occur within the proposed areas. Recommend activities associated with this REC (e.g., clearing, aerial broadcast of herbicide, grubbing, mowing and removal of timber) take place between August-February to avoid or minimize, to the extent practicable, the exposure of birds and their resources to avian stressors that result in take.

Sensitive Terrestrial Species: Sensitive terrestrial species other than plants, MBTA, threatened and/or endangered species have not been reported for the areas associated with this REC due to potentially unexploded ordnance (i.e. Inaccessible/unsafe to enter the IMPACT AREA). Some of these sensitive species that are likely in these proposed treatment areas utilize the riparian and wetland areas as a source for water, cover, and/or food; see response below to minimize or avoid take.

Sensitive Aquatic Species: The US Fish and Wildlife Service (USFWS) received a petition requesting the Alligator Snapping Turtle (Macrochelys temminckii), Kisatchie painted crayfish (Orconectes maletae), Calcasieu crayfish (Orconectes blacki), Triangle Pigtoe Mussel (Fusconaia lananensis), Louisiana Pigtoe Mussel (Pleurobema riddellii) be listed as endangered or threatened and critical habitat be designated under the Endangered Species Act (ESA). Petitioned species are those plants and animals for which the USFWS has received a formal request to list as endangered or threatened under the ESA. Whereby the USFWS review process will evaluate threats to those species prior to determining federal listing. The Alligator Snapping Turtle (Macrochelys temminckii) are found in the Calcasieu River drainages on Fort Polk and Kisatchie painted crayfish (Orconectes maletae) are found in the Red River drainages on Peason Ridge. Confirmation of presence/ absence of the other three species of concern are underway whereby results will not be available until November 2018. To minimize and/or avoid take of these sensitive species from downstream effects recommend avoiding aerial broadcast of herbicide within wetland areas and streams by complying with stream buffers defined by the Recommended Forestry Best Management Practices for Louisiana to minimize impacts to aquatic ecosystems.

Monitoring Recommendations: Studies have shown that adverse effects have been observed on crayfish and uninoid mussels in controlled experiments that maintain a static herbicide concentration. Recommend monitoring potential long-term and cumulative impacts of aerial broadcast of herbicides to ensure sustainment of healthy functioning terrestrial and aquatic ecosystems. This monitoring protocol should include at a minimum sampling of treatment areas for forest litter, soils, water quality and wetland/stream sediments on an annual basis to include non-treated control sites. Quality assurance/ quality control should be applied during spray events to ensure no overlapping of spray areas prior to the 5 year rotation identified within this REC.

CY18016 ENRMD Control Number

Redleg Herbicide Study Report (Summary): We examined the effects of a silvicultural herbicide treatment on diatom and periphyton algal communities on Fort Polk, Louisiana, for evidence of potential perturbations to the basis of food-webs of crayfish and uninoid species of concern from 1 May 2017 through 7 August 2017. We used a BACI (before-after control intervention) design (Underwood, A. J. 1993, Stewart-Oaten et al. 1986), to examine effects of herbicide treatment. Sample sites were classified by site class as Control (Little Brushy Creek) or Impact (East Fork and West Fork Sixmile Creeks). Samples before herbicide application (2 July 2017) were classified as Before treatment else After treatment, and samples on or before the first post-treatment rain event (10 July 2017) were classified as Before post-treatment rain else After post-treatment rain event. For the study period 15 sample events across three sample sites were anticipated for a total of 45 samples. Forty-two (42) samples were collected, with one scheduled sample event missed due to high water (5 June 2017). All water physiochemical metrics were collected at all sample events. Thirteen (13) 7-day and 7 14-day diatometer slide collections were scheduled of which 12 and 7 were collected, respectively. We found evidence of trends in several physiochemical metrics, diatom survival, and percent diatoms over the study period as well as differences among streams unrelated to the herbicide treatment; however, there was no evidence of effects of herbicide application on diatom or periphyton survival or percent diatoms, either directly after herbicide application or following rainfall events after application. Likewise, there was no apparent change in diatom assemblages, either in species present or relative abundances following application. Trends in diatom abundance, survival and percent of the algal community appear to be associated with a seasonal increase in water temperature over the study period. In summary, there was no evidence of effects on diatom/periphyton communities from the herbicide application. We also reviewed the literature on the effects of herbicides on crayfish and uninoid mussels. Although adverse effects have been observed on crayfish and uninoid mussels in controlled experiments that maintain a static herbicide concentration, similar effects are not anticipated in streams due to brief, pulsed herbicide exposure.

Redleg Herbicide Study Report (Final Report): Email attachment.

Sarah Pearce, Wildlife Biologist
DPW, ENRMD, Conservation Branch
Fort Polk, LA 71459
sarah.e.pearce2.civ@mail.mil
Desk: 337.531.4172, DSN 863-4172

-----Original Message-----
From: Dunlevy, Peter A CIV USARMY IMCOM CENTRAL (US)
Sent: Tuesday, November 14, 2017 1:06 PM
To: Pearce, Sarah E CIV USARMY IMCOM CENTRAL (US) <sarah.e.pearce2.civ@mail.mil>; Jones, Javance E Sr CTR USARMY JRTC HQ (US) <javance.e.jones2.ctr@mail.mil>; Ray, Christopher J CIV (US) <christopher.j.ray28.civ@mail.mil>; Blanks, L R (Reaper) CIV USARMY IMCOM CENTRAL (US) <leland.r.blanks.civ@mail.mil>
Cc: Cedars, Allison M CIV USARMY IMCOM (US) <allison.m.cedars.civ@mail.mil>
Subject: FW: CY18018 Aerial Spraying of Impact Areas to Re-Establish Line of Sight (HC-0039-6-P)

Please comment on the attached REC regarding your area (Sensitive Species, Soil Erosion and Pest Management). If you have any questions, please see me. Thanks

Sincerely,

Peter Dunlevy
Ecologist/CIV
DPW, ENRMD, Conservation Branch
Ft. Polk, LA 71459
(337) 531-1363 (DSN 863)

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-----Original Message-----
From: Dunlevy, Peter A CIV USARMY IMCOM CENTRAL (US)
Sent: Tuesday, October 31, 2017 7:45 AM
To: Pearce, Sarah E CIV USARMY IMCOM CENTRAL (US) <sarah.e.pearce2.civ@mail.mil>; Moore, Kenneth R CIV USARMY IMCOM (US) <kenneth.r.moore106.civ@mail.mil>; Thomas, Georgia G CTR (US) <georgia.g.thomas.ctr@mail.mil>; Jones, Javance E Sr CTR USARMY JRTC HQ (US) <javance.e.jones2.ctr@mail.mil>; Ray, Christopher J CIV (US) <christopher.j.ray28.civ@mail.mil>
Subject: FW: CY18018 Aerial Spraying of Impact Areas to Re-Establish Line of Sight (HC-0039-6-P)

Please comment on the attached REC regarding your area (RCW, Sensitive Species, Botany, Soil Erosion and Pest Management). If you have any questions, please see me. Thanks

Sincerely,

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Ecologist/CIV
DPW, ENRMD, Conservation Branch
Ft. Polk, LA 71459
(337) 531-1363 (DSN 863)

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-----Original Message-----
From: Chatelain, Vincent J CIV USARMY JRTC HQ (US)
Sent: Monday, October 30, 2017 3:25 PM
To: Duck, Thomas G (Tom) CIV USARMY USAG (US) <thomas.g.duck.civ@mail.mil>; Hildebrand, Douglas Allen (Doug) CTR USARMY USAG (US) <douglas.a.hildebrand.ctr@mail.mil>
Cc: Dunlevy, Peter A CIV USARMY IMCOM CENTRAL (US) <peter.a.dunlevy.civ@mail.mil>; Chatelain, Vincent J CIV USARMY JRTC HQ (US) <vincent.j.chatelain.civ@mail.mil>; Kelley, Amanda G CTR USARMY IMCOM AEC (US) <amanda.g.kelley6.ctr@mail.mil>; Marshall, Andrew R CTR USARMY (US) <andrew.r.marshall8.ctr@mail.mil>
Subject: CY18018 Aerial Spraying of Impact Areas to Re-Establish Line of Sight (HC-0039-6-P)

All,

This REC has been submitted for environmental review;

CY18018- Aerial Spraying of Impact Areas to Re-Establish Line of Sight (HC-0039-6-P)

Project Evaluator is Peter Dunlevy

Please submit all comments and responses to Peter Dunlevy, Vincent Chatelain, Amanda Kelly, and Andrew Marshall

Thank You

Vincent J. Chatelain, CIV
NEPA Program Manager
Ecologist, Civilian
DPW, ENRMD, Conservation Branch
1697 23rd Street. Building 2543

CY18016 ENRMD Control Number

Dunlevy, Peter A CIV USARMY IMCOM CENTRAL (US)

From: Jones, Javance E Sr CTR USARMY JRTC HQ (US)
Sent: Tuesday, November 21, 2017 12:11 PM
To: Dunlevy, Peter A CIV USARMY IMCOM CENTRAL (US)
Cc: Cedars, Allison M CIV USARMY IMCOM (US); West, Jonathan A CIV USARMY IMCOM CENTRAL (US); Chatelain, Vincent J CIV USARMY JRTC HQ (US)
Subject: RE: CY18016 Aerial Spraying of Impact Areas to Reestablish Line of Sight (HC-0039-6-P)
Signed By: javance.e.jones2.ctr@mail.mil

Team,

I am unable to provide an expert evaluation on "Aerial Spraying of the Impact Areas to Reestablished Line of Sight" using the information provided in these documents. The impacts of erosion should be evaluated over a period of time with a baseline as a starting point. With that said, I do not have enough data to provide practical analysis of the impacts to soils. However, I am confounded by the comments on line " 7. There was no evidence of erosion activity as a result of the treatment and burn, but it should be noted that there has been no substantial rain since the burn was executed.

Have these methods of controlling vegetation been used on any other Installation? And what was the percent of grass cover before application of herbicide on these areas? What is the present percent of vegetative cover? Besides trees, is herbicide affecting other plant life?

I really do not have enough scientific information to say how this action is going to affect erosion. One noted factor, without vegetation in this area, water causes soil to move down slope and that can be observed over a period of time.
Respectfully Javance,

Javance Jones
Maneuver Damage Repair Coordinator, Cooperator
CSU-CEMML
DPW,ENRMD, Conservation Branch
1697 23rd Street
Building 2541
Fort Polk, LA 71459
Office Phone 337-531-6013
Work Cell 337-794-6294 DSN 863-6013
e-mail: javance.e.jones2.CTR@mail.mil
Fax 337-531-2627

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-----Original Message-----
From: Dunlevy, Peter A CIV USARMY IMCOM CENTRAL (US)
Sent: Tuesday, November 21, 2017 10:35 AM

To: Jones, Javance E Sr CTR USARMY JRTC HQ (US) <javance.e.jones2.ctr@mail.mil>
Cc: Cedars, Allison M CIV USARMY IMCOM (US) <allison.m.cedars.civ@mail.mil>; West, Jonathan A CIV USARMY IMCOM CENTRAL (US) <jonathan.a.west6.civ@mail.mil>
Subject: FW: CY18016 Aerial Spraying of Impact Areas to Reestablish Line of Sight (HC-0039-6-P)

Please comment on the attached REC regarding soil erosion. If you have any questions, please see me. Thanks

Sincerely,

Peter Dunlevy
Ecologist/CIV
DPW, ENRMD, Conservation Branch
Ft. Polk, LA 71459
(337) 531-1363 (DSN 863)

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-----Original Message-----
From: Dunlevy, Peter A CIV USARMY IMCOM CENTRAL (US)
Sent: Tuesday, November 14, 2017 1:11 PM
To: Pearce, Sarah E CIV USARMY IMCOM CENTRAL (US) <sarah.e.pearce2.civ@mail.mil>; Jones, Javance E Sr CTR USARMY JRTC HQ (US) <javance.e.jones2.ctr@mail.mil>; Ray, Christopher J CIV (US) <christopher.j.ray28.civ@mail.mil>; Blanks, L R (Reaper) CIV USARMY IMCOM CENTRAL (US) <leland.r.blanks.civ@mail.mil>
Cc: Cedars, Allison M CIV (US) <allison.m.cedars.civ@mail.mil>
Subject: FW: CY18018 Aerial Spraying of Impact Areas to Re-Establish Line of Sight (HC-0039-6-P)

Please comment on the attached REC regarding your area (Sensitive Species, Soil Erosion and Pest Management). If you have any questions, please see me. Thanks

Sincerely,

Peter Dunlevy
Ecologist/CIV
DPW, ENRMD, Conservation Branch
Ft. Polk, LA 71459
(337) 531-1363 (DSN 863)

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-----Original Message-----
From: Dunlevy, Peter A CIV USARMY IMCOM CENTRAL (US)
Sent: Tuesday, October 31, 2017 7:45 AM
To: Pearce, Sarah E CIV USARMY IMCOM CENTRAL (US) <sarah.e.pearce2.civ@mail.mil>; Moore, Kenneth R CIV USARMY IMCOM (US) <kenneth.r.moore106.civ@mail.mil>; Thomas, Georgia G CTR (US) <georgia.g.thomas.ctr@mail.mil>; Jones, Javance E Sr CTR USARMY JRTC HQ (US) <javance.e.jones2.ctr@mail.mil>; Ray, Christopher J CIV (US) <christopher.j.ray28.civ@mail.mil>
Subject: FW: CY18018 Aerial Spraying of Impact Areas to Re-Establish Line of Sight (HC-0039-6-P)

Please comment on the attached REC regarding your area (RCW, Sensitive Species, Botany, Soil Erosion and Pest Management). If you have any questions, please see me. Thanks

Sincerely,

Peter Dunlevy
Ecologist/CIV
DPW, ENRMD, Conservation Branch
Ft. Polk, LA 71459
(337) 531-1363 (DSN 863)

We are the Army's Home-Serving The Rugged Professional

-----Original Message-----
From: Chatelain, Vincent J CIV USARMY JRTC HQ (US)
Sent: Monday, October 30, 2017 3:25 PM
To: Duck, Thomas G (Tom) CIV USARMY USAG (US) <thomas.g.duck.civ@mail.mil>; Hildebrand, Douglas Allen (Doug) CTR USARMY USAG (US) <douglas.a.hildebrand.ctr@mail.mil>
Cc: Dunlevy, Peter A CIV USARMY IMCOM CENTRAL (US) <peter.a.dunlevy.civ@mail.mil>; Chatelain, Vincent J CIV USARMY JRTC HQ (US) <vincent.j.chatelain.civ@mail.mil>; Kelley, Amanda G CTR USARMY IMCOM AEC (US) <amanda.g.kelley6.ctr@mail.mil>; Marshall, Andrew R CTR USARMY (US) <andrew.r.marshall8.ctr@mail.mil>
Subject: CY18018 Aerial Spraying of Impact Areas to Re-Establish Line of Sight (HC-0039-6-P)

All,

This REC has been submitted for environmental review;

CY18018- Aerial Spraying of Impact Areas to Re-Establish Line of Sight (HC-0039-6-P)

Project Evaluator is Peter Dunlevy

Please submit all comments and responses to Peter Dunlevy, Vincent Chatelain, Amanda Kelly, and Andrew Marshall

Thank You

Vincent J. Chatelain, CIV
NEPA Program Manager
Ecologist, Civilian
DPW, ENRMD, Conservation Branch
1697 23rd Street. Building 2543
Ft. Polk, LA 71459
Ph: (337) 531-9919
vincent.j.chatelain.civ@mail.mil

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CY18016 ENRMD Control Number

From: Martin, Bruce D CIV USARMY (US)
To: Fariss, M W (Wayne) CIV USARMY IMCOM CENTRAL (US); Dunlevy, Peter A CIV USARMY ID-READINESS (US)
Cc: Martin, Bruce D CIV USARMY (US); Luttrell, Mark J CIV USARMY ID-READINESS (US); West, Jonathan A CIV USARMY ID-READINESS (US)
Subject: RE: CY18016 - aerial herbicide broadcast
Date: Tuesday, February 13, 2018 8:10:41 AM

To All,

As long as we can keep an contract for aerial burning, we have no issues with supporting the burning for this project.

Bruce D. Martin
Chief, Natural Resources
Management Branch
bruce.d.martin.civ@mail.mil
Com: 337.531.7912
DSN: 863.7912
cell: 337.353.6020
fax: 337.531.2122

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-----Original Message-----
From: Fariss, M W (Wayne) CIV USARMY IMCOM CENTRAL (US) [mailto:milton.w.fariss.civ@mail.mil]
Sent: Wednesday, November 15, 2017 1:03 PM
To: Dunlevy, Peter A CIV USARMY IMCOM CENTRAL (US) <peter.a.dunlevy.civ@mail.mil>
Cc: Martin, Bruce D CIV USARMY IMCOM CENTRAL (US) <bruce.d.martin.civ@mail.mil>; Luttrell, Mark J CIV USARMY IMCOM CENTRAL (US) <mark.j.luttrell.civ@mail.mil>; West, Jonathan A CIV USARMY IMCOM CENTRAL (US) <jonathan.a.west6.civ@mail.mil>
Subject: RE: CY18016 - aerial herbicide broadcast

Yes, it will - but need to make sure it is vetted with foresty

-----Original Message-----
From: Dunlevy, Peter A CIV USARMY IMCOM CENTRAL (US)
Sent: Wednesday, November 15, 2017 10:40 AM
To: Fariss, M W (Wayne) CIV USARMY IMCOM CENTRAL (US) <milton.w.fariss.civ@mail.mil>
Subject: CY18016 - aerial herbicide broadcast

Wayne,

I don't see any mention of prescribed burning post herbicide treatment in this REC. Will this continue throughout the duration of this project, as described (approximately six weeks after aerial herbicide broadcast, etc.) in last year's REC?

Sincerely,

Peter Dunlevy
Ecologist/CIV
DPW, ENRMD, Conservation Branch
Ft. Polk, LA 71459
(337) 531-1363 (DSN 863)

Dunlevy, Peter A CIV USARMY IMCOM CENTRAL (US)

From: Chatelain, Vincent J CIV USARMY JRTC HQ (US)
Sent: Tuesday, December 19, 2017 3:14 PM
To: Dunlevy, Peter A CIV USARMY IMCOM CENTRAL (US)
Subject: FW: ENV = Use of Herbicide within Impact Areas (UNCLASSIFIED)
Signed By: vincent.j.chatelain.civ@mail.mil

FYI.... Saw that you weren't copied

Vincent J. Chatelain, CIV
NEPA Program Manager
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-----Original Message-----
From: Dillon, James H CIV (US)
Sent: Tuesday, December 19, 2017 11:45 AM
To: West, Jonathan A CIV USARMY IMCOM CENTRAL (US) <jonathan.a.west6.civ@mail.mil>
Cc: Cedars, Allison M CIV USARMY IMCOM (US) <allison.m.cedars.civ@mail.mil>; Chatelain, Vincent J CIV USARMY JRTC HQ (US) <vincent.j.chatelain.civ@mail.mil>; Brown, Ken D CIV USARMY USAG (US) <ken.d.brown.civ@mail.mil>
Subject: RE: ENV = Use of Herbicide within Impact Areas (UNCLASSIFIED)

Mr. West,

Thanks for talking with me. Here are my initial thoughts regarding the subject permit.

BLUF. I conclude that the subject permit does not cover the contemplated activity.

BRIEF DISCUSSION.

The cover letter to the permit mentions in paragraph 3 of the first page that the permit will include "right of ways". This cover letter goes on to say that this general permit will automatically cover, "Discharges which meet the eligibility requirements of Part IA..." of the permit. Part IA of the permit does not mention right of ways. Rather, that section addresses 4 categories of activities - (1) Mosquito and Other Flying Insect Pest Control, (2) Aquatic Weed and Algae Control, (3) Aquatic Nuisance Animal Control, and (4) Forest Canopy Pest Control. The permit does not otherwise give authority for right of way activity.

An additional thought is that the term "right of way" connotes a legal property right. We're not actually talking about legal right of ways. Rather, we're contemplating maintaining lines of sight with aerial application of a herbicide. One more reason to tread lightly when considering this issue at this location.

I'm available to discuss if needed. Enjoy your holiday season.

Heath

Respectfully,
Heath Dillon
Administrative Law Attorney
OSJA, JRTC and Fort Polk, Fort Polk, LA
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-----Original Message-----
From: West, Jonathan A CIV USARMY IMCOM CENTRAL (US)
Sent: Monday, December 11, 2017 9:57 AM
To: Dillon, James H CIV (US) <james.h.dillon10.civ@mail.mil>
Cc: Cedars, Allison M CIV USARMY IMCOM (US) <allison.m.cedars.civ@mail.mil>; Chatelain, Vincent J CIV USARMY JRTC HQ (US) <vincent.j.chatelain.civ@mail.mil>
Subject: FW: ENV = Use of Herbicide within Impact Areas (UNCLASSIFIED)

Mr. Dillon:

Here is the answer to the permit expiration.

Jon West
Chief, Conservation Branch
1647 23rd Street, Building 2543
Fort Polk, LA 71459-5509
Jonathan.a.west6.civ@mail.mil
COMM: 337.531.6305
DSN: 863.6305
CELL: 337.718.1305

-----Original Message-----
From: Broussard, Nathan G CIV USARMY ID-READINESS (US)
Sent: Monday, December 11, 2017 9:40 AM

To: West, Jonathan A CIV USARMY IMCOM CENTRAL (US) <jonathan.a.west6.civ@mail.mil>
Subject: RE: ENV = Use of Herbicide within Impact Areas (UNCLASSIFIED)

CLASSIFICATION: UNCLASSIFIED

We spoke with the writer of the permit, he informed us that it has been administratively extended with no proposed date for finalization. It was still going through both body's for a vote.

-----Original Message-----
From: West, Jonathan A CIV USARMY IMCOM CENTRAL (US)
Sent: Monday, December 11, 2017 8:28 AM
To: Broussard, Nathan G CIV USARMY ID-READINESS (US) <nathan.g.broussard.civ@mail.mil>
Subject: FW: ENV = Use of Herbicide within Impact Areas

Jerry:

Can you answer this question from SJA for us?

Jon West
Chief, Conservation Branch
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DSN: 863.6305
CELL: 337.718.1305

-----Original Message-----
From: Dillon, James H CIV (US)
Sent: Friday, December 8, 2017 2:36 PM
To: Cedars, Allison M CIV USARMY IMCOM (US) <allison.m.cedars.civ@mail.mil>
Cc: Brown, Ken D CIV USARMY USAG (US) <ken.d.brown.civ@mail.mil>
Subject: FW: ENV = Use of Herbicide within Impact Areas

Allison,

Hey. I'm reviewing the below issue. Basic question, though, as I'm reading through the docs. The permit appears to have an effective date of October 31, 2011 and states that it, "shall expire five (5) years from the effective date of the permit." Has the permit been renewed? Thanks.

Heath

Respectfully,
Heath Dillon
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(COM) 337-531-0245 / 2754
(DSN) 863-0245 / 2754
james.h.dillon10.civ@mail.mil

From: Chatelain, Vincent J CIV USARMY ID-READINESS (US)
To: Fariss, M W (Wayne) CIV USARMY IMCOM CENTRAL (US)
Cc: West, Jonathan A CIV USARMY ID-READINESS (US); Cedars, Allison M CIV USARMY ID-READINESS (US); Dunlevy, Peter A CIV USARMY ID-READINESS (US); Kelley, Amanda G CTR USARMY ID-READINESS (US)
Subject: REC CY18016 Aerial Herbicide in Impact Areas
Date: Monday, February 12, 2018 3:25:29 PM
Attachments: Herbicide Applicaiton Impact Areas MEMO.PDF

Mr. Fariss,

The NEPA Team has thoroughly reviewed the proposed action for the Aerial Herbicide usage in the impact areas of Redleg and Peason Ridge. After careful consideration and concerns, the Team decided that the two Impact Areas will need to be segregated as two separate projects. The Redleg impact area project is approved to remain as a REC while the Peason Ridge project shall be analyzed in an Environmental Assessment (EA).
Please see the attached MFR and let me know if you concur that you agree and support our decision.

Thank You

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Appendix C

DEPARTMENT OF THE ARMY
US ARMY INSTALLATION MANAGEMENT COMMAND
HEADQUARTERS, UNITED STATES ARMY GARRISON, FORT POLK
6661 WARRIOR TRAIL, BLDG 350
FORT POLK, LOUISIANA 71459-5339

REPLY TO
ATTENTION OF:

IMPO-PLT-R 6 OCT 2017

MEMORANDUM FOR RECORD

RE: Site Reconnaissance to Determine FY17 Redleg Aerial Herbicide Treatment Success.

BACK GROUND:

1. To satisfy the purpose and need for providing line of site from OPs to target arrays in Redleg, a multiyear project has been developed to aerial treat the areas which are encroached with vegetation. Figure 1 below depicts the time laps of encroachment that has occurred through time. The total project was broken into multiple years with each year achieving specific lines of site with an end state of seeing all avalible arrays from all OPs when terrain allows. The reason for the multiple year approach, as advised by the chief of the Environmental Division at Fort Polk, was to have smaller blocks through time primarily to curtail any potential for erosion.
2. In January of 2017, a Record of Environmental Consideration (REC) was completed for the FY17 treatments. One of the requirements agreed to during the development of the REC, which was written into the REC as part of the proposed action, was to burn the area(s) after treatment. The time frame for burning was Mid-August – Mid-September 2017.
3. In accordance with the proposed action set forth in the REC, four polygons were treated in FY17. The polygons for each of these areas are shown at Figure 2. Treatments were applied on 2 July 2017.
4. On 10 August, 39 days after treatment, an aerial reconnaissance was conducted. Some photograhs from this reconnaissance are shown at Figure 3.
5. On 22 September, 82 days after treatment, the areas were burned.

DISCUSSIONS/OBSERVANCES:

A site reconnaissance, this time on the ground, was conducted on 5 October 2017. Range control staff consisting of Jeremy Allison and Wayne Fariss conducted the site recon. Figure 4 shows the area that was traveled during the reconnaissance. There were three separate reasons for conducting the recon: 1) to determine success with treatment, 2) to determine if it is feasible to remove any of the standing trees that have been treated, and 3) to determine if the treatment coverage was sufficient to enable development of the southern OP. Due to UXO the only polygon that was surveyed was the southwestern most polygon.

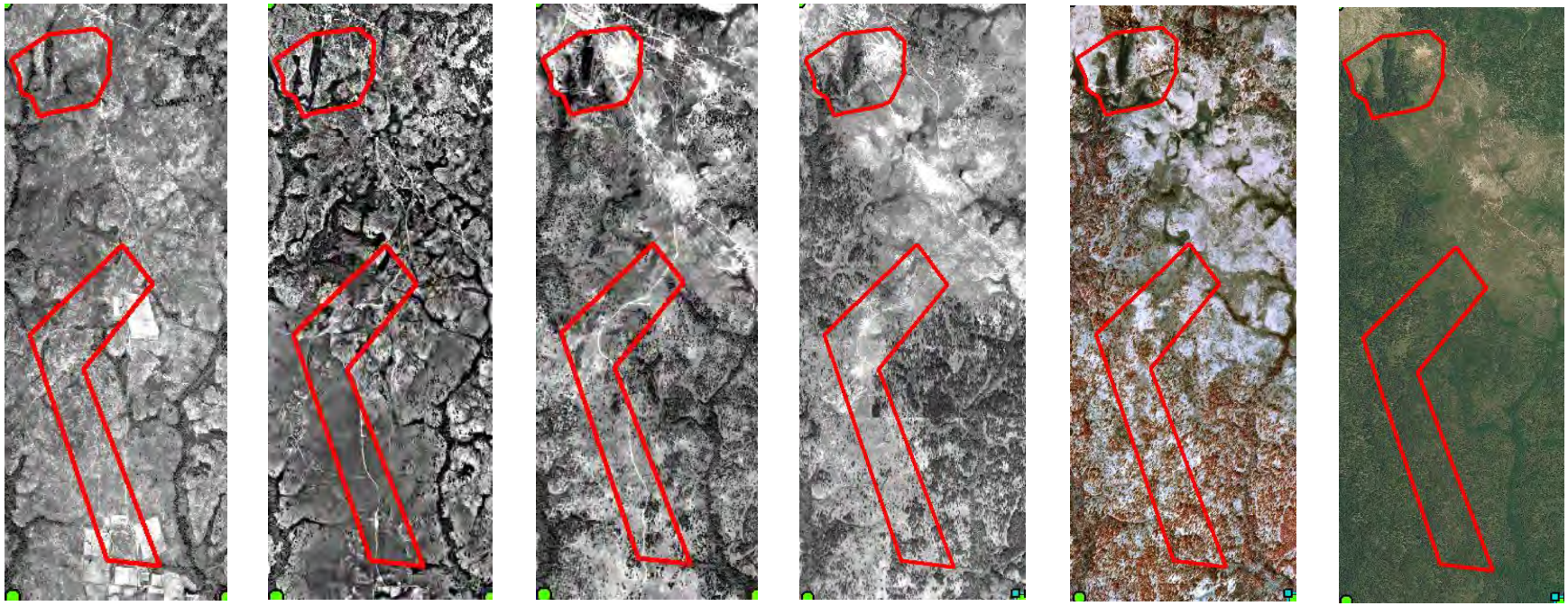
1. The treatment appears to be working. Most of the trees in the area have very few if any (less than 10%) of their needles that are still green.
2. The control burn was effective for the treatment site --- the edges of the treatment area a very defined with no evident drift and the fire burned to the edges but stopped and did not burn the outside of the treatment areas. It appears the treatment, which also burned back

the understory, made it possible for the fire to carry, but when the fire reached the untreated and therefore green understory, there was insufficient dry fuel to carry the fire.

3. On many of the trees (approximately 50%) there is active wood boring insect activity at the base where deposits of saw dust type material are are visible as an indicator of the insect activity.
4. The fire was effective in removing nearly all of the ground cover and in burning already dead trees (those that were dead before the executed treatment), but had little effect on burning into the recently treated trees to fell them (only one treated tree was observed to have fallen as a result of the fire in the 3.25 miles traveled).
5. The grass and forbs are already sprouting or coming back from the root stock throughout the area (in other words green up has begun 13 days after the burn).
6. A side note: many people assumed from the aerial photo that the trees were old and large --- this was not the case for most of the area. Beginning about 150 meters into the treated area, as you are traveling from south to north, up to the Array, which is the southernmost waypoint shown in figure four, the majority of the trees are in the 8-12" with a few scattered trees in the 12-16" range. Past the Array to the north and east nearly all of the trees are 4-8" trees. In other words the forest is not as mature as the forest that is south of the southern OP. However this should not come as a surprise when you look at the time lapse aerial photographs shown in figure 1.
7. There was no evidence of erosion activity as a result of the treatment and burn, but it should be noted that there has been no substantial rain since the burn was executed.
8. From the southern entrance point to the Array (again southernmost waypoint shown in figure 4) there were very few ordnances on the surface of the ground consisting of Hydra 70 2.75 Rockets expended and minimal shrapnel.
9. Once with 100 meters of the Array there was a moderate amount of ordinances. From the Array north and east there were a large amount of ordnance consisting of 105mm & 155mm Artillery rounds and 60mm mortar illumination rounds and various unidentified mortar fins protruding from the ground.
10. As stated in bullet four above, the fire was very effective making it easy to determine where ordnances were on the surface.

Point of contact for this action is M. Wayne Fariss; ITAM Coordinator; COMM 337-531-7417, DSN (863), and Milton.w.fariss.civ@mail.mil.

Figure 1: Time Lapse of REDLEG IMPACT AREA Western two Treatment Polygons for FY17



1939 1951 1963 1978 1991 2015

Year

Figure 2: 2017 treatement areas in REDLEG Impact Area

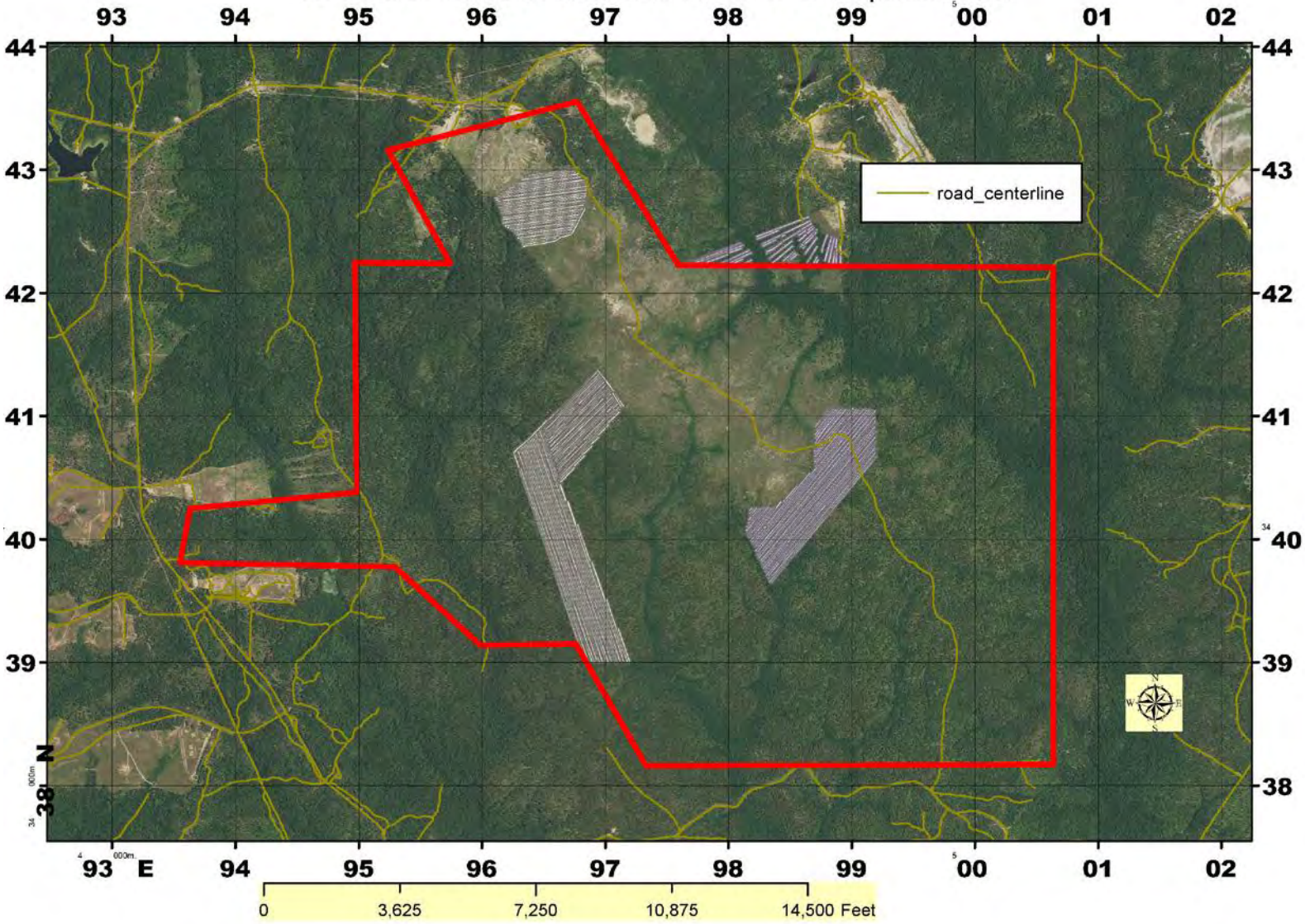
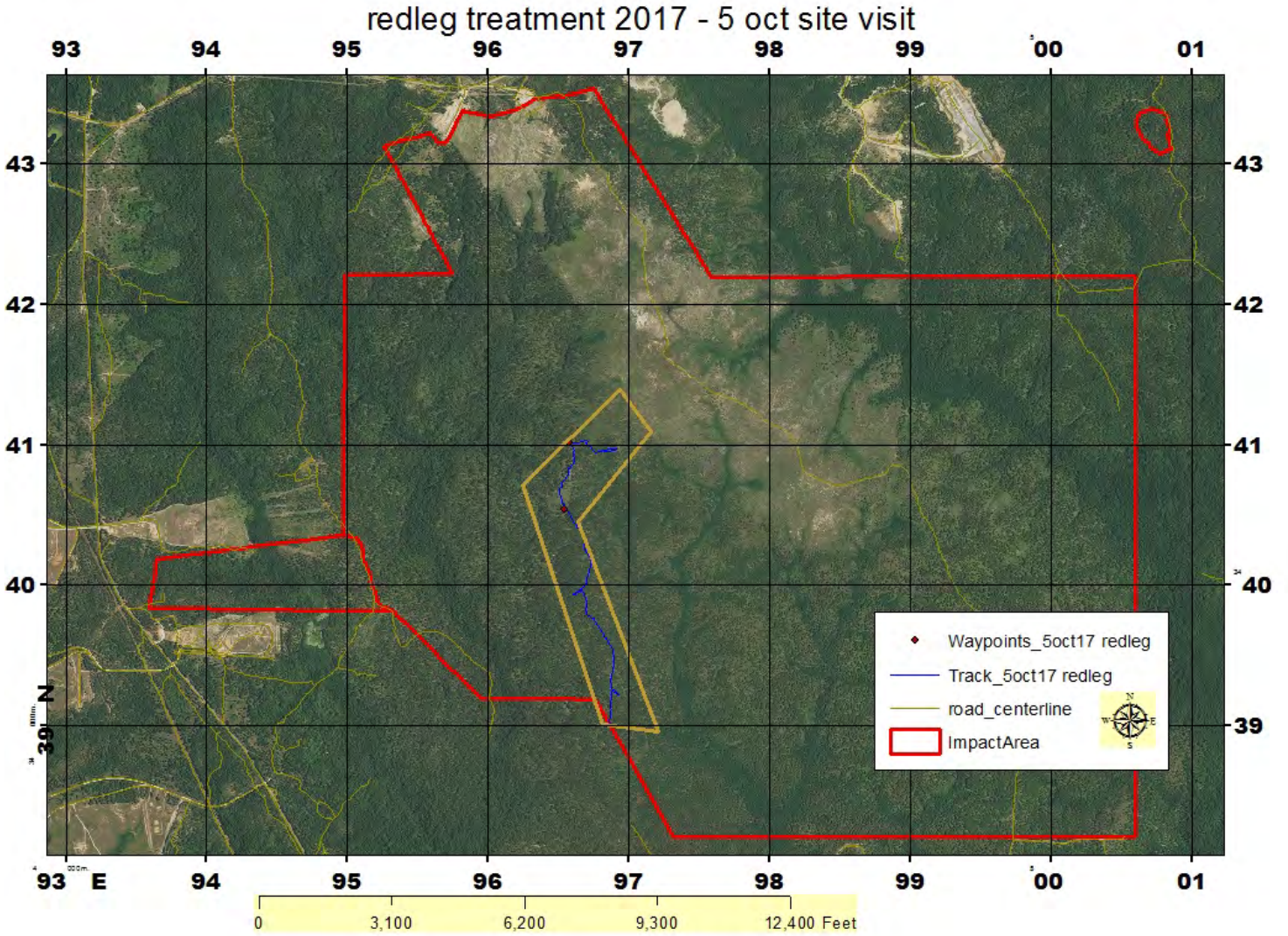


Figure 3: Photos 39 Days after treatment. Top left (Southwest most polygon); Top Right (Southeast most polygon); Bottom left (Northeast most polygon); Bottom right (Northwest most Polygon).

Figure 4: Site RECON Route and Area



Appendix C

DEPARTMENT OF THE ARMY
US ARMY INSTALLATION MANAGEMENT COMMAND
HEADQUARTERS, UNITED STATES ARMY GARRISON, FORT POLK
6661 WARRIOR TRAIL, BLDG 350
FORT POLK, LOUISIANA 71459-5339

REPLY TO
ATTENTION OF:

IMPO-PLT-R 27 OCT 2017

MEMORANDUM FOR RECORD

RE: Site Reconnaissance to Determine FY17 Redleg Aerial Herbicide Treatment Success.

PURPOSE: Provide observation details from progress of FY17 treatments to provide line of sight in Redleg Impact Area. This MFR continues from the point of the last MFR dated 6 Oct 2017.

BACK GROUND:

1. The background for the project and its purpose and need can be found in the Record of Environmental Consideration and the MRF dated 6 OCT 2017.
2. The chart below shows the time from treatments and recons until todays date.

	Date	Days After Chemical Treatment	Days After Burn Treatment	Days Since 10/5 Ground Recon
Chemical Treatment	7/2/2017			
Aerial Recon	8/10/2017	39.00		
Burn Treatment	9/22/2017	82.00		
1st Ground Recon	10/5/2017	95.00	13.00	
2nd Ground Recon	10/27/2017	117.00	35.00	22.00

DISCUSSIONS/OBSERVANCES:

This ground site reconnaissance was conducted on 27 October 2017. Range control staff consisting of Wayne Fariss and Environmental Staff consisting of Jonathan West conducted the site recon. Figure 1 shows the area that was traveled during the reconnaissance. The reason for to see how the cover and litter were coming back in the treated area. Due to previous amount of observed UXO (see 6 OCT 2017 MFR) only the southern portion of the southwest most polygon was observed.

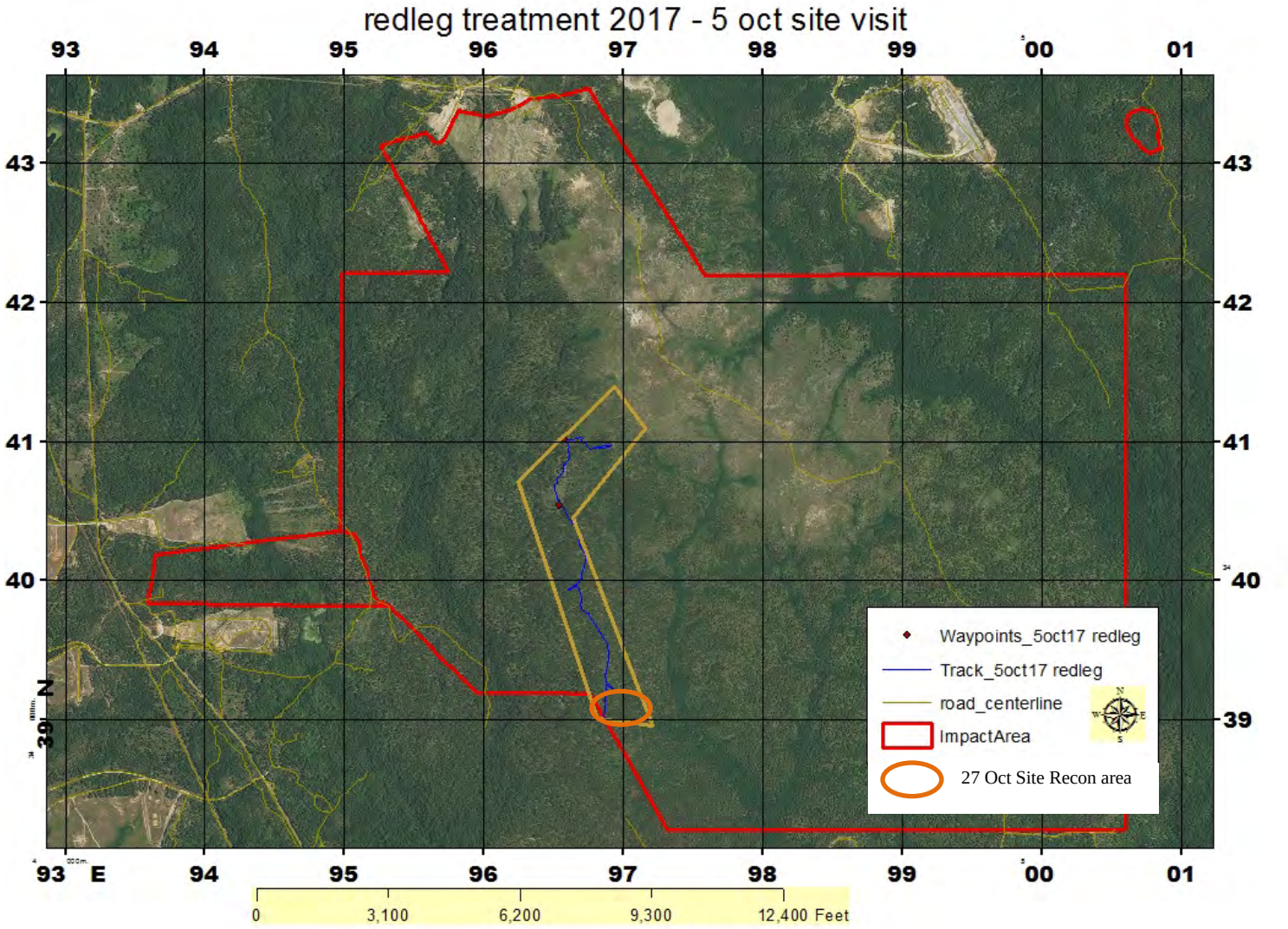
1. As previously observed, the treatment appears to be working. Most of the trees in the area have very few if any (less than 10%) of their needles that are still green. There is one exception to this --- two post oaks in the area do have more green leaves that would have been expected and some smaller oaks that were treated with both chemical and fire are root sprouting.

2. It was previously observed that “the fire was effective in removing nearly all of the ground cover”. In the last 22 days this complete removal has been overcome by needle cast so that there is now litter on most all of the ground --- please see figure 2.
3. Now 35 days after the burn treatment, the grass and forbs continue to emerge either from seed or root stock (some evidence of root sprout from bunch grasses is evident and more forbs and grasses from seed are present than two weeks ago). Again see figure 2.
4. It was previously observed that “the control burn was effective for the treatment site --- the edges of the treatment area a very defined with no evident drift and the fire burned to the edges but stopped and did not burn the outside of the treatment areas”. Figure 3 shows an example of where this edge for the fire and the chemical treatment are the same as well as an example of where the edge of the chemical and fire treatment are not the same (in other words the fire crept past the chemical treatment edge).
5. Again there was no evidence of erosion activity as a result of the treatment and burn, but it should be noted that there has been no substantial (defined as a high intensity rain of more than an inch) rain since the burn was executed. A as training permits continued site visits to this area of the treatment should be scheduled.

Point of contact for this action is M. Wayne Fariss; ITAM Coordinator; COMM 337-531-7417, DSN (863), and Milton.w.fariss.civ@mail.mil.

Appendix C

Figure 1: Site RECON Route and Area



ENRMD Control Number CY18016

Appendix C

Figure 2: Photographs of ground cover/liter on interior of treated area 117 days after chemical treatment and 35 days after burn treatment

ENRMD Control Number CY18016

Appendix C

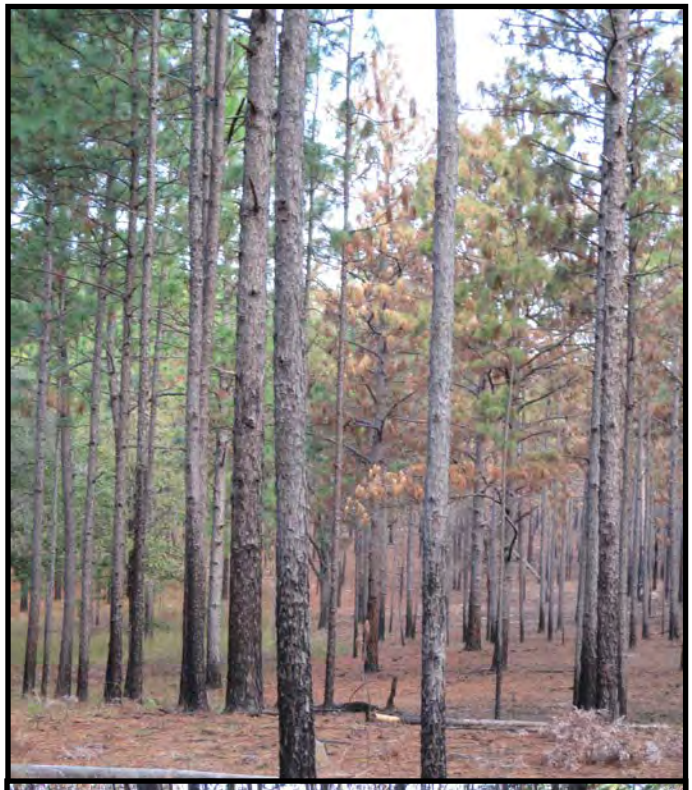


Figure 3: Photographs of ground edge of treated polygon area 117 days after chemical treatment and 35 days after burn treatment. Top Left shows chemical and burn treatment stopping on same line, Bottom Right shows chemical and burn treatment not stopping at same line, but that chemical treatment is still precise, Top Right shoes treatment line through the forest.

ENRMD Control Number CY18016