FINAL

ENVIRONMENTAL ASSESSMENT

FOR

AERIAL APPLICATION OF PESTICIDE FOR MOSQUITO AND INVASIVE PLANT SPECIES CONTROL

AT

JOINT BASE LANGLEY – EUSTIS, VIRGINIA

The Department of the Air Force

April 2023

PRIVACY ADVISORY

This Environmental Assessment (EA) is provided for public comment in accordance with the National Environmental Policy Act (NEPA), the President's Council on Environmental Quality NEPA Regulations (40 Code of Federal Regulations [CFR] §§ 1500-1508), and 32 CFR § 989, Environmental Impact Analysis Process (EIAP).

The EIAP provides an opportunity for public input on the Department of the Air Force (DAF) decision making, allows the public to offer input on alternative ways for the DAF to accomplish what it is proposing, and solicits comments on the DAF's analysis of environmental effects.

Public commenting allows the DAF to make better, informed decisions. Letters or other written or oral comments provided may be published in the EA. As required by law, comments provided will be addressed in the EA and made available to the public. Providing personal information is voluntary. Any personal information provided will be used only to identify your desire to make a statement during the public comment portion of any public meetings or hearings or to fulfill requests for copies of the EA or associated documents. Private addresses will be compiled to develop a mailing list for those requesting copies of EA; however, only the names of the individuals making comments and specific comments will be disclosed. Personal home addresses and phone numbers will not be published in the EA.

Compliance with Section 508 of the Rehabilitation Act

To the extent possible, this document is compliant with Section 508 of the Rehabilitation Act. This allows assistive technology to be used to obtain the available information from the document. Due to the nature of graphics, figures, tables, and images occurring in the document, accessibility is limited to a descriptive title for each item.

Compliance with Revised CEQ Regulations

This document has been verified not to exceed the 75 pages, not including appendices, as defined in 40 CFR § 1501.5(f). As defined in 40 CFR § 1508.1(v) a "page" means 500 words and does not include maps, diagrams, graphs, tables, and other means of graphically displaying quantitation or geospatial information.

COVER SHEET

ENVIRONMENTAL ASSESSMENT FOR
AERIAL APPLICATION OF PESTICIDE FOR MOSQUITO AND INVASIVE PLANT SPECIES CONTROL AT JOINT BASE LANGLEY – EUSTIS, VIRGINIA

a. Lead Agency: The Department of the Air Force (DAF)

b. Proposed Action: Aerial application of pesticides for mosquito and invasive plant species (primarily common reed [*Phragmites australis]*) control at Joint Base Langley – Eustis (JBLE) (which consists of Langley Air Force Base [JBLE – Langley] and Fort Eustis [JBLE – Eustis]), Virginia.

c. Inquiries regarding this document should be directed to the 633 Civil Engineer Squadron, Environmental Element organization email at 633CES.CEI.Flight@us.af.mil.

d. Designation: Final Environmental Assessment (EA)

e. Abstract: This EA evaluates the potential environmental impacts associated with the proposed aerial application of pesticides for mosquito and common reed control at JBLE – Langley and JBLE – Eustis in support of the installations' Integrated Pest Management programs. The purpose of the Proposed Action is to (1) reduce mosquito (and other pest arthropods) populations to tolerable levels, (2) break the disease transmission cycle caused by vectoring arthropods, and (3) restore habitats impacted by invasive plant species such as common reed. The Proposed Action is needed to control mosquitoes and invasive plant species across large areas of JBLE and to reach remote portions of JBLE that are not reasonably accessible for application by land or watercraft. Large-scale application of pesticide would reduce the potential threat of human disease caused by mosquito vectors, mosquito-induced discomfort, hardship, annoyance, and distraction experienced by personnel at JBLE.

   Potential alternatives to the Proposed Action were each evaluated based on selection standards established by the DAF. Alternatives that met all established selection standards are considered reasonable and retained for consideration in this EA. Alternatives that did not meet one or more of the standards were considered unreasonable and are not retained for consideration in this EA. Based on the results of this evaluation, two action alternatives, and the No Action Alternative, are carried forward for detailed analysis in this EA. The EA identifies and discloses potential impacts on the following environmental resources: airspace management and use, air quality and climate change, aesthetics and visual resources, geological resources, water resources, biological resources, and health and safety. The Proposed Action would result in no impacts on land use, noise, prime farmland, cultural resources, socioeconomics, environmental justice and protection of children, transportation and utilities, and hazardous materials and waste.

   Through the EA process, the DAF has determined that no significant impacts on environmental resources would occur under the Proposed Action. The DAF has determined that for components of the Proposed Action that occur within a floodplain and wetlands, impacts would remain less than significant with the application of best management practices.

FORMAT PAGE

FINDING OF NO SIGNIFICANT IMPACT (FONSI) AND
FINDING OF NO PRACTICABLE ALTERNATIVE (FONPA)
FOR
AERIAL APPLICATION OF PESTICIDE FOR MOSQUITO AND INVASIVE PLANT SPECIES CONTROL AT JOINT BASE LANGLEY – EUSTIS, VIRGINIA

Pursuant to the Council on Environmental Quality (CEQ) regulations for implementing the procedural provisions of the National Environmental Policy Act of 1969 (NEPA), Title 40 of the Code of Federal Regulations (CFR) Parts 1500-1508 (the 20 May 2022 version of CEQ NEPA rules is being used, 87 FR 23453), and the Air Force Environmental Impact Analysis Process Regulations (32 CFR Part 989), the Department of the Force (DAF) has prepared this Environmental Assessment (EA) to evaluate the potential impacts on the natural and human environment associated with the proposed aerial application of pesticides for mosquito and common reed (*Phragmites australis*) control at Joint Base Langley – Eustis (JBLE) (which consists of Langley Air Force Base [JBLE – Langley] and Fort Eustis [JBLE – Eustis]), Virginia. This EA is intended to be used until 1) there is a major change in the language or agreement between agencies involved, 2) there is a substantial change in associated pesticides, and/or 3) there is a change to the species of concern.

Purpose and Need

The purpose of the Proposed Action is to (1) reduce mosquito (and other pest arthropods) populations to tolerable levels, (2) break the disease transmission cycle caused by vectoring arthropods, and (3) restore habitats impacted by invasive plant species such as common reed. The Proposed Action is needed to control mosquitoes and invasive plant species across large areas of JBLE and to reach remote portions of JBLE that are not reasonably accessible for application by land or watercraft.

Proposed Action

The Proposed Action is a supporting control technique used as part of integrated pest management program and supports management of mosquito populations under conditions of disease risk and intolerable levels as well as management of invasive plant species, particularly common reed, at JBLE. Aerial pesticide treatment is considered when the approved ground-based techniques outlined in each installation's Integrated Pest Management Plan (IPMP) fail to significantly reduce mosquito and common reed populations. When mosquito surveillance data indicate threshold limits have exceeded the capabilities of ground control methods, an aerial application would be warranted. The Proposed Action includes control of adult mosquitoes over all of JBLE – Eustis' approximately 7,900 acres and over approximately 3,000 acres of JBLE – Langley. Aerial application of US Environmental Protection Agency (USEPA)-registered pesticides to control mosquito larvae may be used in conjunction with or in lieu of adult mosquito applications and would be used in breeding sites that cannot be eliminated using ground-based techniques. These general locations could include but would not be limited to permanent wetlands, drainage ditches, and vehicular-generated ruts.

The Proposed Action also includes the control of common reed within specific areas where aerial applications would be feasible within the approximately 600 acres of common reed at JBLE – Eustis and on approximately 145 acres on JBLE – Langley. Similar to mosquito control, aerial application of herbicides targeting common reed would be implemented when ground control methods fail to effectively control the spread of common reed on JBLE.

Alternatives

Eight action alternatives for mosquito and common reed control were evaluated against a set of selection standards to determine which alternatives would be carried forward for detailed environmental impact analysis. Only the two action alternatives that meet all selection standards were analyzed in detail for potential environmental impacts. Additionally, a No Action Alternative was analyzed.

Alternative 1, the Preferred Alternative, would implement multiple annual aerial applications of pesticides for large area control of mosquitoes and common reed on JBLE. The decision to aerially apply pesticides for adult mosquito control would be based upon a combination of the threat of human and animal disease, environmental and climatic conditions, adult mosquito surveillance, and customer complaints. A pesticide registered with the USEPA and labeled for use in aerial applications for mosquito control would be used at JBLE. Currently, such pesticides include naled as the active ingredient and would be aerially applied to control adult mosquitoes on JBLE. The current formulation that is anticipated to be applied is Trumpet® EC (NSN 6840-01-532-5414 and USEPA Registration No. 5481-481), which is an organophosphate containing 78 percent naled (1,2-dibromo-2,2-dichloroethyl dimethyl phosphate). Applications would be made at an ultralow volume application rate of 0.5 to 1.2 fluid ounces of undiluted Trumpet® EC per acre. Best management practices (BMPs) and drift prevention requirements identified in the IPMPs for JBLE – Eustis and JBLE – Langley would be adhered to by the DAF and its applicators to further minimize environmental risks. Naled-based pesticides have been utilized for adult mosquito control in the past; however, other pesticides such as pyrethins, neo-pyrethrins, and formulations of malathion may be used.

Additionally, control of mosquito larvae via aerial platforms would include *Bacillus thuringiensis* subspecies *israelensis* (Bti), *Bacillus sphaericus* (B.s.), and other mosquito larva control products in conjunction with adult mosquito control techniques under the Preferred Alternative. Larval applications via aerial platforms at JBLE – Eustis could include application within permanent wetlands, drainage ditches, vehicular-generated ruts, and over the Fort Eustis Dredge Material Management Area, which is an approximately 80-acre dredge material disposal site that may at times contain standing water that could be conducive to mosquito breeding. Larval mosquito control, if deemed necessary based on surveillance data, would likely be accomplished via contracted rotor wing aircraft applications at a maximum of twice per season or based on label application rates.

Aerial application of pesticides for mosquito control would not exceed three applications per year and would typically occur from August through October. Aircraft application overflights would occur at an elevation of 300 feet above ground level, and adult mosquito missions would occur from two hours before sunset to sunset, depending on weather conditions. Aerial application would be completed in one night, with the potential for one additional night of application if weather or mechanical issues cause delays. Regardless of the pesticide being applied (adult insecticides or larvicides) the total maximum number of annual flights would not exceed three.

Under the Preferred Alternative, common reed control would be accomplished through aerial application of USEPA-registered herbicides containing imazapyr or glyphosate as the active ingredient, or other herbicides approved for vegetation control via aerial platforms. Based on several years of surveillance and invasive plant species mapping and management, JBLE – Eustis would treat specific areas where aerial applications would be feasible within the 600 acres of common reed on the installation; JBLE – Langley would treat approximately 145 acres of

common reed with aerial herbicide applications. Herbicides are most effective on common reed in late summer to early fall (August through October at the end of the growing season and before initial frosts). Aerial application of herbicides for the control of invasive plant species would be through contracted helicopter pesticide application services. Aerial application of herbicides for common reed control would not exceed one application per year, with the annual need expected to be reduced in succeeding years depending on the efficacy determined through annual monitoring. Aerial application would typically be completed within one day, with the potential for one additional day of application if weather or mechanical issues cause delays.

Under the Preferred Alternative, a maximum of four flights would be flown annually for mosquito and common reed control.

Alterative 2 would implement the Proposed Action as described for Alternative 1; however, aerial application of pesticides for mosquito control would be limited to one application every other year and would typically occur from August through October. Regardless of the pesticide being applied (adult insecticides or larvicides), no more than one flight every other year would occur under this alternative. Under Alternative 2, common reed control would be accomplished as described under Alternative 1; however, aerial application of herbicides for common reed control would be limited to one application every other year in late summer to early fall (August through October at the end of the growing season and before initial frosts) depending on weather conditions. Under this alternative, a maximum of two flights would be flown every other year for mosquito and common reed control.

The No Action Alternative would aerially apply pesticides to control mosquitoes or common reed at JBLE. Under this alternative, mosquitoes would continue to thrive on JBLE, and the potential threat of human disease caused by mosquito vectors would continue. Common reed would continue to propagate and spread throughout areas of JBLE, outcompeting native wetland plant species, preventing marsh retreat (which makes the installation more susceptible to flooding), reducing land use for military training, posing a potential wildland fire risk, and compromising force protection.

Environmental Consequences

The Proposed Actions would have no effect on land use, noise, prime farmland, cultural resources, socioeconomics, environmental justice and the protection of children, infrastructure, transportation, utilities, or hazardous materials and wastes.

The DAF has determined that the Proposed Actions for mosquito and common reed control at JBLE – Eustis would have no effect on the eastern black rail (*Laterallus jamaicensis*) and rusty patched bumblebee (*Bombus affinis*). The Proposed Actions for both mosquito control and common reed control at JBLE – Eustis are compliant with the Final 4(d) rule under the Endangered Species Act for the northern long-eared bat (*Myotis septentrionalis*).

The DAF has determined that the Proposed Actions for mosquito and common reed control at JBLE – Langley would have no effect on West Indian manatee (*Trichechus manatus*), the northeastern beach tiger beetle (*Cicindela dorsalis dorsalis*), and the rusty patched bumblebee and may affect but is not likely to adversely affect the eastern black rail, piping plover (*Charadrius melodus*), red knot (*Calidris canutus rufa*), and roseate tern (*Sterna dougallii*). TThe Proposed Actions for both mosquito control and common reed control at JBLE – Langley are also compliant with the Final 4(d) rule for the northern long-eared bat.

Under the Proposed Action for mosquito control, DAF has also made a may affect, not likely to adversely affect determination for the Atlantic sturgeon (*Acipenser oxyrhynchus oxyrhynchus*) at JBLE – Eustis due to the potential minor and short-term adverse effects due to the low potential for drift or runoff of insecticides into adjacent waterways. No potential impacts on physical or biological features of the Atlantic sturgeon's designated critical habitat in waters near JBLE – Eustis were identified.

Under the Proposed Action, DAF has made a no effect determination for shortnose sturgeon (*Acipenser brevirostrum*) and listed sea turtles (green sea turtle [*Chelonia mydas*], Kemp's ridley sea turtle [*Lepidochelys kempii*], leatherback sea turtle [*Dermochelys coriacea*], and loggerhead sea turtle [*Caretta caretta*]) at JBLE – Langley, as they are unlikely to occur in the area and have not been documented on the base. There is no designated critical habitat for any of the listed sea turtles in the vicinity of JBLE – Eustis and JBLE – Langley. No critical habitat for shortnose sturgeon has been designated. Adult shortnose sturgeon may be found migrating and foraging within the action area year round, and although no overwintering grounds have been confirmed, shortnose sturgeon may overwinter near the JBLE – Langley action area from November through February. However, pesticide and herbicide application are not expected to overlap with the time of year when shortnose sturgeon may be overwintering in the action area; therefore, no effects on sturgeon overwintering grounds are anticipated.

Section 7 consultation, under the Endangered Species Act, has been completed to seek concurrence with these determinations and to identify conservation measures to offset potential impacts. DAF submitted a Self-Certification Letter and review package to the US Fish and Wildlife Service (USFWS) Virginia Field Office on 6 July 2022. No questions or indication that the USFWS does not concur with DAF's Section 7 determinations were received during the established **60-day review period; the Self-Certification letter serves as their official response.**

Negligible to minor impacts would occur on airspace management and use; air quality and climate change; aesthetics and visual resources; soils; vegetation/wildlife habitat; ground and surface water supplies and quality; the coastal zone; wildlife populations; and health and safety. While impacts on wetlands and floodplains are unavoidable given the nature of the Proposed Actions, compliance with all federal, state, local, and DAF regulations would ensure impacts are avoided or minimized to the greatest extent practicable.

Best Management Practices and Permit Requirements

The following BMPs and permit requirements are required in the areas of water resources, biological resources, and health and safety:

Water Resources

- Acquire all necessary wetlands and water resource permits for the Proposed Actions, including, but not limited to National Pollutant Discharge Elimination System stormwater permit(s), Environmental Resource Permit(s), Clean Water Act (CWA) Section 404 dredge and fill permit, and Section 401 water quality certification.
- Implement BMPs as defined in Virginia Pollutant Discharge Elimination System (VPDES) permits to reduce or eliminate the potential for contaminants from entering surface water bodies and groundwater.
- Apply all pesticides in accordance with label instructions and in accordance with VPDES permits and restrict their use over water bodies.

Biological Resources

- Adhere to the precautions outlined in the JBLE – Eustis and JBLE – Langley IPMPs.
- Apply all pesticides in accordance with label instructions and in accordance with VPDES permits and restrict their use over water bodies.
- Only apply pesticides when environmental conditions are conducive to minimize exposure from drift and runoff to nontargeted areas.
- Access and obtain an Endangered Species Protection Bulletin on the USEPA's website (https://www.epa.gov/endangered-species/bulletins-live-two-view-bulletins) no more than six months prior to treatment using malathion.
- Ensure all applicators possess a valid Virginia Pesticide Business License and valid Virginia Applicator Certificate for Category 11 or equivalent Department of Defense Applicator Certification in Category 11.
- Identify all known environmentally sensitive areas (e.g., active bald eagle nests and colonial waterbird rookeries) on spray maps prior to any aerial application mission for avoidance or proper approval for treatment.
- Adhere to JBLE – Eustis and JBLE – Langley Integrated Natural Resources Management Plan measures.

Health and Safety

- Follow all pesticide label instructions, BMPs, and the IPMP for each site to prevent accidental exposures and protect human health.
- Notify personnel in the areas proposed for pesticide application ahead of time and direct them to avoid the areas during applications.
- Only mix the formulated pesticide with surfactants/adjuvants that are approved on the pesticide label. Aerial applications of the pesticides proposed for use typically do not require the use of surfactants/adjuvants.
- Do not complete aerial pesticide application when conditions could increase the likelihood of spray drift (e.g., high or gusty winds, high temperatures, low humidity, temperature inversions) and droplet size would also be controlled per specimen label instructions to minimize drift.

Public Review and Stakeholder Coordination

Coordination letters were submitted to numerous public stakeholders, including the Virginia Department of Conservation and Recreation, Virginia Department of Environmental Quality, Virginia Department of Wildlife Resources, Virginia Department of Historic Resources, Virginia Marine Council, National Oceanic and Atmospheric Administration Fisheries Service, US Army Corps of Engineers, US Department of Agriculture, USEPA, US Fish and Wildlife Service, US Geological Survey, and Native American tribes claiming cultural affinity to the area. An early notification of impacts on wetlands and floodplains was published in the *Daily Press* in November 2021. Copies of the notice and coordination letters are included in **Appendix A** of the EA. The Draft EA was released for public review for 30 days in July 2022, with a Notice of Availability

published in the *Daily Press*. Comments were received from the National Marine Fisheries Service, the city of Newport News, and the Virginia Department of Wildlife Resources; comments have been incorporated into this Final EA, as appropriate.

Finding of No Significant Impact

After review of the EA prepared in accordance with the requirements of NEPA; CEQ regulations; and 32 CFR Part 989, EIAP, and which is hereby incorporated by reference, I have determined that the proposed actions and alternatives would not have a significant impact on the natural or human environment either by themselves or cumulatively. The requirements of NEPA and the CEQ's regulations have been fulfilled. An Environmental Impact Statement is not required and will not be prepared.

Finding of No Practicable Alternative

Executive Order (EO) 11990, *Protection of Wetlands* (24 May 1977), directs agencies to avoid to the extent possible the long- and short-term adverse impacts associated with the destruction or modification of wetlands and to avoid direct or indirect support of proposed actions in wetlands wherever there is a practicable alternative. Agencies should use economic and environmental data, agency mission statements, and any other pertinent information when deciding whether or not to implement actions in wetlands. EO 11990 directs each agency to provide for early public review of plans for construction in wetlands. In accordance with EO 11990 and 32 CFR Part 989, a Finding of No Practicable Alternative (FONPA) must accompany the Finding of No Significant Impact (FONSI) stating why there are no practicable alternatives to development within or affecting wetland areas.

Similarly, EO 11988, *Floodplain Management* (24 May 1977), requires federal agencies to avoid to the extent possible the long- and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct and indirect support of floodplain development wherever there is a practicable alternative. If it is found that there is no practicable alternative, the agency must minimize potential harm to the floodplain and circulate a notice explaining why the action is to be located in the floodplain prior to taking action. In accordance with EO 11988, a FONPA must accompany the FONSI stating why there are no practicable alternatives to development within or affecting floodplains.

The Proposed Actions would result in impacts to both wetlands and floodplains. The following FONPA is therefore presented with the FONSI, pursuant to EO 11990 and EO 11988.

***Wetlands*:** Wetland impacts would be reduced to the maximum extent possible through implementation of environmental protection measures. Pursuant to Section 404(b)(1) of the CWA, wetland impacts must be avoided to the greatest extent practicable. All Proposed Actions would use USEPA-registered pesticides approved for the aerial control of common reed and mosquitoes. These pesticides would be used infrequently, applied in accordance with the label instructions, utilize only surfactants/adjuvants that are allowed under the pesticide label, and be applied conservatively using detailed maps and global positioning system (GPS) locaters. Any required permits would be acquired, such as VPDES permits or updates to existing VPDES permits.

As noted in the attached EA, there are no practicable alternatives to the Proposed Actions that would avoid all impacts or further minimize impacts to wetlands because the objective of these actions is to control mosquitoes and invasive plant species across large areas of JBLE

and to reach remote portions of JBLE that are not reasonably accessible for application by land or watercraft. Common reed is a wetland plant, and aerial application of larvicides would be used in breeding sites that cannot be eliminated using ground-based techniques that could include permanent wetlands and drainage ditches. Taking all the environmental, economic, and other pertinent factors into account, pursuant to EO 11990, the authority delegated by Secretary of the Air Force Order 791.1, and taking into consideration the submitted information, I find that there is no practicable alternative to this action and the Proposed Actions include all practical measures to minimize harm to the environment.

***Floodplains*:** Similarly, there is no practicable alternative to implementing the Proposed Actions at JBLE outside of floodplains. The majority of JBLE – Eustis and JBLE – Langley are within the 100-year floodplain. The Proposed Actions include control of mosquitoes over all of JBLE – Eustis' approximately 7,900 acres and over approximately 3,000 acres of JBLE – Langley. The Proposed Actions also include the control of common reed within specific areas where aerial applications would be feasible within the approximately 600 acres of common reed at JBLE – Eustis and on approximately 145 acres on JBLE – Langley.

As noted in the attached EA, there are no practicable alternatives to the Proposed Actions that would avoid all impacts or further minimize impacts to floodplains because the objective of these actions is to control mosquitoes and invasive plant species across large areas of JBLE and to reach remote portions of JBLE that are not reasonably accessible from application by land or watercraft. Taking all the environmental, economic, and other pertinent factors into account, pursuant to EO 11988, the authority delegated by Secretary of the Air Force Order 791.1, and taking into consideration the submitted information, I find that there is no practicable alternative to this action and the Proposed Actions include all practical measures to minimize harm to the environment.

DEE JAY KATZER, Colonel, USAF Date
Chief, Civil Engineer Division
Air Combat Command (ACC/A4C)

Attachment: *Final Environmental Assessment for Aerial Application of Pesticide for Mosquito and Invasive Plant Species Control at Joint Base Langley – Eustis, Virginia*

FORMAT PAGE

TABLE OF CONTENTS

LIST OF TABLES

Page

LIST OF FIGURES

Page

LIST OF APPENDICES

Page

FORMAT PAGE

ABBREVIATIONS AND ACRONYMS

1 FW	1st Fighter Wing
192 FW	192nd Fighter Wing
°F	degrees Fahrenheit
ACAM	Air Conformity Applicability Model
ACC	Air Combat Command
AFCEC	Air Force Civil Engineer Center
AFI	Air Force Instruction
AFMAN	Air Force Manual
AGL	above ground level
AICUZ	Air Installation Compatible Use Zone
AMPA	aminomethylphosphonic acid
AQCR	Air Quality Control Region
ATC	air traffic control
ATSDR	Agency for Toxic Substances and Disease Registry
BASH	Bird/Wildlife Aircraft Strike Hazard
BGEPA	Bald and Golden Eagle Protection Act
BMP	best management practice
B.s.	*Bacillus sphaericus*
Bti	*Bacillus thuringiensis israelensis*
C	candidate
CAA	Clean Air Act
CBIC	Chesapeake Bay Impact Crater
CDC	Centers for Disease Control and Prevention
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CH	designated critical habitat
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
COSC	Operations Directorate
CWA	Clean Water Act
CZMA	Coastal Zone Management Act
CZMP	Coastal Zone Management Program
DAF	Department of the Air Force
DDVP	degradate dichlorvos
DoD	Department of Defense
E	endangered
EA	Environmental Assessment
EFH	Essential Fish Habitat
EIAP	Environmental Impact Analysis Process
EMP	Environmental Management Procedure
EO	Executive Order
EPCRA	Emergency Planning and Community Right-to-Know Act
ERP	Environmental Restoration Program
ESA	Endangered Species Act
FAA	Federal Aviation Administration
FES	Fire and Emergency Services
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
Fisheries Service	National Marine Fisheries Service
FMP	Fisheries Management Plan
FONPA	Finding of No Practicable Alternative
FONSI	Finding of No Significant Impact
FWIS	Fish and Wildlife Information Service
GHG	greenhouse gas
GPM	gallons per minute
GPS	global positioning system
INRMP	Integrated Natural Resources Management Plan
IPaC	Information for Planning and Consultation
IPM	integrated pest management
IPMC	Installation Pest Management Coordinator
IPMP	Integrated Pest Management Plan
JBLE	Joint Base Langley – Eustis
JBLE – Eustis	Joint Base Langley – Eustis, Fort Eustis
JBLE – Langley	Joint Base Langley – Eustis, Langley Air Force Base
µm	microns
MAJCOM	Major Command
MBTA	Migratory Bird Treaty Act
MDG	Medical Control Group
MMt	million tons per year
mph	miles per hour
MS4	Municipal Separate Storm Sewer System
NAAQS	National Ambient Air Quality Standards
NASA	National Aeronautics and Space Administration
NE	no effect
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
no.	number
NLAA	may affect, not likely to adversely affect
NOAA	National Oceanic and Atmospheric Administration
NO_x	nitrogen oxide
NPIC	National Pesticide Information Center
Pb	lead
PBF	physical or biological feature
PCB	polychlorinated biphenyl
$PM_{2.5}$	particulates equal to or less than 2.5 microns in diameter
PM_{10}	particulates equal to or less than 10 microns in diameter
PPE	personal protective equipment
ppt	parts per thousand
PSD	Prevention of Significant Deterioration

ROI	Region of Influence
SDS	Safety Data Sheet
SDWA	Safe Drinking Water Act
SO_2	sulfur dioxide
SPCC	spill prevention control and countermeasures
SWPPP	Stormwater Pollution Prevention Plan
T	threatened
TMDL	Total Maximum Daily Load
tpy	tons per year
ULV	ultralow volume
US	United States
USACE	US Army Corps of Engineers
USC	United States Code
USDA	US Department of Agriculture
USEIA	US Energy Information Administration
USEPA	US Environmental Protection Agency
USFS	US Forest Service
USFWS	US Fish and Wildlife Service
VAC	Virginia Administrative Code
VDACS	Virginia Department of Agriculture and Consumer Services
VDEQ	Virginia Department of Environmental Quality
VDH	Virginia Department of Health
VDWR	Virginia Department of Wildlife Resources
VMD	volume mean diameter
VOC	volatile organic compound
VPDES	Virginia Pollutant Discharge Elimination System
WHO	World Health Organization
WNS	white-nose syndrome

1.0 PURPOSE, NEED, AND SCOPE

1.1 INTRODUCTION

This Environmental Assessment (EA) has been prepared in accordance with regulations issued by the Council on Environmental Quality (CEQ), 32 Code of Federal Regulations (CFR) Part 989, and the Department of the Air Force (DAF) Environmental Impact Analysis Process (EIAP) to evaluate potential environmental impacts associated with the proposed aerial application of pesticides for mosquito and invasive plant species, primarily common reed (*Phragmites australis*) control at Joint Base Langley – Eustis (JBLE) (which consists of Langley Air Force Base [JBLE – Langley] and Fort Eustis [JBLE – Eustis]), Virginia. Throughout this EA, the term "pesticide" means (1) any substance or mixture of substances intended for preventing, destroying, repelling, or mitigating any pest, (2) any substance or mixture of substances intended for use as a plant regulator, defoliant, or desiccant, and (3) any nitrogen stabilizer (Federal Insecticide, Fungicide, and Rodenticide Act [FIFRA; 7 United States Code [USC] 136-136y]) and by this definition includes both insecticides and herbicides. This EA is intended to be used until 1) there is a major change in the language or agreement between agencies involved, 2) there is a substantial change in associated pesticides, and/or 3) there is a change to any species of concern.

In accordance with CEQ Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act (NEPA) (40 CFR Parts 1500-1508, Section 1502.13), this section specifies the purpose and need for the proposed aerial application of pesticide.

1.2 BACKGROUND

Integrated pest management (IPM) is a key component of community health and natural resources management at JBLE to support military missions (JBLE – Eustis 2020; JBLE – Langley 2021a). Pest species include those impacting operations both in cantonment and natural areas, but also those that may affect wildlife or habitats. These include hematophagous arthropods (such as mosquitoes, ticks, deer flies, and others) and other arthropods with parasitic stages (such as chiggers, bot flies, etc.), as well as invasive or undesirable plants and forest insect pests affecting the health and quality of forest resources. Some biting arthropods vector serious disease organisms pathogenic to humans and wildlife, and in some cases pest species also affect biodiversity.

In particular, mosquito and invasive plant species populations pose risks to human health and impact military operations and the natural environment at JBLE.

1.2.1 Mosquito Populations

Mosquitoes represent a major arthropod group that have the potential to disrupt military missions at JBLE – Eustis and JBLE – Langley. Mosquitoes impact the military mission at JBLE – Eustis and JBLE – Langley in several ways:

- **Biting nuisance.** The females of many mosquito species obtain blood meals from vertebrate hosts (including humans) to facilitate their reproductive process. When mosquitoes attain sufficient numbers of the adult stage, the installation community is at risk of multiple and frequent bites that disrupt outdoor training, small-arms range firing, outdoor recreational activities, and other outdoor events. The degree of risk and impact is also related to the activity location and time of day.

- **Health issues and risks of disease transmission.** There are at least six mosquito-borne diseases documented in the continental United States (US); however, their distribution, prevalence, and frequency are highly variable. These diseases include West Nile virus, La Crosse encephalitis, Jamestown Canyon virus, western equine encephalitis, eastern equine encephalitis, and St. Louis encephalitis. The Zika virus, chikungunya, and dengue have also reached certain areas of the US. In recent years, 2017 (Centers for Disease Control and Prevention [CDC] 2018), 2018 (CDC 2019), 2019 (CDC 2020), and 2020 (CDC 2021a), human cases of West Nile virus were recorded in Virginia, although no human cases have yet been confirmed in 2021 to date (CDC 2021b). Allergic reactions to mosquito bites, secondary infections, and general malaise represent other health issues associated with mosquito bites.
- **Military working dogs.** The health of military working dogs can be impacted by mosquitoes. Several mosquito species (*Culex* genus) are competent vectors of the dog heartworm (*Dirofilaria immitis*), a parasitic filarial roundworm affecting domestic dogs and some wild mammals.
- **Natural resources management.** Mosquitoes impact natural resources directly and indirectly in various ways. Some mosquito species are not native to Virginia and are invasive. These species, as well as native species, are blood feeders on wild mammals, birds, amphibians, and reptiles, and subsequent blood loss could affect the health of these hosts. Furthermore, certain disease pathogens vectored by mosquitoes, such as the roundworm, can affect foxes and raccoons, and the West Nile virus can cause mortality in birds. Such factors could alter vertebrate host populations that in turn can impact habitat structure. Additionally, certain native and invasive insects can cause significant damage to the limited forest areas of JBLE – Eustis under certain conditions. Such damage incurs serious impacts on training activities at JBLE – Eustis.

1.2.2 Common Reed

JBLE – Eustis comprises approximately 7,900 acres of land, of which approximately 3,600 acres are tidal and nontidal wetlands. Several invasive plant species exist that cause impacts on military operations and degrade natural habitats. Common reed is one of the more significant invasive species at JBLE – Eustis, as it continues to expand into wetland areas (and to some extent adjacent upland areas when conditions are favorable) where it outcompetes native wetland species, thereby reducing the ecological and overall wetland value of the areas.

Many invasive plants have become established at JBLE – Langley, and one of the most prolific invasive plants at JBLE – Langley is the common reed. Common reed currently exists within approximately 145 acres of the 652 acres of wetlands present at JBLE – Langley. Common reed has spread across large areas in a manner that impacts military operations and is detrimental to the natural habitats, where natural resources are damaged and land sustainment is compromised. In such cases, accessibility or logistical constraints prevent ground control techniques.

Common reed is a nonnative, highly invasive perennial grass that propagates by seed heads and vegetatively via rhizomes. It grows and expands quickly, often outcompeting native aquatic vegetation. It has little to no resource value to native wildlife and other fauna, creates large impenetrable stands, and poses wildfire risks. Common reed expands rapidly and quickly outcompetes native wetland plant species. As a result, many native wetland habitats become degraded from major losses of biodiversity. Additionally, the large, thick stands of common reed reduce land available for military training, pose potential wildland fire risks, and compromise force protection.

Executive Order (EO) 13751, *Safeguarding the Nation From the Impacts of Invasive Species* (5 December 2016), which amended EO 13112 (3 February 1999), directs continuing actions by federal agencies to prevent the spread of invasive species and to implement control efforts. JBLE – Eustis has completed mapping of common reed stands to use towards identifying areas suitable for aerial or ground-based treatments and those area appropriate for the integration of nonchemical controls. Prior invasive plant control contracts on JBLE – Eustis have involved herbicide treatments of common reed in 2004, 2011, 2012, 2013, 2018, 2019, and 2020. Portions of these treatments included aerial applications. JBLE – Eustis' IPM approach also includes supporting ground methods such as hand spraying of herbicides and limited augmentation with physical methods such as prescription burning, replanting with native plant species, and excavation of soils and rhizomes when feasible.

As part of the installation's IPM approach, the control of the common reed at JBLE – Langley began in October 2002, with the ground-based application of an isopropylamine salt of glyphosate-based herbicide. Aerial application of herbicide was accomplished via helicopter in the tidal wetland areas of JBLE – Langley in 2002 (150 acres), 2005 (157 acres), 2007 (104 acres), and 2008 (114 acres) (JBLE – Langley 2019). Aerial application was suspended in 2009 until adequate funding could be obligated. Ground-based application treatments were continued in developed and natural areas (where possible). In 2017, a contractor was funded to perform 150 acres of invasive plant species treatments on JBLE – Langley Main Base and to remap areas of common reed suitable for aerial and ground-based applications of herbicide. In fiscal year 2018, invasive species treatment projects were funded on JBLE – Langley, which included the treatment of approximately 65 acres of common reed.

1.3 LOCATION OF THE PROPOSED ACTION

JBLE – Eustis is located in the Hampton Roads area of southeast Virginia on the southwest side of the Virginia Peninsula, which is bordered by the James River and Warwick River (**Figure 1-1**). The installation is contiguous to the City of Newport News and is located on the eastern shoreline of the James River approximately 30 miles upstream of its confluence with the Chesapeake Bay (**Figure 1-2**). Additionally, an approximately 50-acre parcel of land exists on the north side of Skiffes Creek adjacent to James City County.

The approximately 2,000-acre cantonment area is located in the northwest part of the installation on the mainland of the Virginia Peninsula (see **Figure 1-2**) and contains the highest concentration of land uses, transportation systems, and infrastructure.

JBLE – Langley is on the lower Virginia Peninsula, between the Northwest Branch and Southwest Branch of the Back River, a tributary of the Chesapeake Bay (see **Figure 1-1**). JBLE – Langley is a 2,883-acre installation located within the City of Hampton (**Figure 1-3**). Tributaries of the Back River form the northern, eastern, and southern boundaries of the Main Base. The western boundary of the installation is generally defined by Armistead Avenue. On the northwest side, the base borders the National Aeronautics and Space Administration (NASA) Langley Research Center.

1.4 PURPOSE AND NEED

The purpose of the Proposed Action is to implement an IPM approach to community health and natural resources management at JBLE to support military missions by: (1) reducing mosquito (and other pest arthropods) populations to tolerable levels, (2) breaking the disease transmission cycle caused by vectoring arthropods, and (3) restoring habitats impacted by invasive plant species such as common reed.

Figure 1-1. Regional Location of Joint Base Langley – Eustis

Figure 1-2. Location of Joint Base Langley – Eustis – Fort Eustis and Surrounding Area

Figure 1-3. Location of Joint Base Langley – Eustis – Langley Air Force Base and Surrounding Area

The Proposed Action is needed to control mosquitoes and invasive plant species across large areas of JBLE and to reach remote portions of JBLE that are not reasonably accessible from application by land or watercraft. Large-scale application of pesticide would reduce the potential threat of human disease caused by mosquito vectors, mosquito-induced discomfort, hardship, annoyance, and distraction experienced by personnel at JBLE. An outbreak of mosquito-borne illness among base personnel could seriously degrade mission-essential operations and readiness. Additionally, the efficiency of military training, maintenance operations, range management, natural resources management, military police, fire and emergency services, and others who work outdoors may be adversely affected when mosquito populations reach intolerable levels. The use of outdoor bivouac areas and recreational facilities such as the golf course, athletic fields, playgrounds, and picnic areas may decline at times due to intense mosquito activity. Such restrictions reduce productivity and have a negative effect on the morale of assigned personnel, their dependents, transient personnel, and guests and residents of civilian communities. Control of invasive plant species such as common reed in coastal and estuarine wetlands would improve the biological diversity and functions of wetlands, increase recreational opportunities, reduce visual restrictions by tall herbaceous vegetation, and support training opportunities and force protection. Further, populations of common reed are currently occupying space in the high marsh and preventing the gradual movement inland of more salt-tolerant species in response to climate change. Common reed is a barrier to inland marsh migration (Smith 2013), and salt-tolerant species are being submerged in some areas as land sinks and oceans rise, pushing up tidal river levels.

1.5 SCOPE OF THE ENVIRONMENTAL ASSESSMENT

The proposed aerial application of pesticide at JBLE addressed within this document constitutes a federal action and, therefore, must be assessed in accordance with NEPA, which requires federal agencies to consider the environmental consequences of proposed actions in the decision-making process (42 USC 4321, et seq.). The intent of NEPA is to protect, restore, or enhance the environment through well-informed decisions by the federal decision maker. The CEQ was established under NEPA, 42 USC 4342, et seq., to implement and oversee federal policy in this process. In 1978, the CEQ issued regulations implementing the NEPA process under 40 CFR 17 Parts 1500–1508. On 14 September 2020, CEQ issued an *Update to the Regulations Implementing the Procedural Provisions of the National Environmental Policy Act (*40 CFR Parts 1500–1508 and 1515–1518). On 20 April 2022, CEQ issued the *Phase I Final Rule for National Environmental Policy Act Implementing Regulations Revisions*. The final rule amended certain provisions of CEQ's regulations for implementing NEPA, addressing the purpose and need of a proposed action, agency NEPA regulations, and the definition of "effects." The amendments generally restore provisions that were in effect for decades before being modified in 2020. The DAF EIAP for meeting CEQ requirements is accomplished via procedures set forth in CEQ regulations and 32 CFR 989. This EA has been prepared in accordance with the most recent 2022 CEQ guidance for implementing NEPA, which became effective on 20 May 2022, and 32 CFR 989.

Consistent with the CEQ regulations, the scope of analysis presented in this EA is defined by the potential range of environmental impacts that would result from implementation of the Proposed Action. Resources with potential impacts were considered in detail to determine if implementing the Proposed Action would have a significant impact on those resources. The resources analyzed include airspace management and use; air quality and climate change; aesthetics and visual resources; geological resources; water resources; biological resources; and health and safety.

The existing affected environment and the potential environmental consequences with implementation of the Proposed Action are described in **Section 3.0,** *Affected Environment and Environmental Consequences*.

1.6 APPLICABLE REGULATORY REQUIREMENTS

Applicable federal, state, and local regulations have been considered during analysis of the impacts on individual environmental and social resources evaluated as part of the EA. The following legislation has been given particular consideration:

- Clean Air Act (CAA) (42 USC 7401)
- Clean Water Act (CWA) (33 USC 1251)
- Coastal Zone Management Act (CZMA) (16 CFR 1451-1464)
- Endangered Species Act (ESA) (16 USC 1531-1543)
- FIFRA (7 USC 136-136y)
- Migratory Bird Treaty Act (MBTA) (16 USC 703–712)
- Bald and Golden Eagle Protection Act (BGEPA) (16 USC 668-668c)
- National Defense Authorization Act for Fiscal Year 2003 (Public Law 107-314, 116 Statute 2458)
- Marine Mammal Protection Act of 1972 (16 USC 31)
- Magnuson-Stevens Fishery Conservation and Management Act of 1976 (16 USC § 1801 et seq.)
- National Historic Preservation Act (NHPA) (16 USC 470)
- Safe Drinking Water Act (SDWA) (42 USC 300f et seq.)
- Occupational Safety and Health Act
- Virginia Pesticide Control Act
- Federal Environmental Pesticide Control Act
- Federal Pesticide Act
- Stormwater requirements under Section 438 of the Energy Independence and Security Act (42 USC 17094)
- EO 11988, *Floodplain Management*
- EO 11990, *Protection of Wetlands*
- EO 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds*
- EO 13751, *Safeguarding the Nation from the Impacts of Invasive Species*
- Department of Defense (DoD) Instruction 4150.07, *DoD Pest Management Program*
- Air Force Manual (AFMAN) 32-1053, *Integrated Pest Management Program*

The DAF consulted with the US Fish and Wildlife Service (USFWS) Virginia Field Office under Section 7 of the ESA regarding the project in accordance with the recently implemented 4(d) rule for the northern long-eared bat (*Myotis septentrionalis*) and the potential occurrence of the eastern black rail (*Laterallus jamaicensis*) and for the bald eagle (which is protected under the MBTA and BGEPA) occurrence and nesting. DAF submitted a Self-Certification Letter and review package to the USFWS Virginia Field Office on 6 July 2022 (**Appendix A**). No questions or indication that the USFWS does not concur with DAF's Section 7 determinations were received during the established 60-day review period; the Self-Certification letter serves as their official response. Coordination with the National Oceanic and Atmospheric Administration's (NOAA) National Marine Fisheries Service (Fisheries Service) regarding aquatic species presence, particularly the Atlantic sturgeon (*Acipenser oxyrhynchus oxyrhynchus*), shortnose sturgeon (*Acipenser brevirostrum*), and listed sea turtles (green sea turtle [*Chelonia mydas*], Kemp's ridley sea turtle

[*Lepidochelys kempii*], leatherback sea turtle [*Dermochelys coriacea*], and loggerhead sea turtle [*Caretta caretta*]), was also completed. Records of correspondence with the USFWS and Fisheries Service are included in **Appendix A.**

The Proposed Action is located within Virginia's coastal zone and requires a federal Consistency Determination in accordance with the CZMA. The CZMA enables states to implement federally approved coastal programs to protect coastal areas in conjunction with the environment, economy, and human health. The DAF will submit a Consistency Determination to the Virginia Department of Environmental Quality (VDEQ).

To comply with the NHPA and its implementing regulations at 36 CFR 800, federally recognized tribes affiliated historically with the JBLE geographic region will be invited to consult on all proposed undertakings that have a potential to affect properties of cultural, historical, or religious significance to the tribes. The tribal coordination process is distinct from NEPA coordination or the Interagency/Intergovernmental Coordination for Environmental Planning processes and requires separate notification of all relevant tribes. Timelines for tribal consultation are also distinct from those of intergovernmental consultations. JBLE initiated consultation in accordance with Air Force Instruction (AFI) 90-2002, *Interactions with Federally Recognized Tribes* (24 August 2020). Once consultation is initiated by the Commander, the JBLE point of contact for consultation with the Tribal Historic Preservation Officer and the Advisory Council on Historic Preservation is the Cultural Resources Manager. Records of correspondence with the Native American tribal governments are included in **Appendix A.**

1.7 PUBLIC AND AGENCY REVIEW OF EA

Through the public involvement process, the DAF will notify relevant federal, state, and local agencies and the public of the Proposed Action and request input on environmental concerns they might have regarding the Proposed Action. The public involvement process provides JBLE with the opportunity to consider and address state and local views in its decision regarding implementing this federal proposal. **Table 1-1** presents the agencies and tribes that were contacted in the preparation of this EA.

An early public notice was published in the *Daily Press* on 5 and 6 November 2021. In accordance with EO 11990, JBLE published the early public notice to notify the public of potential impacts on floodplains and wetlands and to invite public comment on the proposal and any practicable alternatives that may reduce wetland or other impacts. No early public comments were received. A copy of the early public notice is provided in **Appendix A.**

Table 1-1. Agencies and Tribes Consulted/Coordinated

Federal Agencies	
National Oceanic and Atmospheric Administration Fisheries Service	US Army Corps of Engineers, Norfolk District
US Department of Agriculture, Natural Resources Conservation Service	US Environmental Protection Agency, Region 3
US Fish and Wildlife Service, Virginia Field Office	US Geological Survey, Environmental Affairs Program
State Agencies	
Virginia Department of Conservation and Recreation, Virginia Natural Heritage Program	Virginia Department of Environmental Quality, Virginia Coastal Zone Management Program
Virginia Department of Environmental Quality, Office of Environmental Impact Review	Virginia Department of Wildlife Resources

Virginia Department of Historic Resources, Review and Compliance	Virginia Marine Resources Commission
Local Agencies	
City of Hampton, Virginia	City of Newport News
City of Poquoson, Virginia	Hampton Wetland Board
York County Administrator	
Tribes	
Catawba Indian Nation	Chickahominy Indian Tribe
Delaware Nation	Nansemond Indian Nation
Pamunkey Indian Tribe	Rappahannock Tribe Cultural Center
Upper Mattaponi Indian Tribe	

A Notice of Availability for the Draft EA and Draft Finding of No Significant Impact (FONSI)/Finding of No Practicable Alterative (FONPA) was published in the *Daily Press* announcing the availability of the Draft EA and Draft FONSI/FONPA for a period of 30 days. Electronic copies of the Draft EA and Draft FONSI/FONPA were also made available for review online at the JBLE – Eustis and JBLE – Langley public websites, https://www.jble.af.mil/Units/Army/Eustis-Enviromental and https://www.jble.af.mil/About-Us/Units/Langley-AFB/Langley-Environmental. Public and agency comments received on the Draft EA and Draft FONSI/FONPA are provided in **Appendix A.** Comments were received from NOAA Fisheries Service, the City of Newport News, and the Virginia Department of Wildlife Resources; comments have been incorporated into this Final EA, as appropriate.

2.0 PROPOSED ACTION AND ALTERNATIVES

2.1 INTRODUCTION

This section of the EA describes details of the Proposed Action, alternatives considered to meet the purpose and need of the Proposed Action, and how the alternatives were screened against selection standards.

2.2 DESCRIPTION OF THE PROPOSED ACTION

The Proposed Action is a supporting control technique used as part of IPM program and supports management of mosquito populations under conditions of disease risk and intolerable levels as well as management of invasive plant species, particularly common reed, at JBLE. Aerial pesticide treatment is considered when the approved ground-based techniques outlined in each installation's Integrated Pest Management Plan (IPMP) fail to significantly reduce mosquito and common reed populations. When mosquito surveillance data indicate threshold limits have exceeded the capabilities of ground control methods, an aerial application would be warranted. The Proposed Action includes control of adult mosquitoes over all of JBLE – Eustis' approximately 7,900 acres (**Figure 2-1**) and over approximately 3,000 acres of JBLE – Langley (**Figure 2-2**). Aerial application of US Environmental Protection Agency (USEPA)-registered pesticides to control mosquito larvae may be used in conjunction with or in lieu of adult mosquito applications and would be used in breeding sites that cannot be eliminated using ground-based techniques. These general locations could include but would not be limited to permanent wetlands, drainage ditches, and vehicular-generated ruts.

The Proposed Action also includes the control of common reed within specific areas where aerial applications would be feasible within the approximately 600 acres of common reed at JBLE – Eustis (**Figure 2-3**) and on approximately 145 acres on JBLE – Langley (**Figure 2-4**). Similar to mosquito control, aerial application of herbicides targeting common reed would be implemented when ground control methods fail to effectively control the spread of common reed on JBLE.

2.3 ALTERNATIVE SELECTION STANDARDS

NEPA and the CEQ regulations mandate the consideration of reasonable alternatives for the Proposed Action. "Reasonable alternatives" are those that could be utilized to meet the purpose and need of the Proposed Action. In accordance with 32 CFR 989.8(c), the development of selection standards is an effective mechanism for the identification, comparison, and evaluation of reasonable alternatives.

Alternatives to the Proposed Action were evaluated based on four selection standards:

- **Standard 1**: The alternative(s) must provide efficient and effective control of mosquito and invasive plant species across broad areas of JBLE, especially those areas that are remote and difficult to access by vehicle, foot movement, or watercraft.
- **Standard 2**: The alternative(s) must be limited in frequency and duration, so the military mission and ongoing training are not interrupted, while still effectively implementing large-area control of mosquito populations and the common reed.

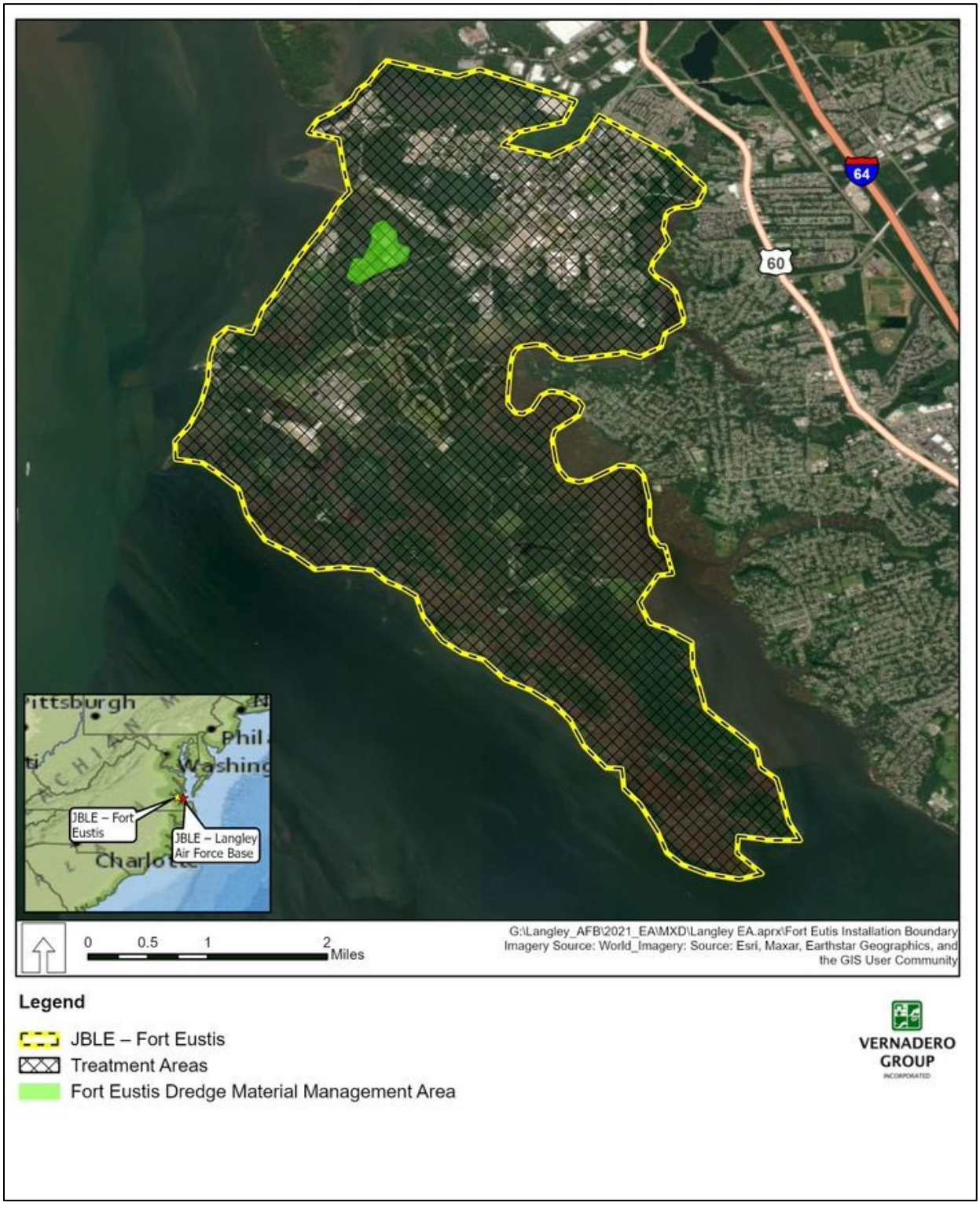


Figure 2-1. Proposed Mosquito Treatment Areas at Joint Base Langley – Eustis — Eustis

Figure 2-2. Proposed Mosquito Treatment Areas at Joint Base Langley – Eustis — Langley

Figure 2-3. Current Common Reed Distribution at Joint Base Langley – Eustis — Eustis

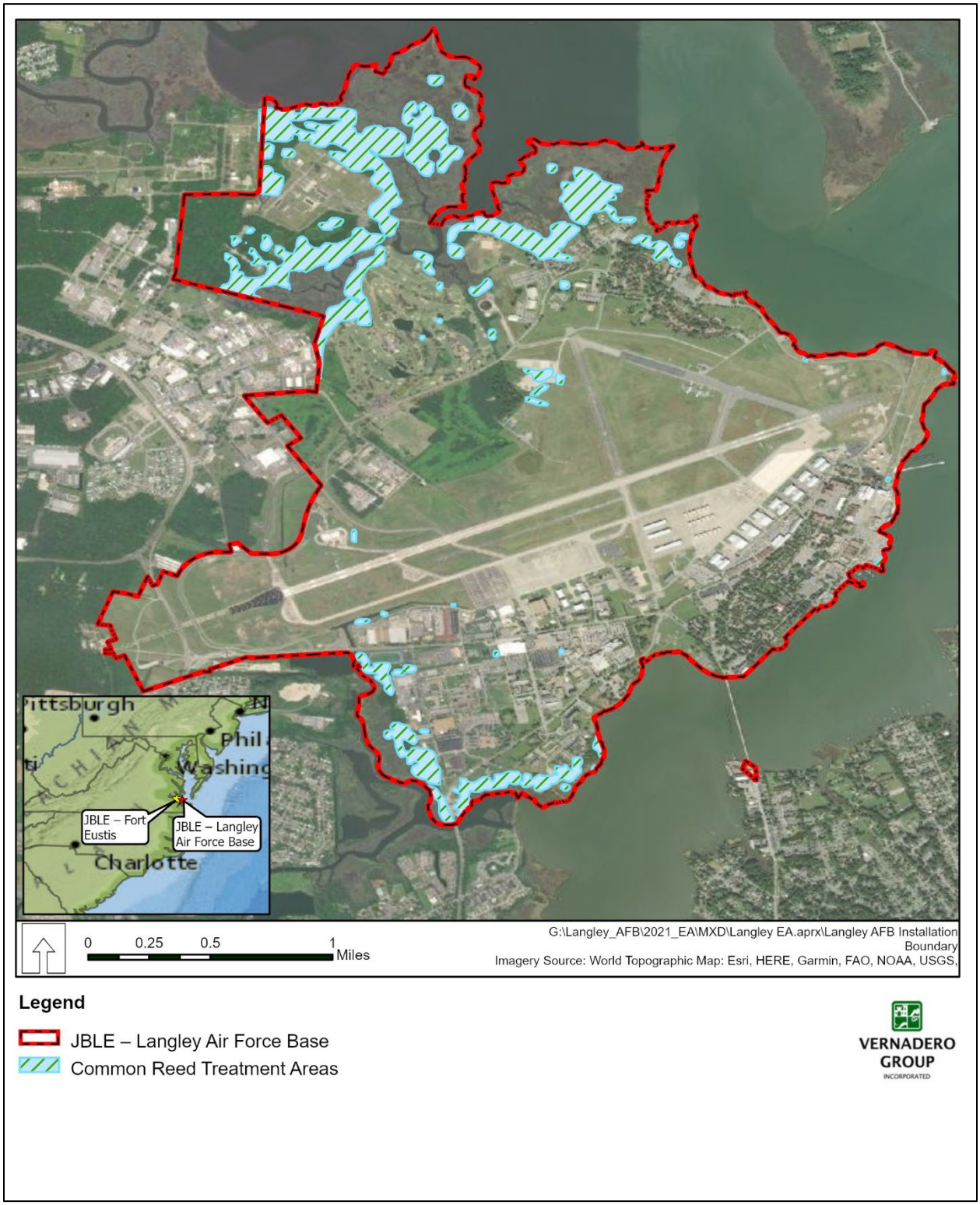


Figure 2-4. Proposed Common Reed Treatment Areas at Joint Base Langley – Eustis — Langley

- **Standard 3**: The alternative(s) must maintain the ecological functionality and services of habitats on base and utilize techniques approved for use in the targeted habitats.
- **Standard 4**: The alternative(s) must comply with Virginia pest management regulations.

2.4 ALTERNATIVES CONSIDERED

This section presents all alternatives evaluated and assesses them relative to selection standards. The selection standards were used to screen alternatives for implementation of the Proposed Action. Those alternatives that met the selection standards were carried forward for further detailed analysis in the EA (**Table 2-1**). Alternatives that met all selection standards were considered reasonable and retained for consideration in this EA. The DAF initially considered a variety of mosquito and common reed control alternatives that could be combined into alternatives carried forward as reasonable alternatives, where both mosquito and common reed control, met the purpose and need and selection standards.

2.4.1 Alternative 1. Multiple Annual Aerial Applications of Pesticides for Large Area Control of Mosquitoes and Common Reed

Alternative 1 would implement multiple annual aerial application of pesticides for large area control of mosquitoes and common reed on JBLE. The decision to aerially apply pesticides for adult mosquito control would be based upon a combination of the threat of human and animal disease, environmental and climatic conditions, adult mosquito surveillance, and customer complaints. The heaviest mosquito infestations typically occur from August through October on and around JBLE. Based on several decades of surveillance data, the DAF has established 45 females per trap night and 75 females per trap night as the thresholds for the chemical control of adult mosquitoes at JBLE – Eustis and JBLE – Langley, respectively. Therefore, when adult mosquito surveillance data indicate threshold limits have exceeded the capabilities of ground control methods, an aerial application would be required. If there are reports of disease-positive specimen pools in the local area, if mosquito populations create a significant decline in the quality of life, or if there is the threat of a disease outbreak, the threshold requirements could be waived.

Requests for aerial application of pesticides for mosquito control would be coordinated with the Air Force Civil Engineer Center Operations Directorate (AFCEC/COSC) Pest Management Professionals, the Public Health section at the 633 Medical Group (MDG), McDonald Army Health Center Department of Public Health, and Installation Pest Management Coordinators (IPMCs). The DAF would obtain all necessary permits (e.g., VAG87/Virginia Pollutant Discharge Elimination System [VPDES] permit) prior to implementing the Preferred Alternative.

All pesticides used in the US must be registered (licensed) by the USEPA. Therefore, a pesticide registered with the USEPA and labeled for use in aerial applications for mosquito control would be used at JBLE. Currently, such pesticides include naled as the active ingredient and would be aerially applied to control adult mosquitoes on JBLE; the proposed USEPA-approved pesticides that could be used are provided in **Table 2-2**. The current formulation that is anticipated to be applied is Trumpet® EC (NSN 6840- 01-532-5414 and USEPA Registration No. 5481-481), which is an organophosphate containing 78 percent naled (1,2-dibromo-2,2-dichloroethyl dimethyl phosphate). Applications would be made at an ultralow volume (ULV) application rate of 0.5 ounce to 1.2 fluid ounces of undiluted Trumpet® EC per acre. When used in accordance with its labeling, Trumpet® EC poses minimal risks to people and the environment. Best management practices (BMPs) and drift prevention requirements identified in the IPMPs for JBLE – Eustis and JBLE – Langley would be adhered to by the DAF and its applicators to further minimize environmental risks. Naled-based pesticides have been utilized for adult mosquito control in the past; however,

Table 2-1. Alternatives Considered Compared to Selection Standards

Selection Standard	Alternative 1 Multiple Annual Aerial Applications of Pesticides for Large Area Control of Mosquitoes and Common Reed	Alternative 2 One Aerial Application Every Other Year of Pesticides for Large Area Control of Mosquitoes and Common Reed	Alternative 3 Natural Predator Control of Mosquitoes	Alternative 4 Mosquito Control Exclusively via Larvicides	Alternative 5 Common Reed Control Exclusively via Prescribed Fire	Alternative 6 Common Reed Control Exclusively via Physical Removal Techniques	Alternative 7 Common Reed Control via Repeat Harvesting (Mowing)	Alternative 8 Biological Control of Common Reed	No Action Alternative No Control of Mosquitoes or Common Reed
Standard 1: The alternative(s) must provide efficient and effective control of mosquito and invasive plant species across broad areas of JBLE, especially those areas that are remote and difficult to access by vehicle, foot movement, or watercraft.	Yes	Yes	No	No	No	No	No	No	No
Standard 2: The alternative(s) must be limited in frequency and duration, so the military mission and ongoing training are not interrupted, while still effectively implementing large-area control of mosquito populations and the common reed.	Yes	Yes	Yes	Yes	No	Yes	No	Yes	No
Standard 3: The alternative(s) must maintain the ecological functionality and services of habitats on the base and utilize techniques approved for use in the targeted habitats.	Yes	Yes	No	Yes	Yes	No	Yes	Yes	No
Standard 4: The alternative(s) must comply with Virginia pest management regulations.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No

JBLE – Joint Base Langley – Eustis

FORMAT PAGE

other pesticides such as pyrethrin, neo-pyrethrins, and formulations of malathion may be used (**Table 2-2**). Additionally, control of mosquito larvae via aerial platforms would include *Bacillus thuringiensis* subspecies *israelensis* (Bti), *Bacillus sphaericus* (B.s.), and other mosquito larva control products in conjunction with adult mosquito control techniques under the Preferred Alternative. Pesticides such as Bti would be the pesticide of choice but could include other USEPA-registered pesticides appropriate for aerial application to larval habitats (**Table 2-2**). Bti is a naturally occurring bacterium found in soils and has been formulated to control agricultural and disease-vectoring arthropods. Larvae consume the bacterial spores whereupon a toxin is released in the larva that causes it to stop feeding and die. Bti is used in residential and commercial sites and has no toxicity to humans, other vertebrate species, pollinating insects, or nonaquatic arthropods.

Larval applications via aerial platforms at JBLE – Eustis could include application within permanent wetlands, drainage ditches, vehicular-generated ruts, and over the Fort Eustis Dredge Material Management Area (see Figure 2-1), which is an approximately 80-acre dredge material disposal site that may at times contain standing water that could be conducive to mosquito breeding. Larval mosquito control, if deemed necessary based on surveillance data, would likely be accomplished via contracted rotor wing aircraft applications at a maximum of twice per season or based on label application rates. Larger-scale application of larval insecticide over selected marsh habitats at JBLE – Eustis may be feasible but would only be undertaken if it was deemed effective in cases of mosquito-borne disease outbreaks or increased mosquito populations resulting from major storm events that contribute to more extensive mosquito breeding. If this did occur, it would be more likely to occur in selected areas of Mulberry Island located south of the cantonment area. Larval insecticide application via aerial platforms would not occur in the cantonment area because the area does not contain larval habitats conducive to aerial applications.

Aerial application of pesticides for mosquito control would not exceed three applications per year and would typically occur from August through October. The Reserve 910th Airlift Wing/757th Airlift Squadron Aerial Spray Unit from Youngstown Air Reserve Station, Vienna, Ohio, would conduct the aerial application. JBLE – Eustis and JBLE – Langley would purchase the pesticide that would be used on each installation. The aircraft and application system used would consist of a C-130H with a modular aerial spray system and a differential global positioning system (GPS). All known environmentally sensitive areas (e.g., active bald eagle nests and colonial waterbird rookeries) would be identified on aerial application maps prior to any mission for avoidance or proper approval for treatment. JBLE – Langley would serve as the base of air operations. Aircraft application overflights would occur at an elevation of 300 feet above ground level (AGL), and adult mosquito missions would occur from two hours before sunset to sunset, depending on weather conditions.

Aerial application would be completed in one night, with the potential for one additional night of application if weather or mechanical issues cause delays. Regardless of the pesticide being applied (adult insecticides or larvicides) the total maximum number of annual flights would not exceed three. No more than six months prior to treatment using malathion, an Endangered Species Protection Bulletin on the USEPA's website (https://www.epa.gov/endangered-species/bulletins-live-two-view-bulletins) would be obtained.

This 757th Airlift Squadron (located at the Youngstown Air Reserve Station, Ohio) would provide all aircraft, aircrews, and DoD-certified entomologists to coordinate and oversee all aspects of the aerial application of pesticides. If the 757th Airlift Squadron Aerial Spray Unit is unavailable, an alternative certified aerial applicator would be selected after consultation with the AFCEC/COSC

Table 2-2. Pesticides Proposed for Aerial Application at Joint Base Langley – Eustis

Proposed Pesticide/ Larvicide/ Herbicide	USEPA Registration No.	Active Ingredient	Aerial Application Rate	Application Requirements
Trumpet EC	5481-481	78 percent naled (1,2-dibromo-2,2-dichloroethyl dimethyl phosphate)	0.5 ounce to 1.2 fluid ounces undiluted per acre	• For use only by federal, state, tribal, or local government officials responsible for public health or vector control or persons certified in the appropriate category or otherwise authorized by the state or tribal lead pesticide regulatory agency to perform adult mosquito control applications, or by persons under their direct supervision. • Do not apply over bodies of water (e.g., lakes, swamps, rivers, permanent streams, natural ponds, commercial fish ponds, marshes or estuaries), except when necessary to target areas where adult mosquitoes are present, and weather conditions will facilitate movement of applied material away from the water in order to minimize incidental deposition into the water body. • To minimize hazard to bees, it is recommended that the product is not applied more than two hours after sunrise or two hours before sunset, limiting application to times when bees are least active. • Do not apply this product or allow it to drift to blooming crops or weeds while bees are visiting the treatment area, except when applications are made to prevent or control a threat to public and/or animal health as determined by a state, tribal, or local health or vector control agency on the basis of documented evidence of disease-causing agents in vector mosquitoes or the occurrence of mosquito-borne disease in animal or human populations, or if specifically approved by the state or the tribe during a natural disaster recovery effort. • Apply by air using only manned aircraft (fixed wing or rotary). For manned fixed wing aircraft, apply at a minimum height of 100 feet. For manned rotary aircraft, apply at a minimum height of 75 feet. • Spray equipment must be adjusted so that the volume median diameter produced is less than 60 microns (Dv 0.5 < 60 µm) and that 90% of the spray is contained in droplets smaller than 115 microns (Dv 0.9 < 115 µm). • The effects of flight speed and, for nonrotary nozzles, nozzle angle on the droplet size spectrum must be considered. Directions from the equipment manufacturer or vendor, pesticide registrant, or a test facility using a wind tunnel and laser-based measurement instrument must be used to adjust equipment to produce acceptable droplet size spectra. • Application equipment must be tested at least annually to confirm that pressure at the nozzle and nozzle flow rate(s) are properly calibrated. • Apply 0.6-1.2 fluid ounces of undiluted Trumpet EC per acre. Use the 1.2 fluid ounce rate where heavy vegetation exists (e.g., woodlands).

Proposed Pesticide/ Larvicide/ Herbicide	USEPA Registration No.	Active Ingredient	Aerial Application Rate	Application Requirements
Dibrom concentrate	5491-400	84 percent naled (1,2-dibromo-2,2-dichloroethyl dimethyl phosphate)	0.5 to 1 fluid. ounce undiluted per acre	• For use only by federal, state, tribal, or local government officials responsible for public health or vector control, or persons certified in the appropriate category or otherwise authorized by the state or tribal lead pesticide regulatory agency to perform adult mosquito control applications, or by persons under their direct supervision. • Do not apply over bodies of water (e.g., lakes, swamps, rivers, permanent streams, natural ponds, commercial fish ponds, marshes or estuaries), except when necessary to target areas where adult mosquitoes are present, and weather conditions will facilitate movement of applied material away from the water in order to minimize incidental deposition into the water body. • To minimize hazard to bees, it is recommended that the product is not applied more than two hours after sunrise or two hours before sunset, limiting application to times when bees are least active. • Do not apply this product or allow it to drift to blooming crops or weeds while bees are visiting the treatment area, except when applications are made to prevent or control a threat to public and/or animal health as determined by a state, tribal, or local health or vector control agency on the basis of documented evidence of disease-causing agents in vector mosquitoes or the occurrence of mosquito-borne disease in animal or human populations, or if specifically approved by the state or the tribe during a natural disaster recovery effort • Apply by air using only manned aircraft (fixed wing or rotary). For manned fixed wing aircraft, apply at a minimum height of 100 feet. For manned rotary aircraft, apply at a minimum height of 75 feet. • Spray equipment must be adjusted so that the volume median diameter produced is less than 60 microns (Dv 0.5 < 60 µm) and that 90% of the spray is contained in droplets smaller than 115 microns (Dv 0.9 < 115 µm). • The effects of flight speed and, for nonrotary nozzles, nozzle angle on the droplet size spectrum must be considered. Directions from the equipment manufacturer or vendor, pesticide registrant, or a test facility using a wind tunnel and laser-based measurement instrument must be used to adjust equipment to produce acceptable droplet size spectra. • Application equipment must be tested at least annually to confirm that pressure at the nozzle and nozzle flow rate(s) are properly calibrated. • Apply 0.5-1 fluid ounces of undiluted Dibrom concentrate per acre. Use the 1 fluid ounce rate where heavy vegetation exists (e.g., woodlands).

Proposed Pesticide/ Larvicide/ Herbicide	USEPA Registration No.	Active Ingredient	Aerial Application Rate	Application Requirements
Anvil 10+10	1021-1688-6329	3-phenoxybenzyl-(1RS, 3RS, 1RS, 3SR)-2,2-dimethyl-3-(2-methylprop-1enyl) cyclopropanecarboxylate piperonyl butoxide	0.21 to 0.62 fluid ounces per acre	• For use only by federal, state, tribal, or local government officials responsible for public health or vector control, or persons certified in the appropriate category or otherwise authorized by the state or tribal lead pesticide regulatory agency to perform adult mosquito control applications, or by persons under their direct supervision. • Do not apply over bodies of water (e.g., lakes, swamps, rivers, permanent streams, natural ponds, commercial fish ponds, marshes or estuaries), except when necessary to target areas where adult mosquitoes are present, and weather conditions will facilitate movement of applied material away from the water in order to minimize incidental deposition into the water body. • Do not apply this product or allow it to drift to blooming crops or weeds while bees are visiting the treatment area, except when applications are made to prevent or control a threat to public and/or animal health as determined by a state, tribal, or local health or vector control agency on the basis of documented evidence of disease-causing agents in vector mosquitoes or the occurrence of mosquito-borne disease in animal or human populations, or if specifically approved by the state or the tribe during a natural disaster recovery effort. • Do not apply by fixed wing aircraft at a height less than 100 feet above the ground or canopy, or by helicopter at a height less than 75 feet above the ground or canopy unless specifically approved by the state or tribe based on public health needs. • Spray equipment must be adjusted so that the volume median diameter produced is less than 60 microns (Dv 0.5 < 60 µm) and that 90% of the spray is contained in droplets smaller than 80 microns (Dv 0.9 < 80 µm). • The effects of flight speed and, for nonrotary nozzles, nozzle angle on the droplet size spectrum must be considered. Directions from the equipment manufacturer or vendor, pesticide registrant, or a test facility using a wind tunnel and laser-based measurement instrument must be used to adjust equipment to produce acceptable droplet size spectra. • Application equipment must be tested at least annually to confirm that pressure at the nozzle and nozzle flow rate(s) are properly calibrated. • Anvil 10+10 ULV may be applied at rates of 0.21-0.62 fluid ounces per acre by fixed wing or rotary aircraft equipped with suitable ULV application equipment.
Duet	1021-2562-8329	Prallethrin:(RS)-2-methyl-4-oxo-3-(2-propynyl) cyclopent-2-enyl-	0.36 to 1.09 fluid ounces per acre	• For use only by federal, state, tribal, or local government officials responsible for public health or vector control, or persons certified in the appropriate category or otherwise authorized by the state or tribal lead pesticide regulatory agency to perform adult mosquito control applications, or by persons under their direct supervision.

Proposed Pesticide/ Larvicide/ Herbicide	USEPA Registration No.	Active Ingredient	Aerial Application Rate	Application Requirements
		(1RS)-cis,trans-chrysanthemate Sumithrin®: 3-Phenoxybenzyl-(1RS, 3RS,1RS, 3SR)-2,2-dimethyl-3-(2-methylprop-1-enyl) cyclopropanecarboxylate Piperonyl Butoxide		• Do not apply by fixed wing aircraft at a height less than 100 feet above the ground or canopy, or by helicopter at a height less than 75 feet above the ground or canopy, unless specifically approved by the state or tribe based on public health needs. • When making aerial application at an altitude of less than 100 feet, apply only when wind speed at altitude is greater than or equal to 5 mph. When making application at an altitude of 100 feet or greater, apply only when wind speed at altitude is greater than or equal to 3 mph. • Aquaduet may be applied at rates of 0.36-1.09 fluid ounces of Aquaduet per acre by fixed wing or rotary aircraft equipped with suitable ULV application equipment.
Zenivex	2724-791	etofenprox	0.00175 to 0.007 pounds per acre	• For use only by federal, state, tribal, or local government officials responsible for public health or vector control, or persons certified in the appropriate category or otherwise authorized by the state or tribal lead pesticide regulatory agency to perform adult mosquito control applications, or by persons under their direct supervision. • Do not apply over bodies of water (e.g., lakes, swamps, rivers, permanent streams, natural ponds, commercial fish ponds, marshes or estuaries), except when necessary to target areas where adult mosquitoes are present, and weather conditions will facilitate movement of applied material away from the water in order to minimize incidental deposition into the water body. • Do not apply this product or allow it to drift to blooming crops or weeds while bees are visiting the treatment area, except when applications are made to prevent or control a threat to public and/or animal health as determined by a state, tribal, or local health or vector control agency on the basis of documented evidence of disease-causing agents in vector mosquitoes or the occurrence of mosquito-borne disease in animal or human populations, or if specifically approved by the state or the tribe during a natural disaster recovery effort. • Apply using ULV-equipped and -capable aircraft, either diluted or undiluted, by fixed wings or rotary aircraft. • Do not apply at altitudes below 100 feet. Apply at altitudes from 100 to 300 feet. • Spray equipment must be adjusted so that the volume median diameter (VMD) produced is less than 60 microns (Dv0.5 < 60 µm) and that 90% of the spray is contained in droplets smaller than 100 microns (Dv0.9 < 100 µm).

Proposed Pesticide/ Larvicide/ Herbicide	USEPA Registration No.	Active Ingredient	Aerial Application Rate	Application Requirements
				• The effects of flight speed and, for nonrotary nozzles, nozzle angle on the droplet size spectrum must be considered. Directions from the equipment manufacturer or vendor, pesticide registrant, or a test facility using a wind tunnel and laser-based measurement instrument must be used to adjust equipment to produce acceptable droplet size spectra. • Application equipment must be tested annually to confirm that pressure at the nozzle and nozzle flow rate(s) are properly calibrated. • Apply at rates from 0.00175-0.007 pounds per acre.
Fyfanon	67760-34	malathion	1.0 to 3.0 fluid ounces per acre	• For use only by federal, state, tribal, or local government officials responsible for public health or vector control, or persons certified in the appropriate category or otherwise authorized by the state or tribal lead pesticide regulatory agency to perform adult mosquito control applications, or by persons under their direct supervision. • Do not apply over bodies of water (e.g., lakes, swamps, rivers, permanent streams, natural ponds, commercial fish ponds, marshes or estuaries), except when necessary to target areas where adult mosquitoes are present, and weather conditions will facilitate movement of applied material away from the water in order to minimize incidental deposition into the water body. • Do not apply this product or allow it to drift to blooming crops or weeds while bees are visiting the treatment area, except when applications are made to prevent or control a threat to public and/or animal health as determined by a state, tribal, or local health or vector control agency on the basis of documented evidence of disease-causing agents in vector mosquitoes or the occurrence of mosquito-borne disease in animal or human populations, or if specifically approved by the state or the tribe during a natural disaster recovery effort. • Do not apply by fixed wing aircraft at height less than 100 feet, or by helicopter at a height less than 75 feet unless specifically approved by the state or tribe based on public health needs. • Spray equipment must be adjusted so that the VMD produced is less than 60 microns (Dv 0.5 < 60 µm) and that 90% of the spray is contained in droplets smaller than 100 microns (Dv 0.9 < 100 µm). • The effects of flight speed and, for nonrotary nozzles, nozzle angle on the droplet size spectrum must be considered. Directions from the equipment manufacturer or vendor, pesticide registrant, or a test facility using a wind tunnel and laser-based measurement instrument must be used to adjust equipment to produce acceptable droplet size spectra.

Proposed Pesticide/ Larvicide/ Herbicide	USEPA Registration No.	Active Ingredient	Aerial Application Rate	Application Requirements
				• Application equipment must be tested annually to confirm that pressure at the nozzle and nozzle flow rate(s) are properly calibrated. • Apply 1.0-3.0 fluid ounces of insecticide per acre (0.08-0.23 pounds per acre).
Vectobac 12 AS (Bti)	73049-38	*Bacillus thuringiensis* subsp. i*sraelensis*, strain AM 65-52	0.25 to 2.0 pint per acre	• For use only by federal, state, tribal, or local government officials responsible for public health or vector control, or persons certified in the appropriate category or otherwise authorized by the state or tribal lead pesticide regulatory agency to perform adult mosquito control applications, or by persons under their direct supervision. • Do not apply when weather conditions favor drift from treated areas. Do not apply to metallic painted objects, such as automobiles, as spotting may occur. If spray is deposited on metallic painted surfaces, wash immediately with soap and water to avoid spotting. • For aerial application, VectoBac 12AS may be applied either undiluted or diluted with water. For undiluted applications, apply 0.25-2.0 pints/acre of VectoBac 12AS through fixed wing or helicopter aircraft equipped with either conventional boom and nozzle systems or rotary atomizers.
Vectobac WDG (Bti)	73049-56	*Bacillus thuringiensis* subsp. *israelensis*, strain AM 65-52	1.75-14.0 ounces per acre	• For use only by federal, state, tribal, or local government officials responsible for public health or vector control, or persons certified in the appropriate category or otherwise authorized by the state or tribal lead pesticide regulatory agency to perform adult mosquito control applications, or by persons under their direct supervision. • Do not apply directly to treated, finished drinking water reservoirs. • For aerial application, apply VectoBac WDG at a rate of 1.75-14 ounces/acre (50-400 grams/acre; 125-1000 grams/hectare) in 0.25-10 gallons of water per acre (2.4-93.5 liters/hectare) through fixed wing or helicopter aircraft equipped with either conventional boom and nozzle systems or rotary atomizers to provide uniform coverage of the target area.
VectoLex WG	73049-20	*Bacillus sphaericus* (B.s.)		• Apply through fixed wing or helicopter aircraft equipped with either conventional boom and nozzle systems or rotary atomizers at a dilution sufficient to produce a smooth flowing suspension of material. • For aerial application, VectoLex WG should be applied diluted in 1-10 gallons of water per acre (9.4–93.5 liters/hectare). Generally, 1-3 gallons of water per acre (9.4-28.1 liters/hectare) is sufficient. For application of more than 1 pound of VectoLex WG per acre (1.1 kilograms/hectare), at least 2 gallons of water per acre (18.7 liters/hectare) is recommended.
Imazapyr 4 SL	81927-24	52.6 percent isopropylamine	Diluted with 2 or more	• This product is toxic to plants. Drift and runoff may be hazardous to plants in water adjacent to treated areas. Do not apply to water except as specified on this label.

Proposed Pesticide/ Larvicide/ Herbicide	USEPA Registration No.	Active Ingredient	Aerial Application Rate	Application Requirements
		salt of Imazapyr (2-[4,5-dihydro-4-methyl-4-(1-methylethyl)-5-oxo-1H-imidazol-2-yl]-3-pyridinecarboxylic acid)	gallons of water per acre (actual minimum spray volume per acre is determined by the spray equipment used)	Treatment of aquatic weeds may result in oxygen depletion or loss due to decomposition of dead plants. Do not treat more than 0.5 the surface area of the water in a single operation and wait at least 10-14 days between treatments. Begin treatments along the shore and proceed outward in bands to allow aquatic organisms to move into untreated areas. Do not contaminate water when disposing of equipment wash waters or rinsate. • Avoiding spray drift at the application site is the responsibility of the applicator. The interaction of many equipment- and weather-related factors determine the potential for spray drift. The applicator and the grower are responsible for considering all these factors when making decisions. • The best drift management strategy and most effective way to reduce drift potential are to apply large droplets that provide sufficient coverage and control. Applying larger droplets reduces drift potential but will not prevent drift if applications are made improperly, or under unfavorable environmental conditions. • Make applications at the lowest possible height (aircraft, ground driven spray boom) that is safe and practical to reduce exposure of droplets to evaporation and wind. • Use 2 or more gallons of water per acre. The actual minimum spray volume per acre is determined by the spray equipment used. Use adequate spray volume to provide accurate and uniform distribution of spray particles over the treated are and to avoid spray drift. • Applicators are required to use a coarse or coarser droplet size (ASABE S572) or, if specifically using a spinning atomizer nozzle, applicators are required to use a VMD of 385 microns (µm) or greater for release heights below 10 feet; Applicators are required to use a very coarse or coarser droplet size or, if specifically using a spinning atomizer nozzle, applicators are required to use a VMD of 475 microns (µm) or greater for release heights above 10 feet. Applicators must consider the effects of nozzle orientation and flight speed when determining droplet size. • Applicators are required to use upwind swath displacement. • The boom length must not exceed 60% of the wingspan or 90% of the rotor blade diameter to reduce spray drift. • Applications with wind speed less than 3 mph and with wind speeds greater than 10 mph are prohibited. • Applications into temperature inversions are prohibited.
Polaris	288-480	53.1 percent isopropylamine salt of Imazapyr	Diluted with 2 or more gallons of water per	• This product is toxic to plants. Drift and runoff may be hazardous to plants in water adjacent to treated areas. Do not apply to water except as specified on this label. Treatment of aquatic weeds may result in oxygen depletion or loss due to decomposition of dead plants. Do not treat more than 0.5 the surface area of the

Proposed Pesticide/ Larvicide/ Herbicide	USEPA Registration No.	Active Ingredient	Aerial Application Rate	Application Requirements
		(2-[4,5-dihydro-4-methyl-4-(1-methylethyl)-5-oxo-1H-imidazol-2-yl]-3-pyridinecarboxylic acid)	acre (actual minimum spray volume per acre is determined by the spray equipment used)	water in a single operation and wait at least 10-14 days between treatments. Begin treatments along the shore and proceed outward in bands to allow aquatic organisms to move into untreated areas. Do not contaminate water when disposing of equipment wash waters or rinsate. • Avoiding spray drift at the application site is the responsibility of the applicator. The interaction of many equipment- and weather-related factors determine the potential for spray drift. The applicator and the entity authorizing spraying are responsible for considering all these factors when making decisions. • The following drift management requirements must be followed to avoid off-target drift movement from aerial applications: 1) The distance of the outermost operation nozzles must not exceed 0.75 the length of the rotor. 2) nozzles must always point backward parallel with the air stream and never be pointed downwards more than 45 degrees. Where states have more stringent regulations, they must be observed. • Spray drift from applying this product may result in damage to sensitive plants adjacent to the treatment area. Only apply this product when the potential for drift to these and other adjacent sensitive areas (e.g., residential areas, bodies of water, known habitat for threatened and endangered species, or nontarget crops) is minimal. Do not apply when the following conditions exist that increase the likelihood of spray drift from intended targets: high or gusty winds, high temperatures, low humidity, temperature inversions. • The best drift management strategy and most effective way to reduce drift potential are to apply large droplets that provide sufficient coverage and control. Applying larger droplets reduces drift potential but will not prevent drift if applications are made improperly, or under unfavorable environmental conditions. • Make applications at the lowest possible height (helicopter, ground-driven spray boom) that is safe and practical to reduce exposure of droplets to evaporation and wind. • Use 2 or more gallons of water per acre. The actual minimum spray volume per acre is determined by the spray equipment used. Use adequate spray volume to provide accurate and uniform distribution of spray particles over the treated are and to avoid spray drift. • Applicators are required to use a coarse or coarser droplet size (ASABE S572) or, if specifically using a spinning atomizer nozzle, applicators are required to use a VMD of 385 microns (µm) or greater for release heights below 10 feet. Applicators are required to use a very coarse or coarser droplet size or, if specifically using a spinning atomizer nozzle, applicators are required to use a VMD of 475 microns (µm) or greater for release heights above 10 feet; Applicators must consider the effects of nozzle orientation and flight speed when determining droplet size.

Proposed Pesticide/ Larvicide/ Herbicide	USEPA Registration No.	Active Ingredient	Aerial Application Rate	Application Requirements
				• Applicators are required to use upwind swath displacement. • The boom length must not exceed 60% of the wingspan or 90% of the rotor blade diameter to reduce spray drift. • Applications with wind speed less than 3 mph and with wind speeds greater than 10 mph are prohibited. • Applications into temperature inversions are prohibited.
Arsenal	241-299	53.1 percent isopropylamine salt of Imazapyr (2-[4,5-dihydro-4-methyl-4-(1-methylethyl)-5-oxo-1H-imidazol-2-yl]-3-pyridinecarboxylic acid)	Diluted with 2 or more gallons of water per acre (actual minimum spray volume per acre is determined by the spray equipment used)	• Do not apply directly to water, or to areas where surface water is present, or to intertidal areas below the mean high-water mark. Do not contaminate water when disposing of equipment wash waters or rinsate. • Avoiding spray drift at the application site is the responsibility of the applicator. The interaction of many equipment- and weather-related factors determine the potential for spray drift. The applicator and the grower are responsible for considering all these factors when making decisions. • The following drift management requirements must be followed to avoid off-target drift movement from aerial applications: 1) The distance of the outermost operation nozzles must not exceed 0.75 the length of the rotor, 2) nozzles must always point backward parallel with the air stream and never be pointed downwards more than 45 degrees, and 3) without compromising aircraft safety, applications should be made at a height of 10 feet above the canopy or tallest plants. • Spray drift from applying this product may result in damage to sensitive plants adjacent to the treatment area. Only apply this product when the potential for drift to these and other adjacent sensitive areas (e.g., residential areas, bodies of water, known habitat for threatened and endangered species, or nontarget crops) is minimal. Do not apply when the following conditions exist that increase the likelihood of spray drift from intended targets: high or gusty winds, high temperatures, low humidity, temperature inversions. • The best drift management strategy and most effective way to reduce drift potential are to apply large droplets that provide sufficient coverage and control. Applying larger droplets reduces drift potential but will not prevent drift if applications are made improperly, or under unfavorable environmental conditions. • Make applications at the lowest possible height (helicopter, ground-driven spray boom) that is safe and practical to reduce exposure of droplets to evaporation and wind. • Use 2 or more gallons of water per acre. The actual minimum spray volume per acre is determined by the spray equipment used. Use adequate spray volume to provide accurate and uniform distribution of spray particles over the treated are and to avoid spray drift.

Proposed Pesticide/ Larvicide/ Herbicide	USEPA Registration No.	Active Ingredient	Aerial Application Rate	Application Requirements
				• Applicators are required to use upwind swath displacement. • The boom length must not exceed 60% of the wingspan or 90% of the rotor blade diameter to reduce spray drift. • Applications with wind speed less than 3 mph and with wind speeds greater than 10 mph are prohibited. • Applications into temperature inversions are prohibited.

USEPA – U.S. Environmental Protection Agency; **no.** – number; **µm** – micron(s); **ULV** – ultra-low volume; **mph** – miles per hour; **VMD** – volume mean diameter

Pest Management Professionals. Further, if services are contracted, then proper coordination with local air traffic control personnel and base operations would also be arranged to ensure safety. In addition to holding a valid Virginia Pesticide Business License and valid Virginia Applicator Certificate for Category 11, contracted applicators would need to obtain a Civil Aircraft Landing Permit to take off and depart from a military installation and treat areas on JBLE, particularly in consideration of ongoing military flight operations.

Under Alternative 1, common reed control would be accomplished through aerial application of USEPA-registered herbicides containing imazapyr or glyphosate as the active ingredient, or other herbicides approved for vegetation control via aerial platforms (**Table 2-2**). The current formulations anticipated for use include Polaris® AC and Arsena®. Imazapyr is the active ingredient in Polaris® AC (53.1 percent) and Arsenal® (53.1 percent isopropylamine salt of imazapyr). Based on several years of surveillance and invasive plant species mapping and management, JBLE – Eustis would treat specific areas where aerial applications would be feasible within the 600 acres of common reed on the installation (see **Figure 2-3**); JBLE – Langley would treat approximately 145 acres of common reed with aerial herbicide applications (see **Figure 2-4**). Herbicides are most effective on common reed in late summer to early fall (August through October at the end of the growing season and before initial frosts) because the plant continues to grow while other plants in adjacent areas begin to go dormant, which reduces the risk of damage to nontarget plant species. Aerial application of herbicides for common reed control would not exceed one application per year, with the annual need expected to be reduced in succeeding years depending on the efficacy determined through annual monitoring. Aerial application would typically be completed within one day, with the potential for one additional day of application if weather or mechanical issues cause delays. Requests for aerial application of herbicides for control of common reed would be coordinated by the IPMCs, Air Combat Command (ACC), 733rd Security Forces Squadron, Force Support Squadron, 1st Fighter Wing (1 FW), and Office of Public All applicable permitting requirements would be met prior to execution of the Preferred Alternative.

Aerial application of herbicides for the control of invasive plant species would be through contracted helicopter pesticide application services. Past contractors have used Bell OII58A (or alternative), Bell206 BII, Bell 206 L3, or Bell OH58A (+) helicopters to aerially apply herbicides within common reed treatment areas. All aircraft staging and refueling would occur within the installation boundaries. A certified aerial applicator would be selected after consultation with the AFCEC/COSC Pest Management Professionals. Further, proper coordination with local air traffic control personnel and base operations would also be arranged to ensure safety. In addition to holding a valid Virginia Pesticide Business License and valid Virginia Applicator Certificate for Category 11, contractor applicators would need to obtain a Civil Aircraft Landing Permit to take off and depart from a military installation and treat areas on JBLE, particularly in consideration of ongoing military flight operations.

Under this alternative, a maximum of four flights would be flown annually for mosquito and common reed control. If the proposed aerial application project is scheduled, the Office of Public Affairs would disseminate information to base personnel concerning the proposed times of application, areas to of application, the presence of low-flying aircraft, the minimal impacts of the herbicides to nontarget plants and vertebrate animals, and to property.

Alternative 1 meets all Selection Standards (see **Table 2-1**).

2.4.2 Alternative 2. One Aerial Application Every Other Year of Pesticides for Large Area Control of Mosquitoes and Common Reed

Alterative 2 would implement the Proposed Action as described for Alternative 1; however, aerial application of pesticides for mosquito control would be limited to one application every other year and would typically occur from August through October. Regardless of the pesticide being applied (adult insecticides or larvicides), no more than one flight every other year would occur under this alternative.

Under Alternative 2, common reed control would be accomplished as described under Alternative 1; however, aerial application of herbicides for common reed control would be limited to one application every other year in late summer to early fall (August through October at the end of the growing season and before initial frosts) depending on weather conditions.

Under this alternative, a maximum of two flights would be flown every other year for mosquito and common reed control. Alternative 2 meets all Selection Standards (see **Table 2-1**).

2.4.3 Alternative 3. Natural Predator Control of Mosquitoes

Alternative 3 would control mosquitoes at the installations by encouraging the presence of natural predators of mosquitoes. Control would be conducted by installing additional bat boxes and birdhouses in areas of suitable bat and bird habitat. Bat boxes and bird/nest boxes (for wood ducks [*Aix sponsa*], eastern bluebirds [*Sialia sialis*], and purple martins [*Progne subis*]) currently exist on JBLE; however, the use of natural predators has received little attention in the literature and thus has not been documented as an effective tool in the control of mosquito populations or in the reduction of the threat of potential disease vectors (Resikind and Wund 2009). Most studies of natural predation on adult mosquitoes have been anecdotal or descriptive (Lamborn 1890; Rydell et al. 2002) or have focused on male mosquitoes (Yuval and Bouskila 1993), which do not transmit disease. Further, attracting additional bats and birds to JBLE in areas where mosquito control is most needed (e.g., outdoor bivouac areas; recreational facilities such as the golf course, athletic fields, playgrounds, and picnic areas; and housing areas) could result in an unintended nuisance to military and civilian personnel. JBLE is home to very active airfields. Attracting additional bats and birds to JBLE would pose a risk to flight operations and could be counterproductive to the existing Bird/Wildlife Aircraft Strike Hazard (BASH) reduction initiatives and BASH prevention program. Natural predator control is also an unreasonable alternative because it could harm the proposed natural predators by creating a genetic sink when present near the airfield. This could happen either through intentional lethal take to avoid a BASH risk or through an actual BASH incident. Either way, it would increase the number of dead animals, which is unacceptable. Further, Alternative 3 was dismissed because it did not meet the purpose and need for the Proposed Action, and it does not meet Selection Standards 1 and 3 (see **Table 2-1**).

2.4.4 Alternative 4. Mosquito Control Exclusively via Larvicides

Alternative 4 would Implement only larval mosquito control using one of two approaches (biological insecticides or methoprene). Microbial larvicides are bacteria that are registered as pesticides for control of mosquito larvae in outdoor areas such as irrigation ditches, floodwater, standing ponds, woodland pools, pastures, tidal water, fresh or saltwater marshes, and stormwater retention areas. Duration of effectiveness depends primarily on the mosquito species, the environmental conditions, the formulation of the product, and water quality. Microbial larvicides are commonly used along with other mosquito control measures in an IPM program. Common microbial larvicides used for mosquito control on JBLE and regionally are Bti and *Bacillus sphaericus* (B.s.). Bti is most commonly used.

While biological insecticides are nontoxic to humans and do not pose risks to wildlife, nontarget species, or the environment, when used according to label directions, the wide-scale application of biological insecticides alone to target mosquito larvae over the required large areas of treatment at JBLE would be costly and would require repeated applications each year and for consecutive years to achieve successful control. Moreover, use of these larvicides are typically implemented along with other mosquito control methods, so their use alone would not provide efficient and effective control by applying the least amount of pesticide. For the abovementioned reasons, this alternative was dismissed from further consideration as the primary mosquito control technique.

Exclusive use of the aerial application of the larvicide methoprene to control mosquito larvae in targeted areas of JBLE was also considered but dismissed as not being a reasonable alternative. Control of mosquito populations can be accomplished by applying larvicides, such as methoprene, in water occupied by juvenile mosquitoes. Larvicides are designed to inhibit growth of juvenile mosquitoes while they are confined to the water, thus preventing mosquitoes from emerging as adults. Treated larvae pupate, but do not hatch into adults. Methoprene is considered a slightly to practically nontoxic general-use pesticide in the USEPA toxicity class IV (USEPA 1991).

Methoprene, when used for mosquito control according to its label directions, does not pose unreasonable risks to human health. In addition to posing low toxicity to mammals, there is little opportunity for human exposure when it is applied directly to ditches, ponds, marshes, or flooded areas that are not drinking water sources. While no unreasonable health risk is associated with methoprene, it is difficult to ensure effective coverage within distinct targeted areas of the installation, such as permanent wetlands, drainage ditches/storm retention ponds when stagnant water remains, vehicular-generated or roadside ruts, ponds lacking aerators, and low areas in the vicinity of horse stables on the base, while preventing overspray into flowing water or waters of the US.

Methoprene used in mosquito control programs does not pose unreasonable risks to wildlife or the environment. Methoprene is known to be slightly toxic to birds, slightly to moderately toxic to fish, and nontoxic to bees and other pollinating insects. Methoprene breaks down quickly in water and soil and will not leach into groundwater. Methoprene mosquito control products present minimal acute and chronic risk to freshwater fish, freshwater invertebrates, and estuarine species, which could pose a threat to ecological functionality. Further, in previous coordination with USFWS and the Virginia Department of Game and Inland Fisheries, it was recommended that spraying or ground application of methoprene not occur during the shorebird breeding season of 1 March through mid-August, which overlaps with the period of high larval mosquito presence on JBLE. This restriction further limits the effectiveness of this control alternative at JBLE. In addition, the current need for mosquito control is specific to adult breeding mosquitoes, as periodic, small-area larvicide treatments have not effectively managed the adult mosquito populations at JBLE. Alternative 4 was dismissed because it does not meet the purpose and need for the Proposed Action, and it does not meet Selection Standard 1 (see **Table 2-1**).

2.4.5 Alternative 5. Common Reed Control Exclusively via Prescribed Fire

Alternative 5 would use prescribed fire as the exclusive means for common reed control at JBLE. The use of prescribed fire is limited by weather conditions and land use restrictions. Favorable weather conditions cannot be planned more than one or two days in advance, and sufficient time needed to complete a prescribed fire may not be available. The large areas involved would require several burns and thus would involve a longer implementation time and considerably more manpower than other reasonable alternatives. Based on the large area that would require burning for common reed control, smoke may be generated that could be disruptive to routine military

operations, including operations at airfields, or affect nearby off-base communities. In addition, fire has been shown to increase the growth of common reed (Natural Resources Conservation Service 2009). While prescribed fire could potentially be used to remove dead common reed, using it in lieu of chemical treatment would actually promote the growth of monospecific stands. Prescribed fires could also have a negative effect on flight mission operations due to smoke production, and therefore is unreasonable. Furthermore, some wetland areas where control is needed are too wet to facilitate prescribed fire. Alternative 5 was dismissed from further analysis because this alternative does not meet Selection Standards 1 and 2 (see **Table 2-1**).

2.4.6 Alternative 6. Common Reed Control Exclusively via Physical Removal Techniques

Alternative 6 would attempt to manage common reed exclusively by various physical techniques such as excavation of the plants and their rhizomes is not feasible due to extensive manpower, equipment, and funding required. Additionally, some areas would not be accessible by heavy operating equipment or foot. In many cases, use of herbicides would still be necessary. Additionally, excavation in areas of common reed could lead to altered hydrologic continuity, which would require obtaining appropriate permits from respective federal, state, and local agencies. Alternative 6 was not considered further because it does not meet Selection Standards 1 and 3 (see **Table 2-1**).

2.4.7 Alternative 7. Common Reed Control via Repeat Harvesting (Mowing)

Alternative 7 considered common reed control using only repeat harvesting (mowing). However, mowing alone is not a feasible alternative because it would not kill common reed, and it would only remove the aboveground vegetative portion of the plant without effectively impacting the belowground rhizomes. The rhizomes would resprout in the season following mowing. In addition, the large areas where control are needed would require several mowing events throughout the growing season and thus would involve a longer implementation time and considerably more manpower than other reasonable alternatives. Further, some wetland areas where control is needed would be too wet to facilitate mowing. Therefore, Alternative 7 was eliminated because it does not meet Selection Standards 1 and 2 (see **Table 2-1**).

2.4.8 Alternative 8. Biological Control of Common Reed

Alternative 8 would implement the biological control of common reed on JBLE. While initially brought forward by the DAF as an alternative, Alternative 8 was deemed unreasonable as there are currently no actively used biological controls for common reed in Virginia at this time and because it does not meet Selection Standard 1 (see **Table 2-1**).

2.4.9 No Action Alternative

Under the No Action Alternative, no pesticides would be aerially applied to control mosquitoes or common reed at JBLE. Mosquitoes would continue to thrive on JBLE, and the potential threat of human disease caused by mosquito vectors would continue. Common reed would continue to propagate and spread throughout areas of JBLE, outcompeting native wetland plant species, preventing marsh retreat (which makes the installation more susceptible to flooding), reducing land use for military training, posing a potential wildland fire risk, and compromising force protection. The No Action Alternative does not meet the selection standards (see **Table 2-1**). The No Action Alternative assumes the Proposed Action would not occur. Although the No Action Alternative does not meet the project purpose, it is carried forward for detailed analysis in this EA

as required under NEPA. The No Action Alternative is a baseline to assess any consequences that might occur if the Proposed Action is not implemented.

2.4.10 Action Alternatives

Two of the action alternatives described in **Section 2.4**, Alternative 1 and Alternative 2, meet the Selection Standards (see **Table 2-1**) and are analyzed in detail in this EA. Alternative 1 is the Preferred Alternative.

2.5 SUMMARY OF POTENTIAL ENVIRONMENTAL CONSEQUENCES

The potential impacts associated with Alternative 1 (Preferred Alternative), Alternative 2, and the No Action Alternative are summarized in **Table 2-3.** The summary is based on information discussed in detail in **Section 3.0,** *Affected Environment and Environmental Consequences*, of the EA, which includes a concise definition of the issues addressed and the potential environmental impacts associated with each alternative.

Table 2-3. Summary of Environmental Consequences

Resource Area	Alternative 1 (Preferred Alternative)	Alternative 2	No Action Alternative
Airspace Management and Use	There would be no change in charted airspace in the region, air traffic for aerial applications would be controlled by air traffic control, and all aircraft operations would follow airspace restrictions. Only a few additional flight operations annually would occur and would result in negligible effects on airspace capacity, airspace management, and airspace use.	There would be no change in charted airspace in the region, air traffic for aerial applications would be controlled by air traffic control, and all aircraft operations would follow airspace restrictions. Only two additional flight operations every other year would occur and would result in negligible effects on airspace capacity, airspace management, and airspace use.	There would be no aerial application of pesticides to control mosquitoes and common reed. No effects on airspace management or use would occur. The Proposed Action would not take place. There would be neither beneficial nor adverse effects regarding airspace management and use, and these resources would not change when compared to existing conditions.
Air Quality and Climate Change	Short-term, minor, adverse effects on air quality would occur. Impacts are anticipated to be temporarily affect local air quality due to exhaust emissions of criteria pollutants from aircraft operations. However, emissions from aircraft operations are minor and do not exceed the General Conformity Rule *de minimis* thresholds. Drift emissions of pesticides during and after aerial application would occur and would result in some adverse effects on air quality. However, BMPs would reduce drift from aerial application and reduce impacts on air quality. Implementation of the Preferred Alternative would emit GHG emissions from the use of fossil fuels in aircraft operations. However, the estimated annual GHG emissions would be relatively low and would have a negligible impact on air quality.	Impacts on air quality and climate change would be similar to, but less than, those described for the Preferred Alternative since only one aerial application for mosquitoes and one aerial application for common reed would occur every other year.	There would be no aerial application of pesticides to control mosquitoes and common reed. No effects on air quality would occur. There would be no concerns regarding adverse air quality effects, however minimal, that would have occurred from the aerial application of pesticide for common reed control and from the aerial application for control of mosquitoes.
Aesthetic and Visual Resources	Minor, short-term impacts on aesthetics would result during pesticide application activities. These activities would be visible on JBLE and in the airspace above JBLE and would include the presence of helicopters, vehicles, and equipment during aerial application events. The Preferred Alternative would not result in any substantial adverse effects on scenic viewsheds, cause any damage to scenic resources, or degrade any existing aesthetic or visual character on JBLE or in its vicinity. Short- and long-term beneficial impacts from the removal of common reed would be expected as the visual restrictions of the tall herbaceous vegetation would be reduced on JBLE.	Impacts on aesthetics and visual resources would be similar to, but less than, those described for the Preferred Alternative since only one aerial application for mosquitoes and one aerial application for common reed would occur every other year.	There would be no aerial application of pesticides to control mosquitoes and common reed. No changes to existing aesthetics or visual resources would occur, and no adverse impacts on these resources are anticipated. Without implementation of the Proposed Action, common reed would continue to grow and cause the current visual restrictions.
Geological Resources	The Preferred Alternative would have no impact on the physiography, topography, or geology of the region. Given the ULV application rates, infrequency of application, conformance to label application instructions, and the rapid degradation of the pesticides, impacts on soils from naled, pyrethrins, neo-pyrethrins, and formulations of malathion would be short term and negligible. Bti and B.s. generally degrade rapidly in the environment so impacts on soils from these pesticides would also be short term and negligible. Aerial application of imazapyr may result in minor, long-term adverse impacts on soils in upland areas, but would be expected to have negligible, short-term adverse impacts on soils in wetland areas. Use of glyphosate may result in minor, short-term to long-term adverse impacts on soils. Other USEPA-registered pesticides could be used for the aerial control of common reed and mosquitoes, and no significant impact on geological resources are expected.	Impacts on geological resources would be similar to, but less than, those described for the Preferred Alternative since only one aerial application for mosquitoes and one aerial application for common reed would occur every other year.	There would be no aerial application of pesticides to control mosquitoes and common reed. No changes would occur to geological resources as current conditions at both JBLE – Eustis and JBLE – Langley would continue.
Floodplains	There would be no impact on floodplain hazard conditions or violation of laws or regulations to protect floodplains from the aerial application of pesticides.	There would be no impact on floodplain hazard conditions or violation of laws or regulations to protect floodplains from the aerial application of pesticides.	There would be no aerial application of pesticides to control mosquitoes and common reed. The only change to floodplains would be that common reed would continue to prevent marsh retreat, which makes the installation more susceptible to flooding.
Coastal Zone Management	The Preferred Alternative is consistent to the maximum extent practicable with the enforceable policies of the Virginia Coastal Resources Management Program.	The Alternative 8 is consistent to the maximum extent practicable with the enforceable policies of the Virginia Coastal Resources Management Program.	There would be no aerial application of pesticides to control mosquitoes and common reed. The only change to the coastal zone would be that common reed would continue to prevent marsh retreat, which makes the installation more susceptible to flooding.

Resource Area	Alternative 1 (Preferred Alternative)	Alternative 2	No Action Alternative
Water Resources	Given the ULV application rates, infrequency of application, conformance to label application instructions, and the rapid degradation of the pesticides, impacts on water resources from naled, pyrethrins, neo-pyrethrins, and formulations of malathion would be short term and negligible. Bti and B.s. generally degrade rapidly in the environment so impacts on water resources from these pesticides would also be short term and negligible. There would be a negligible short-term adverse impact on surface waters from application of imazapyr. Imazapyr has the potential to leach into groundwater and its use may result in minor, short-term to long-term adverse impacts on groundwater. These impacts would be minimized by infrequent application, application in accordance with label instructions, and application in accordance with VPDES permits. Impacts on groundwater from aerial application of glyphosate containing pesticides would be negligible. Given the infrequency of glyphosate application and its use in accordance with label instructions and VPDES permits, impacts on surface waters would be short term and minor for this herbicide. Other USEPA-registered pesticides could be used for the aerial control of common reed and mosquitoes, and no significant impacts on water resources are expected.	Adverse impacts on water resources would be similar to, but less than, those described for the Preferred Alternative since only one aerial application for mosquitoes and one aerial application for common reed would occur every other year.	There would be no aerial application of pesticides to control mosquitoes and common reed. The only change to water resources would be that common reed would continue to prevent marsh retreat, which makes the installation more susceptible to flooding.
Biological Resources	No impacts on terrestrial, semiaquatic, or aquatic vegetation are expected. Potential short-term, minor impacts on mammals may occur. The risk to birds and mammals from the aerial application of pesticides would be short term and minor due to the low application rate and short persistence. There is a small potential for aircraft strikes with birds and bats during aerial applications. However, the potential for aircraft strikes is low given the proposed number of flights associated with aerial application. Low-altitude overflights during pesticide application may startle breeding and nesting bald eagles, but this is expected to be minor and short term, particularly given flights would be flown in the evenings (two hours before sunset to sunset). All pesticides proposed for use and included in this EA are certified by the USEPA. Label applications levels are 3 to 4 orders of magnitude below the no observable effect level prescribed by the USEPA. That translates into 1,000 to 10,000 times below any application rate based on area or volume that would fundamentally effect mammals, fish (with aquatic exceptions), or any other test species used to determine risk factor by USEPA. While some of the pesticides proposed for use are classified as toxic to amphibians at low concentrations, the limited number of applications along with compliance with label requirements to use over water bodies would minimize potential adverse impacts. There is the potential for short-term, minor adverse impacts on fish and other aquatic organisms, as well as the Essential Fish Habitat identified in the James River. While some of the pesticides proposed for use are classified as highly toxic to some fish species, adherence to the label requirements and their short persistence in the environment, minimizes the potential for drift and runoff into aquatic habitats. Flying insects would be the most likely group of nontarget organisms that could be negatively affected, especially those active just before sunset or just after sunset such as moths, many beetles, and fireflies. Due to the limited treatment areas and limited number of annual treatments proposed, this impact would be short term and minor.	Impacts on biological resources would be similar to, but less than those described for the Preferred Alternative since only one aerial application for mosquitoes and one aerial application for common reed would occur every other year.	Mosquitoes could flourish on JBLE, and a late-fall egg base of disease-vector mosquitoes would not be reduced, potentially resulting in a large emergence the following year. The potential adverse and beneficial effects from the aerial application of insecticides to biological resources would not occur. Nontarget insects, such as honeybees and monarch butterflies, would not be adversely affected by the aerial application of insecticide. Aerial application of pesticide for the control of common reed would not occur, and native vegetation in adjacent areas would continue to decline. If common reed is allowed to persist, plant diversity would continue to decrease, along with prey species diversity. Long-term, minor, adverse impacts would be expected because of the reduction of native plant species over time, and the clogging of wetlands and waterbodies from the spread of common reed. Additional long-term, indirect effects are expected as common reed would continue to invade and alter natural stream and wetland functions and hydrology. Long-term, minor, adverse impacts on wildlife and fish that depend on marsh habitats would be expected. While common reed does provide minor beneficial habitat for wildlife and fish, and the abundance of this habitat would increase if left uncontrolled, any potential benefit provided by common reed is less than that of native vegetative communities.

Resource Area	Alternative 1 (Preferred Alternative)	Alternative 2	No Action Alternative
Biological Resources (Continued)	Potential impacts on federal and state listed birds and mammals would be short term and negligible. The insect prey base for listed bats may be temporarily reduced after treatment and may necessitate birds and bats to expand their foraging areas until insect abundance recovers. No impacts would occur to federal and state listed sea turtles, salamanders, and insects with the potential to occur on JBLE – Eustis because habitat is not present on base and multiple surveys have not documented their presence. Potential adverse effects on the federally endangered Atlantic sturgeon (*Acipenser oxyrhynchus oxyrhynchus*) would be short term and minor; however, no adverse impacts on the physical or biological features for the Atlantic sturgeon designated critical habitat in the James River are anticipated. Control of mosquitoes that vector pathogens like West Nile virus disease and eastern equine encephalitis may have beneficial effects on some bird species/populations at JBLE. Aerial application of imazapyr- or glyphosate-containing herbicides may have long-term and direct adverse impacts on the target species located within the treatment areas, either killing or slowing its growth. There would be long-term, beneficial effects on nontarget vegetation from the removal or reducing growth and spread of common reed and allowing for reestablishment of desired native vegetation in and around treated areas. There is a low likelihood of risk to submerged aquatic and nonvascular plants from the application of glyphosate. Potential direct impacts on federal and state listed birds and mammals from aerial application of imazapyr or glyphosate would be negligible and short term. No adverse effects on the federally listed sea turtles from aerial application of imazapyr or glyphosate would occur on JBLE – Langley, and there would be no impacts on federal and state listed salamanders and insects with the potential to occur on JBLE – Langley because habitat is not present and multiple surveys have not documented their presence. The DAF has determined that the Proposed Actions for mosquito and common reed control at JBLE – Eustis would have no effect on the eastern black rail (*Laterallus jamaicensis*) and rusty patched bumblebee (*Bombus affinis*). The Proposed Actions for both mosquito control and common reed control at JBLE – Eustis are compliant with the Final 4(d) rule under the Endangered Species Act for the northern long-eared bat (*Myotis septentrionalis*). The DAF has determined that the Proposed Actions for mosquito control at JBLE – Langley would have no effect on the West Indian manatee (*Trichechus manatus*), the northeastern beach tiger beetle (*Cicindela dorsalis dorsalis*), or the rusty patched bumblebee, and the Proposed Action may affect but is not likely to adversely affect the eastern black rail, piping plover (*Charadrius melodus*), red knot (*Calidris canutus rufa*), and roseate tern (*Sterna dougallii*). The DAF has determined that the Proposed Actions for common reed control at JBLE – Langley would have no effect on the West Indian manatee, the northeastern beach tiger beetle, rusty patched bumblebee, and may affect but is not likely to adversely affect the eastern black rail, piping plover, red knot, and roseate tern. The Proposed Actions for both mosquito control and common reed control at JBLE – Langley are compliant with the Final 4(d) rule for the northern long-eared bat. Under the Proposed Action for mosquito control, JBLE – Eustis has also made a may affect, not likely *t*o adversely affect the determination for the Atlantic sturgeon because of the potential minor and short-term adverse effects due to the low potential for drift or runoff of insecticides into adjacent waterways. No potential impacts on physical or biological features of the Atlantic sturgeon's designated critical habitat in waters near JBLE – Eustis were identified.		

Resource Area	Alternative 1 (Preferred Alternative)	Alternative 2	No Action Alternative
	Under the Proposed Action JBLE – Langley has made a no effect determination for shortnose sturgeon (*Acipenser brevirostrum*) and listed sea turtles (green sea turtle [*Chelonia mydas*], Kemp's ridley sea turtle [*Lepidochelys kempii*], leatherback sea turtle [*Dermochelys coriacea*], and loggerhead sea turtle [*Caretta caretta*]), as they are unlikely to occur in the area and have not been documented on the base. There is no designated critical habitat for any of the listed sea turtles in the vicinity of JBLE – Eustis and JBLE – Langley. No critical habitat for shortnose sturgeon has been designated. Adult shortnose sturgeon may be found migrating and foraging within the action area year round, and although no overwintering grounds have been confirmed, shortnose sturgeon may overwinter near the JBLE – Langley action area from November through February. However, pesticide and herbicide application are not expected to overlap with the time of year when shortnose sturgeon may be overwintering in the action area; therefore, no effects on sturgeon overwintering grounds are anticipated.		
Health and Safety	Impacts on health and safety would be negligible in both the short and long term. Human health risks from the proposed pesticides used would be minimized by following all pesticide label instructions, BMPs, and IPMP guidance for each site to prevent accidental exposures and protect human health. The quantities of pesticide proposed for application at JBLE via aerial application would not present a threat to human health at ground level when applied at the label's recommended rates. Personnel in the areas proposed for pesticide application would be notified ahead of time and asked to avoid the areas during application. The formulated pesticide would be mixed only with surfactants/adjuvants that are approved on the pesticide label. Aerial applications of the pesticides proposed for use typically do not require the use of surfactants/adjuvants. Aerial pesticide application would not occur when conditions could increase the likelihood of drift (e.g., high or gusty winds, high temperatures, low humidity, or temperature inversions), and droplet size would also be controlled per specimen label instructions to minimize drift.	Impacts on health and safety would be similar to, but less than those described for the Preferred Alternative since only one aerial application for mosquitoes and one aerial application for common reed would occur every other year.	There would be no aerial application of pesticides to control mosquitoes and common reed. The public health concerns associated with mosquitoes, such as biting nuisance and risk of disease transmission, would not be controlled as effectively during times when mosquito numbers are high. When ground treatments are not sufficient, JBLE would not have an additional alternative for controlling the mosquito population, and mosquito-borne diseases in humans would potentially increase. Additionally, continued widespread growth of common reed would create large, thick stands that pose potential wildland fire risks and compromise force protection and security. Therefore, negligible to minor, long-term, adverse impacts on health and safety would be expected from implementation of the No Action Alternative.

BMP – best management practice; **GHG** – greenhouse gas; **JBLE** – Joint Base Langley – Eustis; **ULV** – ultralow volume; **Bti** – *Bacillus thuringiensis israelensis*; **B.s.** – *Bacillus sphaericus*; **USEPA** – US Environmental Protection Agency; **VPDES** – Virginia Pollutant Discharge Elimination System; **ESA** – Endangered Species Act; **IPMP** – Integrated Pest Management Plan; **DAF** – Department of the Air Force

3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This chapter describes the environment potentially affected by the Proposed Action. NEPA requires the analysis address those areas and components of the environment with the potential to be affected; locations and resources with no potential to be affected need not be analyzed. The existing conditions of each relevant environmental resource are described to give the public and agency decision makers a meaningful point from which to compare potential future environmental, social, and economic effects.

Sections 3.1 through **3.7** provide the baseline environment potentially affected by the Proposed Action at JBLE and the environmental consequences. The expected geographic scope of any potential consequences in identified as the Region of Influence (ROI). For most resources in this chapter, the ROI is defined as the boundaries of JBLE unless otherwise specified for a particular resource area.

Resource areas that are anticipated to experience no impacts under implementation of the Proposed Action or its alternatives are not examined in detail in this EA and include land use, noise, prime farmland, cultural resources, socioeconomics, environmental justice and protection of children, transportation and utilities, and hazardous materials and waste. The brief summary of the reasons for not undertaking detailed analyses for these resource areas is provided below.

Land Use. The Proposed Action would have no effect on current or future land uses on JBLE. No activities are proposed that would alter existing land use categories at JBLE or that would be incompatible with existing land uses.

Noise. There are no sensitive noise receptors (e.g., churches, schools, residential areas) situated near JBLE that would experience a noticeable increase in noise with implementation of the Proposed Action. Noise generated by a low-flying helicopter or a C-130H during aerial application would be intermittent and short term and would occur in areas where noise from ongoing training at the active airfields is already occurring. To address land use with respect to noise and safety associated with aircraft operations, military installations, including JBLE, have established an Air Installation Compatible Use Zone (AICUZ) program. The goal of the AICUZ program is to protect the health, safety, and welfare of those living or working near military air installations and to protect the military operational capabilities of the base. The AICUZ program includes an analysis of the effects of aircraft noise, accident potential, land use compatibility, and development adjacent to the base (JBLE 2016a). Noise from these rare flight operations for aerial application of pesticides is covered under the JBLE AICUZ. Therefore, no effects from noise would be expected.

Prime Farmland. The Craven-Uchee complex, 0 to 2 percent slopes, is considered to be a prime farmland soil and is found on about 6 acres of JBLE – Eustis; none of this is currently used for agricultural purposes, and the Installation does not hold any agricultural outleases (JBLE – Eustis 2019). All nine of the soil types at JBLE – Langley are classified as “not prime farmland” (JBLE – Langley 2019). Implementation of the Proposed Action would not preclude existing prime farmland soils on JBLE – Eustis from future agricultural production, and no farmland soils would be removed or converted. Therefore, no impacts would be anticipated on prime farmland soils.

Cultural Resources. Section 106 of the NHPA requires federal agencies to take into account the effects of their undertakings on historic properties. As the Proposed Action is limited to aerial application of pesticide for large area control of mosquitoes and common reed, and since alternative approaches including controlled burn, excavation, and repeat harvesting (mowing) have been removed from consideration by application of the selection criteria, per 36 CFR

800.3(a)(1), it has been determined the proposed undertaking represents a type of activity that does not have the potential to affect historic properties.

Socioeconomics. No change in personnel, housing demand, or economic conditions at JBLE would be anticipated as a result of the Proposed Action. The local expenditures for fuel and materials for pesticide application would occur rarely and would have no substantial impact on the local economy. Therefore, no effect on socioeconomics would be expected.

Environmental Justice and Protection of Children. EO 12898, *Environmental Justice*, directs federal agencies to identify low-income and minority populations potentially affected because of proposed federal actions. EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks*, directs federal agencies to identify and assess environmental health and safety risks that may disproportionately affect children. As impacts generated from the Proposed Action would be confined to JBLE, no environmental justice communities, if present in the nearby communities of Newport News or Hampton, would be particularly or disproportionately affected. Further, no change in personnel, housing demand, or economic conditions would occur and therefore would not impact low-income, minority, or youth populations that may be present on JBLE. No health and safety risks to the children of military families who attend the Child Development Centers or use the outdoor playgrounds are anticipated, and the installation is inaccessible to the general public. The Proposed Action would not have disproportional impacts on low-income, minority, or youth populations; therefore, no disproportionate effects on low-income or minority populations or children would be expected.

Infrastructure, Transportation, and Utilities. No new construction or infrastructure changes would occur under the Proposed Action, and no effects on infrastructure are anticipated. No project-related increases in traffic are anticipated during implementation of the Proposed Action. No change in the traffic level of service would occur; therefore, no effects on transportation would be expected. No change in utility infrastructure or usage at JBLE would result from the Proposed Action; therefore, no effects on utilities would be expected.

Hazardous Materials and Waste. Hazardous wastes are defined by the Resource Conservation and Recovery Act, as amended, as any solid, liquid, contained gaseous, or semisolid waste that poses a potential hazard to human or environmental health. Hazardous materials are defined by the Comprehensive Environmental Response, Compensation, and Liability Act, as amended, as any substance with physical properties of ignitability, corrosivity, reactivity, or toxicity that might cause an increase in mortality, serious reversible illness, or incapacitating reversible illness. JBLE contains storage tanks; transformers, capacitors, and switches containing polychlorinated biphenyls (PCBs); medical/biohazardous waste; and/or radioactive materials. Implementation of the Proposed Action would not disturb potential or known sources of asbestos-containing materials or lead-based paint and would not alter any current pesticide storage procedures or areas on JBLE. However, during aerial application activities, small amounts of hazardous materials would be utilized by the contractor.

The DAF, through AFIs 10-2510 and 32-7086, has dictated that all facilities develop and implement Hazardous Materials Management Plans, Hazardous Waste Management Plans, and/or Spill Prevention, Control, and Countermeasures (SPCC) Plans. Storage, handling, and transportation of hazardous materials and waste during Proposed Action implementation would be conducted in accordance with applicable regulations and established procedures, including the JBLE – Eustis and JBLE – Langley Hazardous Waste Management Plans. Any spills or releases of hazardous materials would be reported to the VDEQ, cleaned up by the contractor, and disposed of at an approved off-base treatment, storage, or disposal facility (Virginia

Administrative Code [VAC] § 62.1-44.34.8 through 9, and 9 VAC 25- 580-10, et seq.). Spills would be handled in accordance with the installations' SPCC Plan.

All pest control activities including pesticide applications must comply with JBLE Instruction 32-101, respective Environmental Management Procedures (EMPs), and the installations' IPMPs (JBLE – Eustis 2020; JBLE – Langley 2021a). As pesticides are considered hazardous materials, their acquisition, storage, and use are subject to EMP 4.4.6.6. This ensures appropriate documentation exists to comply with the provisions of the Emergency Planning and Community Right-to-Know Act (EPCRA).

Under the Proposed Action, all pesticides used will be registered through the HazMart. All pesticides brought onto or used on the installation are registered through the HazMart and are on the HazMart Authorized Use List.

Pesticide spills (or any condition or event where the release/discharge of a pesticide was not done so in accordance with its respective label) will be reported to Fire and Emergency Services (FES) immediately by the individual(s) responsible for the spill (or any person witnessing such a spill). FES responds to pesticide spills as it does for any hazardous material. Additionally, unauthorized releases/discharges of pesticides into surface waters, wetlands, or storm drains will be reported to the National Response Center and VDEQ immediately.

All pesticides intended for use on the installations must be found on the List of Approved Pesticides. The IPMC maintains this list, which is updated periodically because some pesticides may no longer be registered by the USEPA and/or no longer authorized for use in Virginia. Additionally, DoD policies may ban the use of given pesticides from use on military installations. Furthermore, JBLE – Eustis or JBLE – Langley may deem certain pesticides inappropriate for use on the installation based on unique issues even when such pesticides are approved for use in Virginia (JBLE – Eustis 2020; JBLE – Langley 2021a). Generation of hazardous materials and wastes associated with the Proposed Action is unlikely. Pesticide applicators would calculate the amount of pesticide needed for a given area/mission and use it to completion. The only potential for generation of waste would be if a pesticide is purchased but never used and an expiration date (if applicable) is exceeded. This could occur if JBLE purchases a pesticide and stores it at the installations in preparation for an unexpected need, but then the pesticide is never used. Additionally, JBLE would not be responsible for the purchase, storage, or disposal of herbicides used for common reed control because these efforts would be conducted by a licensed, approved contractor.

Environmental Restoration Program (ERP) sites at JBLE include areas where hazardous wastes, substances, pollutants, radioactive wastes, or petroleum were released. The Proposed Action would not likely interfere with the long-term monitoring of any ERP sites at JBLE and similarly no effects on the Proposed Action are expected from any existing ERP sites. Further, land use control measures are in place and inspected annually, which would reduce the likelihood of the Proposed Action affecting any ERP sites and any ERP sites affecting the Proposed Action.

Because hazardous materials and waste would be managed in accordance with applicable regulations and procedures, impacts from hazardous materials and waste would not be expected. An analysis of impacts on health and safety associated with the use of pesticides under the Proposed Action is included in this EA in **Section 3.9**, *Health and Safety*.

Cumulative Effects. Direct and indirect cumulative effects of reasonably foreseeable proposed projects at and near JBLE (**Appendix B**) and recently completed projects on JBLE are also analyzed for each resource.

3.1 AIRSPACE MANAGEMENT AND USE

Airspace management involves the direction, control, and handling of flight operations in the airspace that overlies the borders of the US and its territories. Under Title 49, USC § 40103, *Sovereignty and Use of Airspace,* and Public Law No. 103-272, the US government has exclusive sovereignty over the airspace. The Federal Aviation Administration (FAA) has the responsibility for planning, managing, and controlling the structure and use of all airspace over the US. FAA rules govern the national airspace system, and FAA regulations establish how and where aircraft may fly. Collectively, the FAA uses these rules and regulations to make airspace use as safe, effective, and compatible as possible for all types of aircraft, from private propeller-driven planes to large, high-speed commercial and military jets.

3.1.1 Existing Conditions

The JBLE – Langley airfield is operated by the 1 FW and 192nd Fighter Wing (192 FW) supporting military operations conducted by units stationed on base. Military training has occurred in the vicinity of JBLE – Langley since 1916. With a large complement of F-22s and T-38A/Bs, most operations at JBLE – Langley are performed by the 1 FW and 192 FW.

Air traffic control for JBLE – Langley is provided by the DAF. Controlled Class D airspace, extending upward from the surface up to and including 2,500 feet AGL within a 4-nautical-mile radius of JBLE Langley, has been established around the airfield to support managing air traffic.

A variety of factors influence the annual level of operational activity at JBLE – Langley, including economics, national emergencies, and maintenance requirements. Operations consist of arrivals and departures (itinerant) by primarily military aircraft, with a smaller amount of traffic from NASA turboprop aircraft flights. Military aircraft use makes up 92 percent of the airfield use at JBLE – Langley, with the remaining amount used by NASA and transient aircraft flights (**Table 3-1**).

Table 3-1. Annual Operations at Joint Base Langley-Eustis, Langley Air Force Base

Use	Annual Operations	Percentage of Use
1st Fighter Wing	38,677	92
National Aeronautics and Space Administration	1,134	3
Transient	2,200	5
Total	**42,011**	**100**

Source: DAF 2019

The majority of helicopter training at JBLE – Eustis occurs within the restricted on-base airspace. The hub for flight operations is the Felker Army Airfield. Although some helicopter training is done off base, flight paths outside the boundaries of JBLE – Eustis are restricted in certain areas to avoid disturbances of known noise-sensitive sites.

3.1.2 Environmental Consequences

3.1.2.1 Preferred Alternative

There would be no change in charted airspace in the region, air traffic for aerial applications would be controlled by air traffic control (ATC), and all aircraft operations would follow airspace restrictions. Only a few additional flight operations annually would occur and would result in negligible effects on airspace capacity, airspace management, and airspace use.

The proposed aircraft and certified personnel are based at the Youngstown Air Reserve Station in Vienna, Ohio. JBLE – Langley would serve as the base of air operations. Aircraft application overflights would occur at elevations between 150 feet and 300 feet AGL, and adult mosquito missions would occur from two hours before sunset to sunset, depending on weather conditions. Aerial application would be completed in one night, with the potential for one additional night of application if weather or mechanical issues cause delays. C-130H operations would depart the Air Reserve base in Vienna following all ATC procedures, transit to JBLE and land according to ATC procedures. The helicopter would then be refueled, obtain clearance for low-altitude operations over JBLE, and operate in the restricted airspace for one night. Following operations, the helicopter would land at JBLE, refuel, and depart for Vienna following all ATC procedures.

This DAF Reserve Unit would provide all aircraft, aircrews, and Virginia state-certified/DoD-certified entomologists to coordinate and oversee all aspects of the aerial application of pesticides. If the 757th Airlift Squadron Aerial Spray Unit is unavailable, an alternative certified aerial applicator would be selected after consultation with the AFCEC/COSC Pest Management Professionals. Further, if services are contracted, then proper coordination with local air traffic control personnel and base operations would also be arranged to ensure safety. In addition to holding a valid Virginia Pesticide Business License and valid Virginia Applicator Certificate for Category 11, contracted applicators would obtain a Civil Aircraft Landing Permit to take off and depart from a military installation and treat areas on JBLE, particularly in consideration of ongoing military flight operations.

Aerial application of herbicides for the control of common reed would be through contracted helicopter pesticide application services. Past contractors have used Bell OII58A (or alternative), Bell206 BII, Bell 206 L3, or Bell OH58A (+) helicopters to aerially apply herbicides within common reed treatment areas. All aircraft staging and refueling would occur within the installation boundaries. A certified aerial applicator would be selected after consultation with the AFCEC/COSC Pest Management Professionals. Further, proper coordination with local air traffic control personnel and base operations would also be arranged to ensure safety. In addition to holding a valid Virginia Pesticide Business License and valid Virginia Applicator Certificate for Category 11, contractor applicators would need to obtain a Civil Aircraft Landing Permit to take off and depart from a military installation and treat areas on JBLE, particularly in consideration of ongoing military flight operations.

3.1.2.2 Alternative 2

There would be no change in charted airspace in the region, air traffic for aerial applications would be controlled by air traffic control, and all aircraft operations would follow airspace restrictions. Only two additional flight operations every other year would occur under Alternative 2 and would result in negligible effects on airspace capacity, airspace management, and airspace use.

3.1.2.3 Cumulative Effects

When combined with reasonably foreseeable proposed projects on JBLE – Eustis and JBLE – Langley, the Proposed Action would have no cumulative impacts on airspace management or use. The addition of up to four days of C-130H and helicopter flight associated with mosquito and common reed control annually on JBLE would not result in any significant cumulative effects when combined with ongoing and future aircraft training activities and other reasonably foreseeable future actions.

3.1.2.4 No Action Alternative

Under the No Action Alternative, no effects on airspace management or use would occur. The Proposed Action would not take place. There would be neither beneficial nor adverse effects regarding airspace management and use, and these resources would not change when compared to existing conditions.

3.2 AIR QUALITY AND CLIMATE CHANGE

3.2.1 Existing Conditions

3.2.1.1 National Ambient Air Quality Standards and Attainment Status

Air quality in various areas of the country is affected by pollutants emitted by numerous sources, including natural and human-made sources. To manage pollutant emission levels in ambient air, the USEPA was mandated under the CAA to set air quality standards for select pollutants that are known to affect human health and the environment.

The USEPA has divided the country into geographical regions known as Air Quality Control Regions (AQCRs) to evaluate compliance with the National Ambient Air Quality Standards (NAAQS) (40 CFR 50). NAAQS are currently established for six criteria air pollutants: ozone, carbon monoxide (CO), nitrogen oxide (NO_x), sulfur dioxide (SO_2), respirable particulate matter (including particulates equal to or less than 10 microns in diameter [PM_{10}] and particulates equal to or less than 2.5 microns in diameter [$PM_{2.5}$]), and lead. The VDEQ has adopted the NAAQS, thereby requiring the use of the standards within the Commonwealth of Virginia (9VAC5 Chapter 30). Each AQCR has regulatory areas that are designated as an attainment area or nonattainment area for each of the criteria pollutants depending on whether it meets or exceeds the NAAQS. Attainment areas that were reclassified from a previous nonattainment status to attainment are called maintenance areas and are required to prepare a maintenance plan for air quality.

JBLE – Langley is located in the independent city of Hampton, and JBLE – Eustis is in the city of Newport News, both of which are located in the Hampton Roads Intrastate AQCR in Virginia (40 CFR § 81.93). The cities of Hampton and Newport News are part of the Norfolk-Virginia Beach-Newport News (Hampton Roads) region.

The Hampton Roads area is in attainment of all current applicable NAAQS. However, the area is designated maintenance for the 1997 ozone NAAQS since June 2007. Note, although the 1997 ozone standard was revoked by the USEPA (*Federal Register,* Volume 80, Number 44, 6 March 2015), the maintenance areas are required to demonstrate compliance with the standard for purposes of the CAA conformity until 28 July 2027. This requirement was based on the court decision in Case No. 15-1115 (USEPA 2018), on USEPA's guidance on the court decision (USEPA 2018), and on Air Force designations in the Air Conformity Applicability Model (ACAM).

Overall, VDEQ monitoring data show that criteria pollutant emission concentrations of CO, SO_2, NO_x, and ozone have been decreasing over the past several years. Additionally, based on the past three-year (2018 through 2020) ozone monitoring network data, there have been no exceedances of the 2015 ozone standard of 0.070 parts per million in any of the areas of the state (VDEQ 2020). The reductions are believed to be the result of emission control measures that have been implemented over the past two decades. These measures targeted motor vehicle engines, gas stations, the consumer products industry, and power plants.

Federal actions in NAAQS nonattainment and maintenance areas are also required to comply with USEPA's General Conformity Rule (40 CFR 93). These regulations are designed to ensure that federal actions do not impede local efforts to achieve or maintain attainment with the NAAQS.

Federal actions are evaluated to determine if the total indirect and direct net emissions from the project are below *de minimis* levels for each of the pollutants as specified in 40 CFR 93.153. If *de minimis* levels are not exceeded for any of the pollutants, no further evaluation is required. However, if net emissions from the project exceed the *de minimis* thresholds for one or more of the specified pollutants, a demonstration of conformity, as prescribed in the General Conformity Rule, is required.

USEPA's Prevention of Significant Deterioration (PSD) regulations apply in attainment areas and apply only to a major stationary source, (i.e., source with the potential to emit 250 tons per year [tpy] of any regulated pollutants), and a significant modification to a major stationary source, as defined. Additional PSD major source and significant modification thresholds apply for greenhouse gases (GHGs). PSD permitting can also apply to a proposed project if the following conditions exist: (1) the proposed project is a modification with a net emissions increase to an existing PSD major source, (2) the proposed project is within 10 kilometers of national parks or wilderness areas (i.e., Class I areas), and (3) regulated stationary source pollutant emissions would cause an increase in the 24-hour average concentration of any regulated pollutant in the Class I area of 1 milligram per cubic meter or more (40 CFR 52.21[b][23][iii]). A Class I area includes national parks larger than 6,000 acres, national wilderness areas and national memorial parks larger than 5,000 acres, and international parks.

3.2.1.2 Existing Emissions and Permitting Overview

The regional climate of southeast Virginia, where the Preferred Alternative is proposed to take place, is classified as a humid subtropical climate which is characterized by mild winters and hot, humid summers. The warmest month in the region is July, with average high and low temperatures of 89 degrees Fahrenheit (°F) and 73°F, respectively. January is the coldest month with an average high temperature of 50°F and average low temperature of 34°F. The wettest month by average precipitation is July with an average of 5.1 inches of rain. The driest month is February with an average of 3.1 inches of precipitation (US Climate Data 2022a, 2022b). Summers are characterized by frequent thunderstorms, and winters are impacted by midlatitude cyclones. Tropical cyclones affect the region about once per year during the summer and fall months.

Neither JBLE – Langley nor JBLE – Eustis is classified as a major source for PSD or located within 10 kilometer (6.21 miles) of any of the designated Class I areas protected by the Regional Haze Rule. Thus, the project requires no analysis with respect to the PSD requirements under 40 CFR 51.166. As the area is not in nonattainment for any criteria pollutant, the project requires no analysis with respect to the nonattainment New Source Review requirements under 40 CFR 51.165.

JBLE – Langley and JBLE – Eustis operate under separate VDEQ-issued stationary Source Operating Permits which limit emissions for each criteria pollutant from stationary sources to less than 100 tpy. Stationary sources at each of the installations that emit criteria pollutants and hazardous air pollutants include generators, boilers, paint spray booths, fuel storage and handling and degreasing activities. Mobile sources, such as vehicle and aircraft emissions, are generally not regulated under permitting requirements and are not covered under existing stationary Source Operating Permit.

3.2.1.3 Climate Change

GHGs are gases that trap heat in the atmosphere. These emissions are generated by both natural processes and human activities. The accumulation of GHGs in the atmosphere helps regulate the

earth's temperature and is believed to contribute to global climate change. GHGs include water vapor, carbon dioxide (CO_2), methane, nitrous oxide, ozone, and several hydrocarbons and chlorofluorocarbons.

In Virginia, the USEPA regulates GHG primarily through a permitting program known as the GHG Tailoring Rule. In addition to the GHG Tailoring Rule in 2009, the USEPA promulgated a rule requiring sources to report their GHG emissions if they emit more than 25,000 metric tons or more of CO_2 equivalent (CO_2e) per year (40 CFR 98.2[a][2]). CO_2e is a term for describing different greenhouse gases in a common unit. For any quantity and type of greenhouse gas, CO_2e indicates the amount of CO_2 that would have the equivalent global warming impact. The primary GHGs that are required to be reported include CO_2, methane, and nitrous oxide. Both regulations apply only to stationary sources of emissions.

CO2e emissions from stationary sources at JBLE – Langley are estimated to be 16,196 metric tpy (JBLE – Langley 2020); however, there is no limit for GHG emissions at JBLE – Langley under the Stationary Source Operating Permit, and the base is exempt from mandatory USEPA GHG reporting. CO2e emissions from stationary sources at JBLE – Eustis are estimated to be 5,697 metric tpy (JBLE – Eustis 2022); however, there is no limit for GHG emissions at JBLE – Eustis under the Stationary Source Operating Permit, and the base is exempt from mandatory USEPA GHG reporting. Environmental Consequences

Although the region is in attainment for the current ozone standard, because of historical nonattainment and maintenance designations for ozone, the primary pollutants of concern are NO_x and volatile organic compounds (VOCs). In nonattainment and maintenance areas, emissions at or above 100 tpy are considered significant, particularly as this threshold triggers full conformity analysis. Proposed project emissions below 100 tpy are considered moderate or, if very low, minor.

Based on guidance in Chapter 4 of the Air Force Air Quality EIAP Guide, Volume II, *Advanced Assessments,* proposed project emissions are also compared to the insignificance indicator of 250 tpy for the PSD major source permitting threshold for actions occurring in areas that are in attainment for all criteria pollutants (25 tpy for lead). Thus, for the remaining criteria pollutants (CO, sulfur oxides, lead, $PM_{2.5}$, and PM_{10}), the annual emission increases would not be considered significant if they are below the relevant insignificant indicator values.

3.2.1.4 Preferred Alternative

Implementation of the Preferred Alternative would generate air emissions that would impact air quality in an adverse way, but these emissions are expected to be short term and minor. For the Preferred Alternative, there are two primary air emissions sources that would impact air quality. The operation of aircrafts for aerial application of pesticides and herbicides would generate mobile emissions from engine exhausts. Also, particulate and VOC emissions would result from the application of pesticides and herbicides.

Aerial Application Aircraft Emissions

Table 3-2 presents emissions from aircraft operations used for aerial application and related activities. The affected area includes the installations and their vicinities where aerial application would occur. The methodologies, emission factors, emission calculations and related assumptions for aerial application and related activities are outlined in **Appendix C.** As seen from **Table 3-3**, estimated VOC and NO_x emissions from aircraft operations and related activities are well below the 100 tpy *de minimis* threshold. Emissions from all other remaining criteria pollutants are well below their relevant insignificance indicator emission levels. The ACAM documentation

of estimated emissions in the form of a Record of Conformity Applicability is provided in **Appendix C.**

Impacts on air quality would be minor, as emissions from aircraft are intermittent and short term. In addition, it is anticipated that all federal and state regulations as well as DAF guidelines and policies regarding aerial application of pesticides and herbicides would be followed, which would help limit impacts on air quality.

Table 3-2. Total Annual Increases in Criteria Pollutant Emissions Summary

Source	CO	NO_X	PM_{10}	$PM_{2.5}$	SO_2	VOC	Pb
C130H Aircraft Operations[1,2] (tpy)	2.200	0.632	0.099	0.089	0.115	1.464	2.200
Bell OII58A Helicopter Operations[3] (tpy)	0.067	0.005	0.002	0.001	0.002	0.008	0.067
Total Emissions (tpy)	2.267	0.637	0.101	0.090	0.117	1.472	2.267
De Minimis Threshold[4] (tpy)	-	100	-	-	-	100	-
Exceeded *De Minimis*	-	No	-	-	-	No	-

CO – carbon monoxide; **NO_x** – nitrogen oxide; **PM_{10}** – particulate matter less than 10 microns in diameter; **$PM_{2.5}$** – particulate matter less than 2.5 microns in diameter; **SO_2** – sulfur dioxide; **VOC** – volatile organic compound; **Pb** – lead; **tpy** – tons per year

1 ACAM estimates

2 Includes total annual emissions for (1) flight operations, (2) aerospace ground equipment, and (3) Jet-A and aviation gasoline fuel storage.

3 Calculated emissions estimates. Proposed aircraft and alternatives are not in ACAM. Includes total annual emissions for flight operations.

4 *De minimis* thresholds are for ozone precursors (NO_x and VOC) only. The installations are in a maintenance area for ozone and in an attainment area for all other criteria pollutants.

Table 3-3. Indicators for Carbon Dioxide Emission Impacts

Projected CO_2e Emissions (tpy)[1]	Regulatory Thresholds (CO_2e tpy)	Regulatory Thresholds (CO_2e tpy)	Inventory Data (MMt CO_2e/year)
	Title V	PSD New/Modified Source	2018 Virginia Energy Sector[2]
349	100,000	100,000 / 75,000	108

CO_2e – carbon dioxide equivalent from ACAM; **tpy** – tons per year; **MMt** – million tons per year; **PSD** – Prevention of Significant Deterioration

1 Emissions from aircraft operations for aerial application of pesticides and herbicides. Manual calculation results for the Bell helicopter are included; thus, emissions are higher than those in ACAM reports.

2 US Energy Information Administration (USEIA), *Energy - Related Carbon Dioxide Emissions by Sta*te, 2000-2018, Table 1 (USEIA 2018). To convert from MMt to tpy multiply by 1.1E6.

Dust or particulate emissions could be generated during staging, refueling, or refilling activities during aerial application events, especially from the movement of vehicles in unpaved roads. Per VDEQ regulations (9 VAC 5-50-90), any fugitive dust that may be generated from the proposed project must be kept to a minimum by using control methods outlined in the regulations. These measures include, where possible, the use of chemicals or water for dust control and covering of open equipment for material transport to reduce emissions to the air. Also, any prescribed burning activities that may occur after the aerial application of herbicides and pesticides would need to follow VDEQ regulations, including any requirements to obtain a permit.

No new stationary source of air emissions is expected to be constructed or stationed permanently at either of the installations for the proposed aerial application of pesticides and herbicides. Thus,

project emissions were not evaluated for new source construction permitting and Title V permitting impacts. Requirements in the permit would remain unchanged.

Drift and Volatile Emissions

Pesticides applied aerially using aircraft can remain airborne and drift to nearby areas where application was not intended to occur. Windy conditions can exacerbate drift during aerial applications. This drift can cause minor, short-term, adverse impacts on air quality.

Drift of pesticides, in particulate form, can affect animals and humans that are in the immediate vicinity of the drift. However, drift impacts from aerial application would be controlled by applying in accordance with respective pesticide labels. The implementation of the Preferred Alternative would follow prescribed label instructions, be consistent with good practices, and aerially apply when weather conditions are appropriate to minimize risk of drift.

Applications would be made at ULV application rates. In practice, the ULV method involves the application of the minimum effective volume of an undiluted formulation of pesticide (as received from the manufacturer). With the ULV method, the application volume is dependent on the intrinsic toxicity of a pesticide to the target species and its concentration in a liquid formulation. With ULV aerial application against adult mosquitoes, the critical meteorological parameters are wind velocity and direction, temperature, and atmospheric stability. In contrast to highly diluted water-based sprays, relative humidity as it relates to droplet evaporation is not critical with ULV aerial application because the undiluted insecticide formulations are essentially nonvolatile. Wind velocity data are required prior to spray operations to determine whether or not the average velocity at ground level exceeds a maximum threshold, usually around 10 miles per hour (Mount et al. 1996). Wind direction data are needed to establish crosswind swath direction for aerial application (Mount et al. 1996).

Ambient temperature is important because it influences mosquito activity and the efficacy of insecticides (Mount et al. 1996). Atmospheric stability is an important factor that influences transport of droplets from release altitude to ground level. Many factors determine air stability, such as wind velocity, temperature gradient, and time of day. In general, the stable or slightly unstable air associated with early morning or evening are considered most suitable for aerial application (Mount et al. 1996).

The early morning and evening timeframes tend to optimize spray efficacy because of increased mosquito activity and probability of adequate atmospheric stability for effective spray dispersion into mosquito habitat with adequate crosswinds. A stable atmosphere is normally characterized by warmer air on top of colder air and usually occurs when insolation intensity is reduced or absent (Mount et al. 1996). Conversely, an unstable atmosphere is characterized by colder air on top of warmer air and usually occurs during the middle of the day when insolation intensity is highest (Mount et al. 1996). Thermals, which are rising air currents caused by incoming solar radiation falling on the earth, usually occur in an unstable atmosphere. A strong inversion may actually resist the downward air transport of sprays (Mount et al. 1996). Further, there are indications that air temperature inversions provide ideal conditions for tiny, aerosol-sized droplets to drift away from their targets. Understanding air temperature inversions is essential to following state and federal regulations that prohibit pesticide application during inversions, observing pesticide manufacturers' warnings about inversion conditions on product labels and preventing unintended pesticide contact with nontarget areas (Enz et al. 2019). These inversions are typically observed in fall and winter months in the Hampton Roads region.

Aerial spray offsets are employed to maximize value of drift. Offsets have been estimated by empirical testing by the Reserve 910th Airlift Wing/757th Airlift Squadron Aerial Spray Unit, as well as modeled prediction based on U. S. Department of Agriculture's (USDA's) AGDISP drift model. Low-level aerial application (8 feet AGL]) would minimize drift. However, this is an impractical approach for aerial application for mosquito control. The Reserve 910th Airlift Wing/757th Airlift Squadron Aerial Spray Unit and commercial applicators typically make applications at 150 feet AGL for day operations and 300 feet AGL for any night operations, assisted with night vision goggles. The Reserve 910th Airlift Wing/757th Airlift Squadron Aerial Spray Unit has largely abandoned the use of day applications, as evening and night applications favor a more stable atmospheric scenario regarding prevailing winds and minimal turbulence. In addition, the added benefit of night application is that pollinators are generally protected due to their diurnal nature and are effectively ensconced in protected hibernacula during nighttime hours. Typical offset for 5 to 7 mph crosswind application is 2,000 feet based on the USDA AGDISP drift model, empirical tests, and pre-and post-spray mosquito counts in traps.

There are indications that air temperature inversions provide ideal conditions for tiny, aerosol-sized droplets to drift away from their targets. Understanding air temperature inversions is essential to following state and federal regulations that prohibit pesticide application during inversions, observing pesticide manufacturers' warnings about inversion conditions on product labels and preventing unintended pesticide contact with nontarget areas (Enz et al. 2019). These inversions are typically observed in fall and winter months in the Hampton Roads region.

The volatile components contained in herbicides and pesticides can evaporate, post-application, and become airborne, resulting in emissions of VOCs. Vapor pressure of the control chemical appears to have a major effect on volatilization. In general, substances with lower vapor pressures are less likely to turn into vapor and be released into the air. Also, pesticides and herbicides are less likely to evaporate if they stick tightly to soil or become bound to leaves. Other factors that affect volatilization include meteorological conditions and soil properties.

Most of the control chemicals proposed as part of the Preferred Alternative are not extremely volatile or are less likely to evaporate easily. For example, glyphosate, when applied, is absorbed by leaves and rapidly moves through the plant. Glyphosate and the non-ionic surfactant recommended for use do not readily evaporate (US Department of Agriculture [USDA] 1997). Imazapyr herbicide has been found to be effective at very low rates, which means there would be less chemical load on the environment when used as prescribed on manufacturer labels. Additionally, imazapyr also does not volatilize readily when applied in the field (Tu et al. 2001). However, some other studies have found that the potential to volatilize increases with increasing temperature, increasing soil moisture, and decreasing clay and organic matter content. Also, the amount of active ingredient tends to be small when compared to the extent of treatment area, which would further limit the release of significant levels of volatiles into to the air.

Overall, the implementation of the Preferred Alternative would result in short-term, minor, adverse effects on air quality. They are anticipated to temporarily affect local air quality due to exhaust emissions of criteria pollutants from aircraft operations. However, emissions of VOCs and NO_x from aircraft operations would be minor and would not exceed the General Conformity Rule's *de minimis* thresholds. Also, drift emissions of pesticides and herbicides during and after aerial application would occur and would result in some adverse effects on air quality. However, mitigation would reduce drift from aerial application and reduce impacts on air quality. Most of the herbicides and pesticides have low volatility and on application are most likely to subside onto the ground, water, and vegetation where they quickly biodegrade and hydrolyze. This further reduces the chance for volatile chemicals to be emitted into the air.

3.2.1.5 Climate Change

The coastal regions of the Middle Atlantic states and in particular the Chesapeake Bay are very vulnerable to the effects of climate change. Thermal expansion caused by warming oceans and the melting of glaciers and ice caps appear responsible for an observed sea-level rise in the Chesapeake Bay of about 1 foot. A further rise of more than 1 foot (up to 5.2 feet) is predicted over the next 100 years. The city of Hampton is undertaking a citywide effort, called Resilient Hampton, to tackle recurrent flooding from rising seas and storms. The city's plan notes that nearby Sewell's Point in Norfolk experienced nearly 1.5 feet of sea-level rise in the past century. The rise in the sea level damages fragile ecosystems and contributes to the loss of wetlands. Warmer bay water itself can lead to unnatural changes in aquatic habitats that negatively impact marine life and fauna (Chesapeake Bay Foundation 2022).

Implementation of the Preferred Alternative would emit GHG emissions from the use of fossil fuels in aircraft operations. However, the estimated annual GHG emissions for the Preferred Alternative would be relatively low (**Table 3-3**). CO_2e emissions fall well below the permitting thresholds and account for less than 0.0003 percent of state CO_2e emissions. Although Title V and PSD are not applicable to this action, the applicability thresholds for these permitting requirements were compared to projected CO_2e emission levels as an indicator of significance. This demonstrates that in isolation additional CO_2e emissions expected because of the implementation of the Preferred Alternative would have a negligible impact. Based on publicly available documents, there are no conclusive studies that have quantitatively determined the longer-term impact of pesticides and herbicides on global climate change. In general, however, the use of chemicals to control invasive species of plants may cause temporary changes of carbon in the atmosphere. Carbon would be released into the air when vegetation would be removed, but control of invasive plant species will inevitably allow growth of native plant community, resulting in an overall positive effect on climate change in the long run. In some cases, the treated areas can be seeded or replanted soon after application, thus replenishing the lost carbon. Thus, control of invasive species using the proposed herbicides are not expected to increase the impact of climate change in the longer term.

Wetlands hold large amounts of carbon and changes to existing wetlands would be a factor in predicting carbon emissions. The loss of an existing wetlands means not only the loss of that carbon sink, but it also means that the carbon stored in wetlands will be released as GHG emissions (Minnesota Board of Water and Soil Research 2019). Tidal wetlands are particularly special in this sense, as they continuously vertically accrete over time—storing away layers of carbon-rich sediment (Chesapeake Bay Climate Action Network 2016). Published data in laboratory and field studies describe the fate and effects of pesticides in coastal wetlands. These studies demonstrate the potential for adverse impacts associated with pesticide uses, especially from direct over application from adjacent treatment areas. It is difficult and complex to ascertain if, or by how much, the intermittent aerial application for the treatment of invasive plant species or for the control of mosquitoes would result in the degradation of wetlands (due to marsh die-off) that may ultimately lead to drastic changes in regional carbon emissions.

3.2.1.6 Alternative 2

Impacts on air quality and climate change would be similar to, but less than, those described for the Preferred Alternative since only one aerial application for mosquitoes and one aerial application for common reed would occur every other year under Alternative 2.

3.2.1.7 Cumulative Effects

The Proposed Action, in addition to past, present, and reasonably foreseeable future actions at JBLE, would result in less than significant cumulative impacts on air quality. With any addition of ongoing construction projects in the area, criteria pollutant emissions, especially PM_{10} emissions, could increase; however, these increases would be short in duration and localized, and the incremental impact on air quality in the longer term would be negligible. The implementation of the Preferred Alternative would result in mainly VOC and NO_x emissions from aircraft that would operate below the mixing height (3,000 feet AGL) in the areas proposed for aerial application; however, the duration would be short and intermittent, and therefore impacts on air quality would not be significant. Emissions of CO_2 (e.g., GHG) are expected because of aerial application from aircraft operations, but these would be minor, temporary, and intermittent and would not be likely to add to the regional GHG levels in any meaningful way.

Overall, no incremental change in air quality is expected when adding the Proposed Action to past, present, and reasonably foreseeable future actions; therefore, cumulative effects on air quality are expected to be less than significant.

3.2.1.8 No Action Alternative

The No Action Alternative would not have an impact on air quality. With this alternative, there would be no concerns regarding the adverse air quality effects, however minimal, that would have occurred from the aerial application for common reed control and from the aerial application for control of mosquitoes.

3.3 AESTHETICS AND VISUAL RESOURCES

Visual resources consist of natural and human-made features that give a particular environment its aesthetic qualities. Landscape character is evaluated to assess whether the Proposed Action would be compatible with the existing features or would contrast noticeably with the setting and appear out of place. Visual sensitivity includes public values, goals, awareness, and concern regarding visual quality.

3.3.1 Existing Conditions

Spatial and visual relationships on JBLE are the result of development activities that have occurred since World War II. There are visually disorganized elements in the cantonment areas, including substations, exterior mechanical systems (heating, ventilating, and fuel storage), dumpsters, storage areas, and maintenance yards, which are often unscreened and lack visual appeal. Facilities and parking areas often disrupt the scenic natural environment. JBLE – Eustis is home to the Army Transportation Museum, which lies just inside the main entrance. Much of its collection of aircraft, boats, trains, and other vehicles is displayed outdoors and is readily seen when entering and exiting the installation by automobile through this gate (US Army Corps of Engineers [USACE] 2008).

Landscaping practices and improvements are used on JBLE to enhance the visual character of the installation. Tree plantings and lawn maintenance are subject to the specifications outlined in the installation Integrated Natural Resources Management Plans (INRMPs) (JBLE – Eustis 2019; JBLE – Langley 2019). General design, security issues, and standards are also considered in the development of JBLE landscapes.

Aircraft training operations from the airfields at JBLE – Eustis and JBLE – Langley present views of aircraft on and off the installation. Rivers and creeks on JBLE offer views of watercraft varying in size from kayaks to large military and commercial vessels. Along the waters' edges are marshes

and associated wildlife viewing opportunities. Training areas on JBLE have generally retained the typical oak-hickory-pine forest vegetation native to the southern Coastal Plain.

3.3.2 Environmental Consequences

Potential impacts on aesthetic and visual resources are considered significant if the Proposed Action would (1) have a substantial adverse effect on a scenic vista or viewshed; (2) substantially damage scenic resources, including primary/secondary ridgelines, trees, rock outcroppings, and historic buildings; (3) substantially degrade the existing visual character or quality of the site and its surroundings; or (4) create a new source of substantial light or glare that would adversely affect day or nighttime views in the area. Impacts on aesthetics would be deemed significant if disturbances could permanently and negatively alter the overall character of the viewshed.

3.3.2.1 Preferred Alternative

Minor, short-term impacts would result during pesticide application activities. These activities would be visible on JBLE and in the airspace above JBLE and would include the presence of C-130H aircraft, helicopters, vehicles, and equipment during aerial application events. The Proposed Action would not result in any substantial adverse effects on scenic viewsheds, cause any damage to scenic resources, or degrade any existing aesthetic or visual character on JBLE or in its vicinity. However, short- and long-term beneficial impacts from the removal of common reed would be expected. Common reed is an exceptionally tall herbaceous plant, often exceeding 10 feet in height. Removal of common reed would reduce visual restrictions to tidal wetlands and estuarine areas from on the installations.

3.3.2.2 Alternative 2

Impacts on aesthetics and visual resources would be similar to, but less than, those described for the Preferred Alternative since only one aerial application for mosquitoes and one aerial application for common reed would occur every other year under Alternative 2.

3.3.2.3 Cumulative Effects

When combined with proposed projects on JBLE, the Proposed Action's minor, short-term impacts on aesthetics and visual resources would not result in any significant cumulative effects on these resources. The currently proposed tree removal and replanting projects along with the common reed control associated with the Proposed Action could together result in future significant beneficial cumulative impacts on JBLE.

3.3.2.4 No Action Alternative

Under the No Action Alternative, there would be no aerial application of pesticides to control mosquitoes and common reed. No changes to existing aesthetics or visual resources would occur, and no adverse impacts on these resources are anticipated. Without implementation of the Proposed Action, common reed would continue to grow and cause the current visual restrictions.

3.4 GEOLOGICAL RESOURCES

Geological resources are defined as the physiography, topography, geology, and soils of a given area. Physiography and topography pertain to the general shape and arrangement of a land surface, including its height and the position of its natural and human-made features. Geology is the study of the Earth's composition and provides information on the structure and configuration of surface and subsurface features.

3.4.1 Existing Conditions

JBLE – Eustis lies on the Pleistocene-aged (10,000 to 1.6 million years ago) Princess Anne terrace formation. Approximately 2,000 feet of unconsolidated Cretaceous (66 to 144 million years ago) and Tertiary (28 to 66 million years ago) period sediments separated by an unconformity lie between the terrace and the granite basement rock. These deposits consist of clay, silt, sand, and gravel with variable amounts of shell material that thicken and drop eastward toward the Atlantic Ocean (JBLE – Eustis 2019). The upper surface geology at JBLE – Langley consists of "recent deposits," which contain alluvium (silt, sand, and clay), marsh sediment (peat, silt, sand, and clay with organic matter), and sand (beach and dune sand occurring as a tidal mud flat). They are Coastal Plain deposits that extend from the surface to a depth of 774 feet (JBLE – Langley 2021b).

Soils within JBLE – Eustis fall within one of two general groups: (1) low river terrace and marsh soils (hydric) and (2) low coastal plain upland soils, with an estimated 75 percent of the soils falling into the first category (JBLE – Eustis 2012, 2019). The hydric soils on JBLE – Eustis include Bethera silt loam, Bohicket muck, Chickahominy silt loam, Johnston complex, and Tomotly fine sandy loam. Soils in these associations range from well to very poorly drained with subsoil and substrata textures that range from sandy to clayey. The soils are gently sloped or level and are prone to flooding (JBLE – Eustis 2019). A summary of all the soils mapped on JBLE – Eustis can be found in the JBLE – Eustis INRMP (JBLE – Eustis 2019: Appendix 1 to Annex C).

Soils within JBLE – Langley are mostly unconsolidated fluvial, marine, and estuarine deposits underlain by beach sands, sandy clays, and gravels from the Tabb and Lynnhaven formations. Land-moving and -filling activities at JBLE – Langley have altered soil profiles to the extent that site soil profiles do not concur with local soil surveys from adjacent counties (JBLE 2016b). The list below identifies soils of the JBLE – Langley area (JBLE – Langley 2014; USDA 2019a):

- Udorthents-Dumps complex
- Chickahominy-Urban land complex, 0 to 2 percent slopes
- Axis very fine sandy loam, 0 to 2 percent slopes
- Altavista-Urban land complex, 0 to 3 percent slopes
- Lawnes loam, 0 to 1 percent slopes, very frequently flooded
- Bohicket muck, 0 to 1 percent slopes
- Johnston silt loam, 0 to 2 percent slopes
- Urban land

3.4.2 Environmental Consequences

Protection of unique geological features, minimization of soil erosion, and the siting of facilities in relation to potential geologic hazards are typically considered when evaluating potential impacts of a proposed action on geological resources. An alternative could have an adverse impact if any the following were to occur as a result of implementing the alternative: (1) a decrease in soil productivity or fertility; (2) changes to the soil composition, structure, or function within the environment; (3) impacts on soils classified as prime and unique farmland; or (4) an increased potential for soil erosion.

3.4.2.1 Preferred Alternative

Impacts in the following subsections are focused on the potential impacts on soils. Implementation of the Preferred Alternative would have no impact on the physiography, topography, or geology of the region.

Mosquito Treatment

Under the Preferred Alternative, aerial application of pesticides to control mosquitoes would take place. A pesticide registered with the USEPA and labeled for use in aerial applications for mosquito control would be used. Naled-based pesticides have been utilized for adult mosquito control in the past; however, other pesticides such as pyrethins, neo-pyrethrins, and formulations of malathion may be used. Additionally, control of mosquito larvae via aerial platforms would include Bti, B.s., and other mosquito larva control products in conjunction with adult mosquito control techniques under the Preferred Alternative.

Naled Products

Naled and its anaerobic soil degradate dichlorvos (DDVP) degrade rapidly in the environment through chemical hydrolysis and biodegradation and have a low bioaccumulation potential (USEPA 2020a). Terrestrial, aquatic, and forestry dissipation studies show that both naled and DDVP have a dissipation half-life of less than two days, and there is no evidence of movement of naled or DDVP through the soil profile (USEPA 2020a). Given the ULV application rates, infrequency of aerial application, conformance to label application instructions, and the rapid degradation of the pesticide, impacts on soils would be short term and negligible.

Pyrethrin/Pyrethroid Products

Pyrethrin and pyrethroid compounds bind strongly to soil and are not very mobile. These compounds are not easily taken up by the roots of plants and vegetation because they are strongly bound to the soil (Agency for Toxic Substances and Disease Registry [ATSDR] 2003a). Pyrethrins and pyrethroids are generally rapidly degraded by microorganisms in soil and water. They can also be degraded by sunlight at the surfaces of water, soil, or plants. Some of the more recently developed pyrethroids can persist in the environment for a few months before they are degraded. However, laboratory and field studies suggest that pyrethroids are degraded faster in soils than many of the organochlorine, organophosphorus, and carbamate pesticides (ATSDR 2003a). Given the ULV application rates, infrequency of aerial application, conformance to label application instructions, and the rapid degradation of these compounds, impacts on soils from the use of pyrethrin and pyrethroid would be short term and negligible.

Malathion Products

Malathion has a wide range of measured soil half-lives, which roughly correlate with soil microbial activity and moisture. On moist, microbially active soils, malathion would degrade faster than on dryer, less microbially active soils. Aerobic soil metabolism data indicate that half-life values for malathion range from several hours to nearly 11 days (USEPA 2009a). Given the relatively moist soils in the JBLE area, the persistence of malathion products would be on the shorter end of the half-life range. Given the ULV application rates, infrequency of aerial application, conformance to label application instructions, and the rapid degradation of malathion products, impacts on soils from the use of malathion would be short term and negligible.

Bti and B.s. Products

Mosquito larva control products such as Bti and B.s. are designed to be applied over water. These agents may gradually settle and become attached the bottom substrate of a water body. Both Bti and B.s. are naturally occurring soil bacteria. Bti is rapidly broken down by sunlight, acidic soil, and microbial activity (National Pesticide Information Center [NPIC] 2015). Pesticide products containing this B.s. remain active for one to four weeks after application (USEPA 2014). Given the natural occurrence of Bti and B.s., conformance to label application instructions, and the rapid

degradation of these products, impacts on soils from the use of Bti and B.s. would be short term and negligible.

Common Reed Treatment

Under the Preferred Alternative, common reed control would be accomplished through aerial application of USEPA-registered herbicides containing imazapyr or glyphosate as the active ingredient, or other herbicides approved for vegetation control via aerial platforms. Imazapyr is nonvolatile, persistent, and mobile in soil with a half-life of a minimum of 313 days with some reports suggesting a half-life of 8.1 years (USDA 2011). However, direct application into surface water allows imazapyr to degrade quickly via photolysis with a half-life of three to five days in surface water (USEPA 2006a). Because of the soil activity of imazapyr, application near desired trees or vegetation or in forested areas would not occur. Use of imazapyr may result in minor, long-term adverse impacts on soils in upland areas, but it would be expected to have negligible, short-term impacts on soils in wetland areas.

Glyphosate biodegrades via microbial activity into naturally occurring elements, first to aminomethylphosphonic acid (AMPA, a weak organic acid) then to CO_2, with no residual soil activity, and its persistence and mobility in soils is low (USEPA 2020a). In soils incubated under aerobic conditions, the half-life of glyphosate ranges from 1.8 to 109 days and in aerobic water-sediment systems it is 14 to 518 days. However, anaerobic conditions, like those found in wetland areas, limit the metabolism of glyphosate and result in a half-life 199 to 208 days in anaerobic water-sediment systems (USEPA 2015). Use of glyphosate may result in minor, short-term to long-term, adverse impacts on soils.

For all herbicide applications, in the short term after application, soils may be more susceptible to erosion after the common reed has died but before other vegetation has been established. Follow-up monitoring and native planting would be carried out to prevent erosion and sedimentation in accordance with each Base's IPMP (JBLE – Eustis 2020; JBLE – Langley 2021a) and INRMP (JBLE – Eustis 2019; JBLE – Langley 2019). There would be short-term, negligible adverse impacts on soils from potential erosion. Aerial application of pesticides would result in no contact to the soil during the application process; therefore, there would be no impact from soil compaction or erosion as there would be with ground application methods.

Surfactants used in aerial applications of pesticides have the potential to affect the half-life and degradation of pesticides in soil. Care would be used to ensure that adjuvants are only added in accordance with the pesticide label and only when appropriate for the pest management task. Although the potential exists for surfactants to affect the environmental fate of pesticides in soil, any potential effects would be unlikely under normal conditions because of the relatively low concentration of surfactants in the soil/water matrix (Bakke 2007). Aerial applications of the pesticides proposed for use typically do not require the use of surfactants/adjuvants.

Other USEPA-registered pesticides could be used for the aerial control of common reed and mosquitoes. These pesticides would be used infrequently, approved for aerial application, applied in accordance with the label instructions, utilize only surfactants/adjuvants that are allowed under the pesticide label, and applied conservatively using detailed maps and GPS locaters. Pesticides would be applied in accordance with requirements specified in VPDES permits. These requirements ensure that there would be no significant impact on soils.

3.4.2.2 Alternative 2

Impacts on geological resources would be similar to, but less than, those described for the Preferred Alternative since only one aerial application for mosquitoes and one aerial application for common reed would occur every other year under Alternative 2.

3.4.2.3 Cumulative Effects

The Preferred Alternative would not result in significant long-term cumulative impacts on geological resources. Implementation of the Preferred Alternative would have no impact on the physiography, topography, or geology of the region. Potential cumulative environmental impacts on soils from the Preferred Alternative are negligible to minor on their own and when added to impacts on soils from the other reasonably foreseeable future actions identified in **Appendix B.**

3.4.2.4 No Action Alternative

Under the No Action Alternative, there would be no aerial application of pesticides to control mosquitoes and common reed. No changes would occur to geological resources under this alternative as current conditions at both JBLE – Eustis and JBLE – Langley would remain the same.

3.5 FLOODPLAINS

3.5.1 Existing Conditions

Floodplains are areas of low, level ground present along rivers, stream channels, or coastal waters that are subject to periodic or infrequent inundation due to rain or melting snow. Floodplain ecosystem functions include natural moderation of floods, flood storage and conveyance, groundwater recharge, nutrient cycling, water quality maintenance, and provision of habitat for a diversity of plants and animals. Flood potential is evaluated by the Federal Emergency Management Agency, which defines the 100-year floodplain as an area within which there is a 1 percent chance of inundation by a flood event in a given year, or a flood event in the area once every 100 years. The risk of flooding is influenced by local topography, the frequencies of precipitation events, the size of the watershed above the floodplain, and upstream development.

Federal, state, and local regulations often limit floodplain development to passive uses, such as recreation and conservation activities, to reduce the risks to human health and safety. EO 11988, *Floodplain Management,* provides guidelines that agencies should carry out as part of their decision making on projects that have potential impacts on or within the floodplain. This EO requires federal agencies avoid, to the extent possible, the long- and short-term, adverse impacts associated with the occupancy and modification of floodplains and to avoid direct and indirect support of floodplain development wherever there is a practicable alternative. EO 13690, *Establishing a Flood Risk Management Standard and Process for Further Soliciting and Considering Stakeholder Input,* signed in January 2015, established a Federal Flood Risk Management Standard and a process for further soliciting and considering stakeholder input.

Most of JBLE – Eustis lies within the 100-year floodplain (**Figure 3-1**). The elevation of the 100-year floodplain is 8.3 feet above mean sea level. All of Mulberry Island is within the 100-year floodplain (JBLE – Eustis 2019).

Most of JBLE – Langley lies within the 100-year floodplain (**Figure 3-2**). The base occasionally has severe flooding with some strong nor'easters and hurricanes. Flood-prone areas on the base include any land below 9 feet mean sea level along the base's perimeter and adjacent to waterbodies (JBLE 2016b).

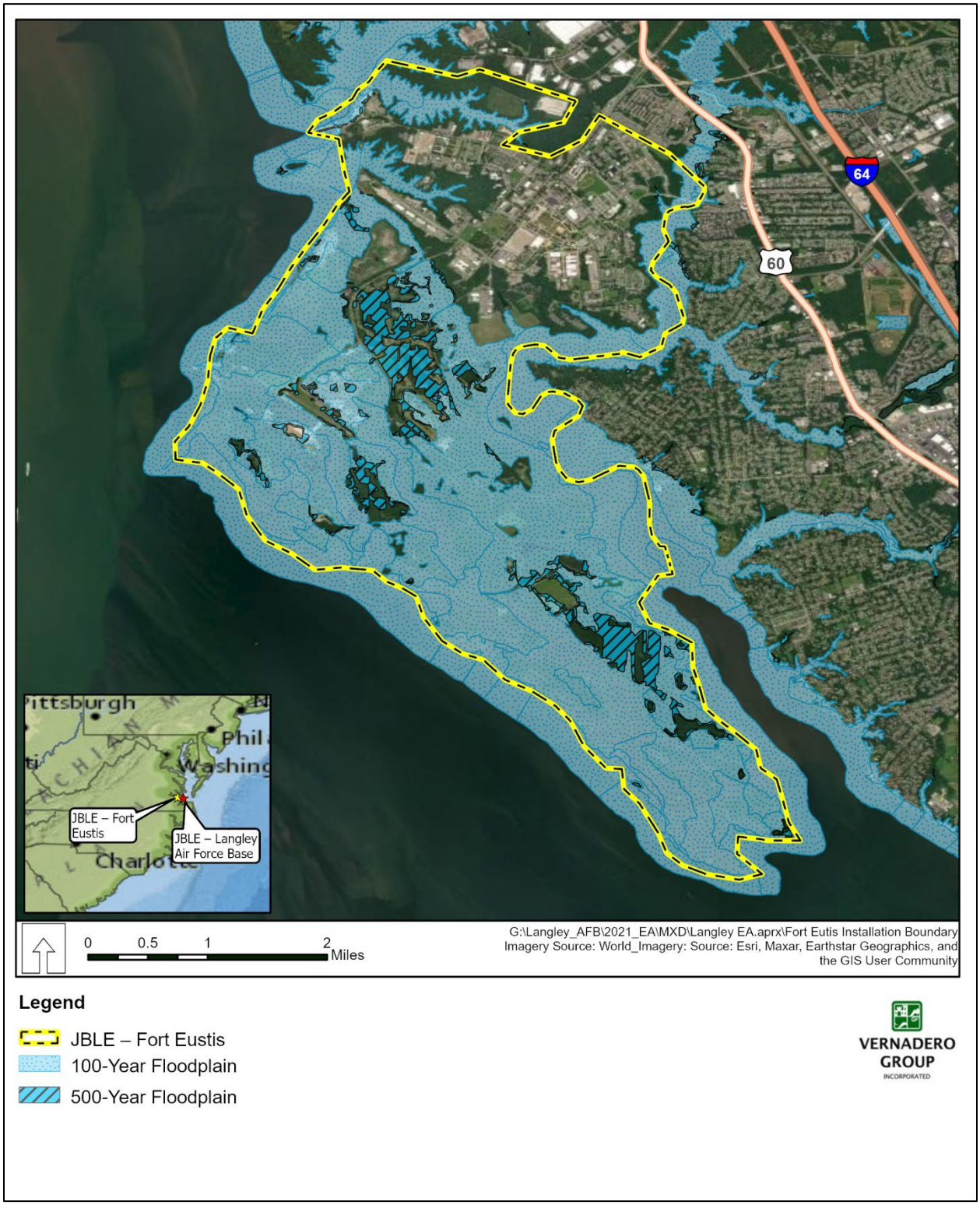


Figure 3-1. Floodplains at Joint Base Langley Eustis – Eustis

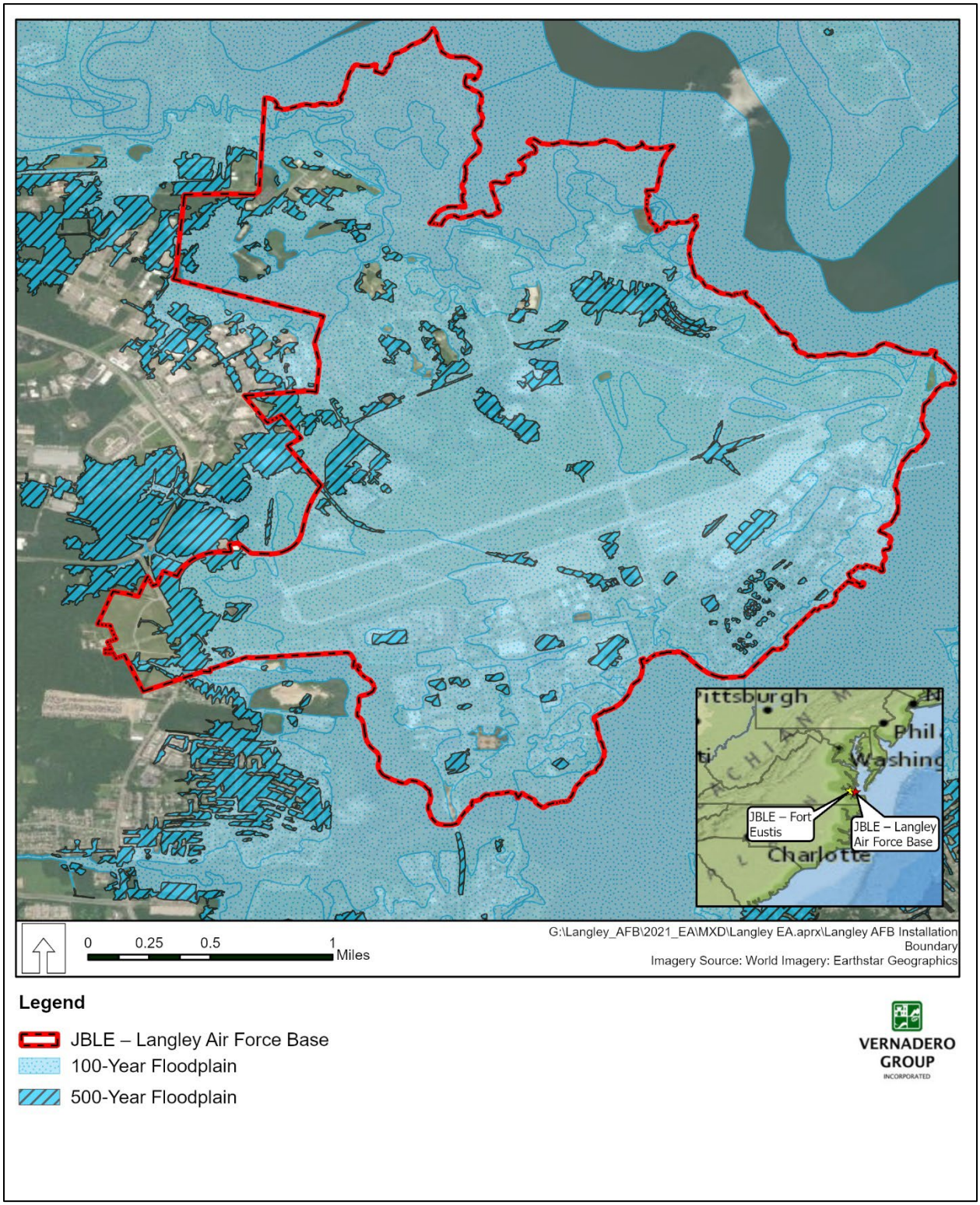


Figure 3-2. Floodplains at Joint Base Langley Eustis – Langley

3.5.2 Environmental Consequences

Evaluation criteria for potential impacts on floodplains are based on existence of floodplains and associated regulations. Adverse impacts on floodplains would occur if the proposed or alternative actions endanger public health by creating or worsening hazard conditions, or violating established laws or regulations adopted to protect floodplains.

3.5.2.1 Preferred Alternative

There would be no impact on floodplain hazard conditions or violation of laws or regulations to protect floodplains from the aerial application of insecticides or herbicides under the Proposed Action.

3.5.2.2 Alternative 2

There would be no impact on floodplain hazard conditions or violation of laws or regulations to protect floodplains from the aerial application of pesticides under Alternative 2.

3.5.2.3 Cumulative Effects

Potential cumulative environmental impacts on floodplains from the Preferred Alternative are negligible to minor on their own and when added to impacts on water quality from the other reasonably foreseeable future actions identified in **Appendix B.**

3.5.2.4 No Action Alternative

Under the No Action Alternative, there would be no aerial application of pesticides to control mosquitoes and common reed. The only change to floodplains under this alternative would be that common reed would continue to prevent marsh retreat, which makes the installation more susceptible to flooding.

3.6 COASTAL ZONE MANAGEMENT

The coastal zone refers to coastal waters and the adjacent shorelines, including islands, transition and intertidal areas, salt marshes, wetlands, and beaches, extending to the outer limit of state title and ownership under the Submerged Lands Act (i.e., 3 nautical miles). NOAA oversees the Coastal Zone Management Program for the federal government. Coastal areas in the US receive special land use protections through the federal Coastal Zone Management Program. Authorized by the CZMA of 1972 (16 USC § 1451, et seq., as amended), this federal program addresses the coastal issues of the US through a voluntary partnership among the federal government and the coastal and Great Lakes states and territories. The program's purpose is to protect, restore, and responsibly develop the nation's diverse coastal communities and resources.

Section 307 of the CZMA provides states with the authority to offer input in federal agency decision making for activities potentially affecting coastal uses or resources. This federal consistency provision provides authority to the states that would not otherwise be authorized through other federal programs. Section 307 of the CZMA requires that federal actions that have reasonably foreseeable effects on any coastal use or natural resources of the coastal zone be consistent with the enforceable policies of a state's approved coastal management program. Federal agency activities must be consistent with the state's coastal management program to the maximum extent practicable. A CZMA Consistency Determination is provided in **Appendix C.**

All of JBLE – Eustis and all of JBLE – Langley are within Virginia's coastal zone, as defined by the Virginia Coastal Zone Management Program (CZMP). Virginia's CZMP is federally approved and activities on the base with the potential to affect coastal resources must comply to the

maximum extent practicable with the enforceable policies of the CZMP. JBLE is required by the federal CZMA to follow the Chesapeake Bay Preservation Act (Virginia Code §10.1-2100) to the maximum extent practicable. Both sites established 100-foot upland buffers at tidal creeks, streams, and wetlands, in conjunction with the 100-foot buffers established by the City of Hampton. The objective is to maintain these with native vegetation to the greatest extent practical (JBLE – Eustis 2019; JBLE – Langley 2019).

3.6.1 Environmental Consequences

Impacts would be considered significant if alternative actions are inconsistent with the state's CZMP.

3.6.1.1 Preferred Alternative

As stated above, federal agency activities must be consistent with the state's CZMP to the maximum extent practicable. The Preferred Alternative is consistent to the maximum extent practicable with the enforceable policies of the Virginia Coastal Resources Management Program. The CZMA Consistency Determination provided in **Appendix C** discusses the potential impacts on the coastal zone from the Preferred Alternative.

3.6.1.2 Alternative 2

Alternative 2 is consistent to the maximum extent practicable with the enforceable policies of the Virginia Coastal Resources Management Program.

3.6.1.3 Cumulative Effects

The Preferred Alternative, in addition to reasonably foreseeable future actions identified in **Appendix B,** is not anticipated to result in cumulative impacts on the coastal zone. All proposed and reasonably foreseeable future actions must be consistent with the state's CZMP to the maximum extent practicable.

3.6.1.4 No Action Alternative

Under the No Action Alternative, aerial application of pesticides to control mosquitoes and common reed would not occur. Common reed, an invasive species on JBLE, would continue to prevent marsh retreat, which makes the installation more susceptible to flooding.

3.7 WATER RESOURCES

3.7.1 Existing Conditions

Water resources are natural and human-made sources of water that are available for use by, and for the benefit of, humans and the environment. Water resources include groundwater, surface water, wetlands, and stormwater. Evaluation of water resources examines the quantity and quality of the resource and its demand for various purposes and ensures compliance with the CWA.

3.7.1.1 Surface Water

Surface water includes natural, modified, and human-made water confinement and conveyance features above groundwater that may or may not have a defined channel and discernable water flow. These features are generally classified as streams, springs, wetlands, natural and artificial impoundments (e.g., ponds, lakes) and constructed drainage canals and ditches.

The CWA regulates discharges of pollutants into surface waters of the US. Jurisdictional waters, including surface water resources as defined in 33 CFR 328.3, are regulated under § 401 and § 404 of the CWA and § 10 of the Rivers and Harbors Act. Human-made features not directly associated with a natural drainage, such as stormwater control features to convey, treat, infiltrate, or store runoff constructed in upland or nonjurisdictional waters, are generally not considered jurisdictional waters. The CWA establishes federal limits through the VAG87/VPDES permit process for regulating point (end of pipe) and nonpoint (e.g., stormwater) discharges of pollutants into the waters of the US and quality standards for surface waters. The term "waters of the US" has a broad meaning under the CWA and incorporates deep-water aquatic habitats and special aquatic habitats (including wetlands). Wetlands are defined in **Section 3.7.1.3**, and stormwater is defined in **Section 3.7.1.4.**

JBLE – Eustis has an estimated 21.6 miles of open tidal shoreline along the James River, Warwick River, and Skiffes Creek. In addition, there are several miles of shoreline within installation boundaries along small tidal creeks. The named waterways on or bordering JBLE – Eustis are Bailey Creek, Skiffes Creek, Milstead Creek, Island Creek, Butlers Gut, Blows Creek, Morrisons Creek, Fort Creek, Nellis Creek, and Jail Creek. Bailey Creek is located on the northern boundary of JBLE – Eustis and is a tidally influenced tributary of Skiffes Creek. It flows in a westerly direction through a low wetlands area and empties into Skiffes Creek, which flows into the James River. Milstead Creek, Island Creek, and Butlers Gut connect the James and Warwick rivers. A canal connected the creeks early this century to create a thoroughfare between the rivers. Jail Creek drains the southern tip of Mulberry Island and discharges into the James River at its confluence with the Warwick River. Morrisons Creek, Blows Creek, and Fort Creek drain the western portion of Mulberry Island and discharge into the James River.

There are several unnamed tributaries as well as six golf course ponds and three human-made ponds (Eustis Lake, Browns Lake, and Memorial Pond) that are environmental restoration program sites with land use controls. The Warwick River defines the eastern boundary of the installation and flows southward into the James River. JBLE – Eustis has 353 acres of tidal surface waters, 118 acres in the cantonment area, and 235 acres on Mulberry Island. Freshwater surface waters comprise approximately 177 acres (JBLE – Eustis 2019). No drinking water intake systems exist on JBLE – Eustis (JBLE – Eustis 2012). JBLE – Eustis water features are depicted on **Figure 3-3**.

In 2015, VDEQ notified JBLE – Eustis that, as part of maintaining its Municipal Separate Storm Sewer System (MS4) Program Plan, the installation is required to develop Total Maximum Daily Load (TMDL) Action Plans for the Warwick River and Skiffes Creek to address bacteria impairment in those waterbodies (JBLE – Eustis 2021a). Section I.C of the JBLE–Eustis MS4 permit (No. VAR040035, effective 1 July 2013) requires the base to prepare a Chesapeake Bay TMDL Action Plan that demonstrates future plans that meet required nutrient and suspended solids reductions (JBLE – Eustis 2021b).

JBLE – Langley is on the lower Virginia Peninsula, between the Northwest Branch and Southwest Branch of the Back River, a tributary of the Chesapeake Bay. The land occupied by the installation lies entirely within the Lynnhaven-Poquoson watershed. The surface water surrounding JBLE – Langley is brackish to saline and occurs in an estuarine setting. The Back River, Brick Kiln Creek, New Market Creek, and Tabbs Creek provide drainage for the area. Brick Kiln Creek and the Northwest Branch of Back River are listed on the 2014 Impaired Waters list. These streams are considered impaired for recreation and shellfish consumption due to bacterial contamination (JBLE – Langley 2019). Section I.D of the JBLE – Langley MS4 permit (No. VAR040140, effective 1 November 2018) requires the base to prepare a Chesapeake Bay TMDL Action Plan that

Figure 3-3. Surface Water Features at Joint Base Langley Eustis – Eustis

demonstrates future plans that meet the required nutrient and suspended solids reductions (JBLE – Langley 2021c). No drinking water intake systems exist on JBLE – Langley. JBLE – Langley surface water features are depicted in **Figure 3-4.**

3.7.1.2 Groundwater

Groundwater is water that exists in the saturated zone beneath the Earth's surface that collects and flows through aquifers. Groundwater is an essential resource that functions to recharge surface water and is used for drinking, irrigation, and industrial purposes. Groundwater typically can be described in terms of depth from the surface, aquifer or well capacity, water quality, recharge rate, and surrounding geologic formations.

Groundwater quality and quantity are regulated under several federal and state programs. Groundwater resources are regulated on the federal level by the USEPA under the SDWA. The federal Underground Injection Control regulations, authorized under the SDWA, require a permit for the discharge or disposal of fluids into a well. The USEPA's Sole Source Aquifer Program, authorized by the SDWA, further protects aquifers that are designated as critical to water supply and makes any proposed federal or federal financially assisted project that has the potential to contaminate the aquifer subject to USEPA review. The Virginia Department of Health (VDH) Office of Drinking Water reviews projects for the potential to impact public drinking water sources (groundwater wells and surface water intakes) and sets standards for groundwater to protect human health.

The hydrogeologic framework in the JBLE – Eustis area consists of a system of seven aquifers separated by intervening semiconfining units and, like JBLE – Langley, includes the Yorktown-Eastover Aquifer and the Chickahominy-Piney Point Aquifer. The upper portion of the Columbia Aquifer comprises the water table (Meng and Harsh 1988). The Yorktown unit separates the Columbia Aquifer from the underlying Yorktown-Eastover Aquifer. The Yorktown unit occurs at approximately 30 to 40 feet below the ground surface near Eustis Lake and is about 30 feet thick. The top of the Yorktown-Eastover Aquifer is approximately 40 feet below the ground surface. The thickness of the aquifer ranges from 100 to 200 feet on JBLE – Eustis. The Chickahominy-Piney Point Aquifer ranges in thickness from 50 to 100 feet. The average thickness of the Aquia Aquifer is 100 feet or more. The Aquia Aquifer is capable of supplying large quantities of water that are suitable for most uses, and the aquifer serves as a water source for many light industrial, small municipal, and domestic users on the Virginia Peninsula. The Potomac group includes the six lowermost hydrogeologic units of the Virginia Coastal Plain and consists of three aquifers and three confining units (Meng and Harsh 1988). Several groundwater withdrawal wells exist within JBLE – Eustis. These wells contain nonpotable water used for various purposes, such as emergency situations. No aerial application of pesticides occurs near the groundwater well locations (JBLE – Eustis 2012).

JBLE – Langley does not conform to the regional groundwater model, because of the extraordinary circumstances of the Chesapeake Bay Impact Crater (CBIC) during the depositional history of the Lower Virginia Peninsula (JBLE – Langley 2019). The outer rim of the crater appears to act as a boundary and a mixing zone separating groundwater of high salinity inside the outer rim from fresher, lower-salinity water outside the outer rim. The result of the impact was the local removal of five water-bearing units beneath the area now occupied by JBLE – Langley and their replacement by impact-generated crater fill sediments (JBLE – Langley 2019).

Figure 3-4. Surface Water Features at Joint Base Langley Eustis – Langley

Beneath JBLE – Langley, the hydrogeologic units include, in descending order: the Water Table Aquifer, the Yorktown Confining Unit, the Yorktown-Eastover Aquifer, the Eastover-Calvert Confining Unit, and the Chickahominy-Piney Point Aquifer (Powars and Bruce 1999). Due to the loss of aquifers associated with the CBIC, the groundwater beneath JBLE – Langley is not a practical source of irrigation or potable water. An investigation based on available regional and JBLE – Langley-specific well data (JBLE – Langley 2019) predicted that the water table aquifer could yield up to 35 gallons per minute (GPM). This prediction was confirmed in 2004 when an exploratory production water well drilled at the JBLE – Langley golf course sustained a yield of 30 GPM. However, the water evacuated during the pump test proved too brackish to be used untreated for either irrigation or potable purposes (JBLE – Langley 2019).

3.7.1.3 Wetlands

The USACE defines wetlands as “those areas that are inundated or saturated with ground or surface water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted to life in saturated soil conditions” (Environmental Laboratory 1987). Wetlands generally include swamps, marshes, bogs, and similar areas (33 CFR 328).

Wetlands are an important natural system and habitat because of the diverse biologic and hydrologic functions they perform. These functions include water quality improvement, groundwater recharge and discharge, pollution mitigation, nutrient cycling, wildlife habitat detention, and erosion protection. Wetlands are protected as a subset of the “the waters of the US” under Section 404 of the CWA. The term “waters of the US” has a broad meaning under the CWA and besides navigable waters, incorporates deep-water aquatic habitats and wetlands. Section 404(b)(1) of the CWA directs the USEPA to develop guidelines for the placement of dredged or fill material (33 USC § 1341[b]). These guidelines developed by USEPA are known as the “404(b)(1) guidelines” and are located at 40 CFR 230. The stated purpose of the guidelines is to “restore and maintain the chemical, physical, and biological integrity of waters of the US through the control of discharges of dredged or fill material” (40 CFR 230.1[a]). Federal protection of wetlands is promulgated under EO 11990, the purpose of which is to reduce adverse impacts associated with the destruction or modification of wetlands. This order directs federal agencies to provide leadership in minimizing the destruction, loss, or degradation of wetlands. In Virginia, activities occurring within a wetland are regulated by both the VDEQ and the USACE.

Wetlands cover approximately 3,600 acres on JBLE – Eustis. Approximately, 2,022 acres constitute wetlands delineated by the USACE, Norfolk District, with the remaining being estimated by National Wetland Inventory data (JBLE – Eustis 2019). The plants that comprise the majority of the tidal wetlands include black needlerush (*Juncus roemerianus*) and saltmarsh cordgrass (*Spartina alterniflora*). On slightly higher elevations, tidal wetland vegetation consists of big cordgrass (*Spartina cynosuroides*), saltmeadow hay (*Spartina patens*), narrowleaf cattail (*Typha angustifolia*), and groundsel bush (*Baccharis halimifolia*). Forested wetlands on JBLE – Eustis include overstory species such as bald cypress (*Taxodium distichum*) and black gum (*Nyssa sylvatica*), with understories of species such as blueberry (*Vaccinium* spp.) and wax myrtle (*Morella cerifera*). Fresh tidal wetlands consist primarily of pickerelweed (*Pontederia cordata*) and arrow arum (*Pentandra virginica*) (JBLE – Eustis 2019). JBLE – Eustis also contains approximately 80 acres of ephemeral/vernal pools. Ephemeral/vernal pools are seasonal, freshwater wetlands that hold water for a portion of the year, usually in a contained basin with no water outlet, and support the breeding activity of amphibian and macroinvertebrates, but do not contain fish populations (JBLE – Eustis 2019).

The latest wetlands delineation for JBLE – Langley was accomplished by USACE in February 2013. The delineation classified JBLE – Langley's wetlands following the Cowardin classification system (Cowardin et al. 1979). Jurisdictional wetlands are those wetlands subject to regulatory protection under Section 404 of the CWA. Wetlands at JBLE – Langley, classified as jurisdictional by the USACE, encompass approximately 652 acres, of which 462 acres are nonfreshwater estuarine wetlands. Most of the wetlands are associated with Tabbs Creek, Tide Mill Creek, and their tributaries. Established forested wetlands were identified in the northwest section of the base, and isolated palustrine emergent wetlands were identified throughout the flightline area. In 2001, several distinct wetland communities were identified within the confines of the base: Big Cordgrass Community, Brackish Water Mixed Community, Cattail Community, Phragmites Community, Isolated Freshwater Emergent Communities, Saltbush Community, Saltmarsh Cordgrass Community, Saltmeadow Community, and Forested Community (JBLE – Langley 2019).

3.7.1.4 Stormwater Drainage

Stormwater is surface water generated by precipitation events that may percolate into permeable surficial sediments or flow across the top of impervious or saturated surficial areas, a condition known as runoff. Stormwater is an important component of surface water systems because of its potential to introduce sediments and other contaminants that could degrade surface waters, such as lakes, rivers, or streams. Proper management of stormwater flows, which can be intensified by high proportions of impervious surfaces associated with buildings, roads, and parking lots, is important to the management of surface water quality and natural flow characteristics.

The USEPA delegated authority to VDEQ to administer its own VAG87/VPDES permitting program (the VPDES) for wastewater and stormwater discharge associated with industrial activity, construction activity, and MS4 activity.

JBLE – Eustis is authorized to discharge stormwater from the installation in accordance with an industrial stormwater permit (No. VA0025216) and an MS4 permit (No. VAR040035), both issued by the VDEQ. JBLE – Eustis monitors seven outfalls for contaminants at Eustis Lake and Browns Lake as well as other outfalls that discharge into the James and Warwick rivers. JBLE – Eustis has a Stormwater Pollution Prevention Plan (SWPPP) for management of stormwater runoff and pollution prevention. It identifies the locations of buildings in which regulated and nonregulated industrial activities occur, provides locations for all 144 stormwater outfalls, and describes local drainage patterns. Approximately 32 miles of stormwater infrastructure is available to collect and transport stormwater runoff from the cantonment area into nearby waterways (JBLE – Eustis 2019).

JBLE – Eustis developed an implementation schedule for addressing bacteria impairments in Warwick River and Skiffes Creek as part of the Warwick River and Skiffes Creek Bacteria TMDL Action Plan referenced above. Additionally, the JBLE – Eustis developed a Chesapeake Bay TMDL Action Plan to describe future plans that meet required nutrient and suspended solids reductions.

JBLE – Langley is serviced by a stormwater drainage system of pipes, box culverts, and open ditches that discharges to the Back River and its tributaries: Tide Mill Creek, Brick Kiln Creek, and Tabbs Creek. Surface water also drains directly to these waterbodies. Because of the flat relief of the area, standing water accumulates during heavy storm events. JBLE – Langley has 24 permitted stormwater outfalls under the General Industrial Stormwater Permit VAR052285. JBLE – Langley coordinates with VDEQ if a permit modification is needed to implement any proposed base project. The 633 Civil Engineer Squadron/Environmental maintains a SWPPP, which

addresses pollution control measures and management strategies for its industrial-related (i.e., aircraft) stormwater discharges. This plan is a requirement under the VPDES stormwater discharge permit and requires the assessment of stormwater outfalls (with current monitoring requirements), outdoor material storage and usage areas, and existing materials management practices and an annual erosion and sediment control survey (JBLE – Langley 2019).

Under the JBLE – Langley MS4 Permit No. VAR040140, the VDEQ assigned JBLE – Langley a reduction amount of 6.21 percent for bacteria, which includes fecal coliform, *Enterococcus*, and *E. coli* (JBLE – Langley 2019). According to the 2017 VDEQ TMDL report, fecal bacteria originate from multiple sources, including natural and anthropogenic sources in the Back River watershed, with wildlife contributing about 50 percent of the fecal bacteria. Part II (TMDL Special Conditions) of the MS4 permit requires the base to meet the Chesapeake Bay TMDL requirements by reducing total nitrogen, total phosphorus, and total suspended solids loads by 40 percent of the Chesapeake Bay L2 scoping reductions by 30 June 2023 (JBLE – Langley 2021c).

Virginia Code specifies special regulatory requirements regarding discharges of pesticides into surface waters. Pesticide applications that take place at both installations are always performed in accordance with the VPDES General Permit No. VAG87 as specified in 9VAC25-800. Additionally, at JBLE – Eustis compliance with the VPDES General Permit is met by all applicators with adherence to the Fort Eustis Pesticide Discharge Management Plan.

3.7.2 Environmental Consequences

Evaluation criteria for potential impacts on water resources are based on water availability, quality, and use; existence of floodplains; and associated regulations. Adverse impacts on water resources would occur if the proposed or alternative actions (1) reduce water availability or supply to existing users, (2) overdraft groundwater basins, (3) exceed safe annual yield of water supply sources, (4) adversely affect water quality, (5) endanger public health by creating or worsening health hazard conditions, or (6) violate established laws or regulations adopted to protect water resources.

3.7.2.1 Preferred Alternative

Mosquito Treatment

Under the Preferred Alternative, aerial application of pesticides to control mosquitoes would take place at JBLE – Eustis and JBLE – Langley. Only pesticides registered with the USEPA and labeled for use in aerial applications for mosquito control would be used at JBLE. Naled-based pesticides have been utilized for adult mosquito control in the past; however, other pesticides such as pyrethrins, neo-pyrethrins, and formulations of malathion may be used. The aerial application of pesticides for adult mosquito control would not be applied directly to surface waters. Additionally, control of mosquito larvae via aerial platforms could include Bti and other mosquito larva control products. These products are designed to be applied over water.

Naled Products

Naled and its degradate DDVP degrade rapidly in the environment, and both have a dissipation half-life of less than two days (USEPA 2020a). In addition, the very small droplets from the ULV application allow naled to rapidly diffuse into the atmosphere (Hanson et al. 2018). Within water, the rate of degradation is further enhanced by sunlight and temperature (Jones et al. 2020). This rapid degradation means that naled and DDVP would not last long enough to reach groundwater and would occur in surface water runoff but would diminish quickly after rain events (USEPA 2020a). Given the ULV application rates, infrequency of aerial application, conformance to label

application instructions, and the rapid degradation of the pesticide, impacts on water resources would be short term and negligible.

Pyrethrin/Pyrethroid Products

Because of the low mobility of pyrethrins and pyrethroids in soil surfaces, these compounds are rarely detected at elevated levels in drinking water or groundwater, with the exception of spills and shallow wells near agricultural areas (ATSDR 2003a). Pyrethrins and pyrethroids are also generally rapidly degraded by microorganisms in soil and water. They can also be degraded by sunlight at the surfaces of water, soil, or plants (ATSDR 2003a). Given the ULV application rates, infrequency of aerial application, conformance to label application instructions, and the rapid degradation of the pesticide, impacts on water resources would be short term and negligible.

Malathion Products

Although malathion has some mobility characteristics which suggest it may leach into groundwater, its short soil persistence in conjunction with its relatively quick degradation reduces this potential exposure (USEPA 2009a). In water, malathion has a relatively short half-life of between 2 and 18 days, depending on conditions like temperature and pH (NPIC 2010). Given the ULV application rates, infrequency of aerial application, conformance to label application instructions, and the rapid degradation of malathion, impacts on water resources from the use of malathion would be short term and negligible.

Bti and B.s. Products

Mosquito larva control products such as Bti and B.s. are designed to be applied over water but will eventually settle into the substrate of the water body. Bti is rapidly broken down by sunlight and, in water, Bti does not readily reproduce (NPIC 2015). Pesticide products containing B.s. remain active for one to four weeks after application (USEPA 2014). These microbial pesticides do not leach into ground water. Given the natural occurrence of Bti and B.s., conformance to label application instructions, and the rapid degradation of these products, impacts on water resources from the use of Bti and B.s. would be short term and negligible.

Common Reed Treatment

Typically, herbicides containing imazapyr or glyphosate as the active ingredient would be used for the control of common reed. Imazapyr rapidly degrades in open water and is, therefore, ideal for aquatic environments. There would be a negligible short-term adverse impact on surface waters from application of imazapyr-containing herbicides. In terms of groundwater impacts, because imazapyr is persistent and mobile in soils, it has the potential to leach into groundwater (DAF 2013). For this reason, imazapyr is not recommended for use in forested areas and would not be applied close to groundwater wells. Imazapyr is effective at very low rates, so the chemical load on the environment would be minimized (USACE 2005). Additionally, pesticides for common reed control would be used infrequently (typically once a year) and within the backdrop of an IPMP that incorporates multiple approaches to the control of common reed. Herbicides would not be directly applied to areas of open water where common reed would not be present. Due to their rapid degradation, the use of imazapyr may result in minor, short-term to long-term adverse impacts on groundwater. These impacts are minimized by infrequent application, application in accordance with label instructions, and application in accordance with VPDES permits.

Glyphosate biodegrades via microbial activity into naturally occurring elements with no residual soil activity and its persistence and mobility in soils is low (USEPA 2020a). Glyphosate is strongly adsorbed onto soil particles, with low potential to move through soil to contaminate groundwater (DAF 2013). Impacts on groundwater from aerial application of glyphosate-containing pesticides

would be short term and negligible. When glyphosate applications come into contact with surface water from runoff, glyphosate is removed by binding to sediment and is then degraded by microbes into natural substances such as CO_2, with a half-life of less than seven days (DAF 2013). These natural substances are not anticipated to be in large enough quantities to result in negative impacts on surface water quality. Given the infrequency of glyphosate application and its use in accordance with label instructions and VPDES permits, impacts on surface waters would be short term and minor for this herbicide.

Surfactants used in aerial applications of pesticides have the potential to affect the half-life and degradation of pesticides. Care would be used to ensure that surfactants are only added in accordance with the pesticide label and only when appropriate for the pest management task. As stated above, the potential exists for surfactants to affect the environmental fate of pesticides; however, any potential effects would be unlikely under normal conditions because of the relatively low concentration of surfactants in the soil/water matrix (Bakke 2007).

Other USEPA-registered pesticides could be used for the aerial control of common reed and mosquitoes. These pesticides would be used infrequently, approved for aerial application, applied in accordance with the label instructions, utilize only surfactants/adjuvants that are allowed under the pesticide label, and be applied conservatively using detailed maps and GPS locaters. Any required permits would be acquired, such as VPDES permits or updates to existing VPDES permits. This approach would ensure that there would be no significant impact on water resources.

3.7.2.2 Alternative 2

Adverse impacts on water resources would be similar to, but less than, those described for the Preferred Alternative since only one aerial application for mosquitoes and one aerial application for common reed would occur every other year under Alternative 2.

3.7.2.3 Cumulative Effects

Potential cumulative environmental impacts on water resources from the Preferred Alternative are negligible to minor on their own and when added to impacts on water resources from the other reasonably foreseeable future actions identified in **Appendix B.**

Potential cumulative impacts from the application of pesticides on water resources at a regional level are monitored by the VDEQ. By complying with all USEPA, VDEQ, VDH, and Chesapeake Bay Preservation Act regulations and guidance associated with water resources, JBLE ensures that cumulative impacts are taken into consideration when proposing pesticide applications. Additionally, JBLE – Eustis and JBLE – Langley each have IPMPs (JBLE – Eustis 2020; JBLE – Langley 2021a) to guide the management of nuisance species in which chemical application of pesticides is one of many strategies used for the control of those species.

3.7.2.4 No Action Alternative

Under the No Action Alternative, there would be no aerial application of pesticides to control mosquitoes and common reed. The only change to water resources under this alternative would be that common reed would continue to prevent marsh retreat, which makes the installation more susceptible to flooding.

3.8 BIOLOGICAL RESOURCES

Biological resources include native plants and animals, sensitive and protected floral and faunal species, and the habitats, such as wetlands, forests, early successional habitats, and

shorelines/riparian corridors, in which they exist. Habitat can be defined as the resources and conditions in an area that support a defined suite of organisms. The following is a description of the primary federal statutes that form the regulatory framework for the evaluation of the potential effect on biological resources.

3.8.1 Existing Conditions

3.8.1.1 Regional Biological Setting

Vegetation

On JBLE – Eustis, about 3,548 acres are composed of forests, 766 acres in the cantonment and 2,782 acres on Mulberry Island (JBLE – Eustis 2019). These forested areas primarily consist of loblolly pine (*Pinus taeda*) with a smaller amount of Virginia pine (*P. virginiana*) and shortleaf pine (*P. echinata*). Common hardwoods include species such as red maple (*Acer rubrum*), white oak (*Quercus alba*), northern red oak (*Q. rubra*), and yellow poplar (*Liriodendron tulipifera*). Species within the understory include pawpaw (*Asimina triloba*), American holly (*Ilex opaca*), flowering dogwood (*Cornus florida*), and wax myrtle. The improved areas primarily consist of grasses such as fescue (*Festuca* spp.) and Bermuda grass (*Cynodon dactylon*), as well as clover (*Trifolium* spp.), lespedeza (*Lespedeza* spp.), and orchard grass (*Dactylis glomeratus*). The aquatic habitats consist of the lower James and Warwick rivers, Eustis and Browns lakes, Skiffes Creek, Bailey Creek, and several unnamed tidal creeks and ponds (JBLE – Eustis 2019). Emergent wetland vegetation exists along the periphery of ponds and in some cases upland vegetation occurs along their borders. Some forested wetlands exist that may include obligate, facultative-wet and Facultative trees and other vegetation types. Most of the wetlands on JBLE – Eustis are tidal marshes, of which the largest communities are black needle rush, saltmarsh cordgrass, and an assemblage of big cordgrass, saltmeadow cordgrass, and cattails (JBLE – Eustis 2019). Common reed is commonly found in disturbed wet areas such as tidal and nontidal wetlands; brackish and freshwater marshes; along river, pond, and lake edges; and in ditches (Swearingen et al. 2010). Common reed grows vigorously, forming dense monotypic stands that push out native plants, including native reed species. On JBLE – Eustis, common reed is scattered throughout the base (see **Figure 2-3**).

Most of the Main Base consists of managed lawns and landscaped areas with ornamental trees and shrubs surrounding residential and industrial development (JBLE – Langley 2019). The two typical types of upland forests present on JBLE – Langley are maritime pine-hardwood forest and oak-pine forest. Maritime pine-hardwood forests are common on the Southeastern Coastal Plain along the estuarine marsh ecotone at lower elevations than other Coastal Plain upland communities. Oak-pine forests are uncommon on the base, occurring on hummocks in the Tabbs Creek area. The typical forested area on base consists of loblolly pine, southern red oak (*Quercus falcata*), white oak, willow oak (*Q. phellos*), black cherry (*Prunus serotina*), sweetgum (*Liquidambar styraciflua*), red maple, yellow poplar, and hickory (*Carya* spp.). Approximately 230 acres of JBLE – Langley, mainly located in the northwestern part of the base, is second-growth forest, dominated by either pine (*Pinus* spp.) or sweet gum, and is characteristic of old field succession and growth that has occurred since the establishment of the federal use of the lands.

Wildlife

Wildlife species on JBLE – Eustis include white-tailed deer (*Odocoileus virginianus*), raccoon (*Procyon lotor*), red fox (*Vulpes* and *V.v. fulva*), gray fox (*Urocyon cinereoargenteus*), eastern coyote (*Canis latrans*), Virginia opossum (*Didelphis marsupialis*), muskrat (*Ondatra zibethica*), northern river otter (*Lontra canadensi lataxinas*), and beaver (*Castor canadensis*), as well as

several species of squirrels, mice, rats, shrews, and voles. Several species of bats have also been documented, including the red bat (*Lasiurus borealis*), big brown bat (*Eptesicus fuscus*), evening bat (*Nycticeius humeralis*) and tricolored bat (*Perimyotis subflavus*). Two federally listed bat species have also been identified and are discussed in greater detail below in the "Threatened and Endangered Species" subsection. Bat surveys have been included as part of the JBLE – Eustis vertebrate fauna management. Surveys involving identification of bat species were performed in 1998, 2004, 2014, 2016, 2017, 2020, and 2021 providing fairly extensive insight regarding what occurs on the installation. A wide variety of reptiles have been documented on JBLE – Eustis, including snakes such as the northern watersnake (*Nerodia sipedon*), eastern ratsnake (*Pantherophis alleghaniensis*), and northern black racer (*Coluber constrictor*); turtles such as common snapping turtle (*Chelydra serpentina*), northern red-bellied cooter (*Pseudemys rubriventris*), eastern mud turtle (*Kinosternon subrubrum*), and woodland box turtle (*Terrapene carolina*); as well as several species of lizards, including the ground skink (*Scincella lateralis*) and the five-lined skink (*Plestiodon fasciatus*). Common amphibians include frogs and toads such as the green frog (*Lithobates clamitans*), Coastal Plains leopard frog (*L. sphenocephalus utricularius*), upland chorus frog (*Pseudacris feriarum*), Fowler's toad (*Anaxyrus fowleri*), and American toad (*A. americanus*).

Over 190 species of birds have been identified on JBLE – Eustis. The common species include mourning dove (*Zenaida macroura*), bobwhite quail (*Colinus virginianus*), woodpeckers (*Melanerpes* spp.), crows (*Corvus* spp.), American robin (*Turdus migratorius*), and northern mockingbird (*Mimus polyglottos*). Common waterfowl include Canada geese (*Branta canadensis*), wood duck, and mallard (*Anas platyrhynchos*). Other less common species identified include common loon (*Gavia immer*), clapper rail (*Rallus longirostris*), spotted sandpiper (*Actitis macularia*), bank swallow (*Riparia riparia*), eastern bluebird, and hermit thrush (*Catharus guttatus*). Bald eagles have occupied JBLE – Eustis for several years. Twelve known bald eagle nests are documented on the base, and two are relatively close to the northwest boundary (JBLE – Eustis 2019). **Figure 3-5** shows the current known locations of bald eagle nests.

Surveys of Eustis Lake, Skiffes Creek, Bailey Creek, Blows Creek, Milstead Creek, Island Creek, Warwick River, James River, and Brown's Lake have identified a wide variety of fish, shellfish, and aquatic crustaceans. Almost 40 species of fish were identified such as bay anchovy (*Anchoa mitchilli*), Atlantic menhaden (*Brevoortia tyrannus*), bluegill (*Lepomis macrochirus*), largemouth bass (*Micropterus salmoides*), striped bass (*Morone saxatilis*), mullet (*Mugil cephalus*), and catfish (*Ictalurus* spp.). The shellfish identified include eastern floater mussel (*Anodonta cataracta*) and eastern elliptio mussel (*Elliptio complanata*). The common crustaceans identified include three species of crayfish (*Cambarus bartonii, C. robustus,* and *Orconectes immunis*). In addition, both American oysters (*Crassostrea virginica*) and blue crab (*Callinectes sapidus*) are common in the James River and its tributaries.

While there is no Essential Fish Habitat (EFH) within the proposed treatment areas, EFH is located in the James River, which is immediately adjacent to the ROI. Within the James River, the New England/Mid-Atlantic Fishery Management Council identified EFH for Atlantic herring (*Clupea harengus*) and bluefish (*Pomatomus saltatrix*); the Northeast Multispecies Fisheries Management Plan (FMP) identified EFH for red hake (*Urophycis chuss*) and windowpane flounder (*Scophthalmus aquosus*); the Northeast Skate FMP identified EFH for clearnose skate (*Raja eglanteria*); the Atlantic Mackerel, Squid, and Butterfish FMP identified EFH for the Atlantic butterfish (*Peprilus triacanthus*); and the Summer Flounder, Scup, Black Sea Bass FMP identified EFH for the summer flounder (*Paralichthys dentatus*) and black sea bass (*Centropristis striata*) (NOAA 2022).

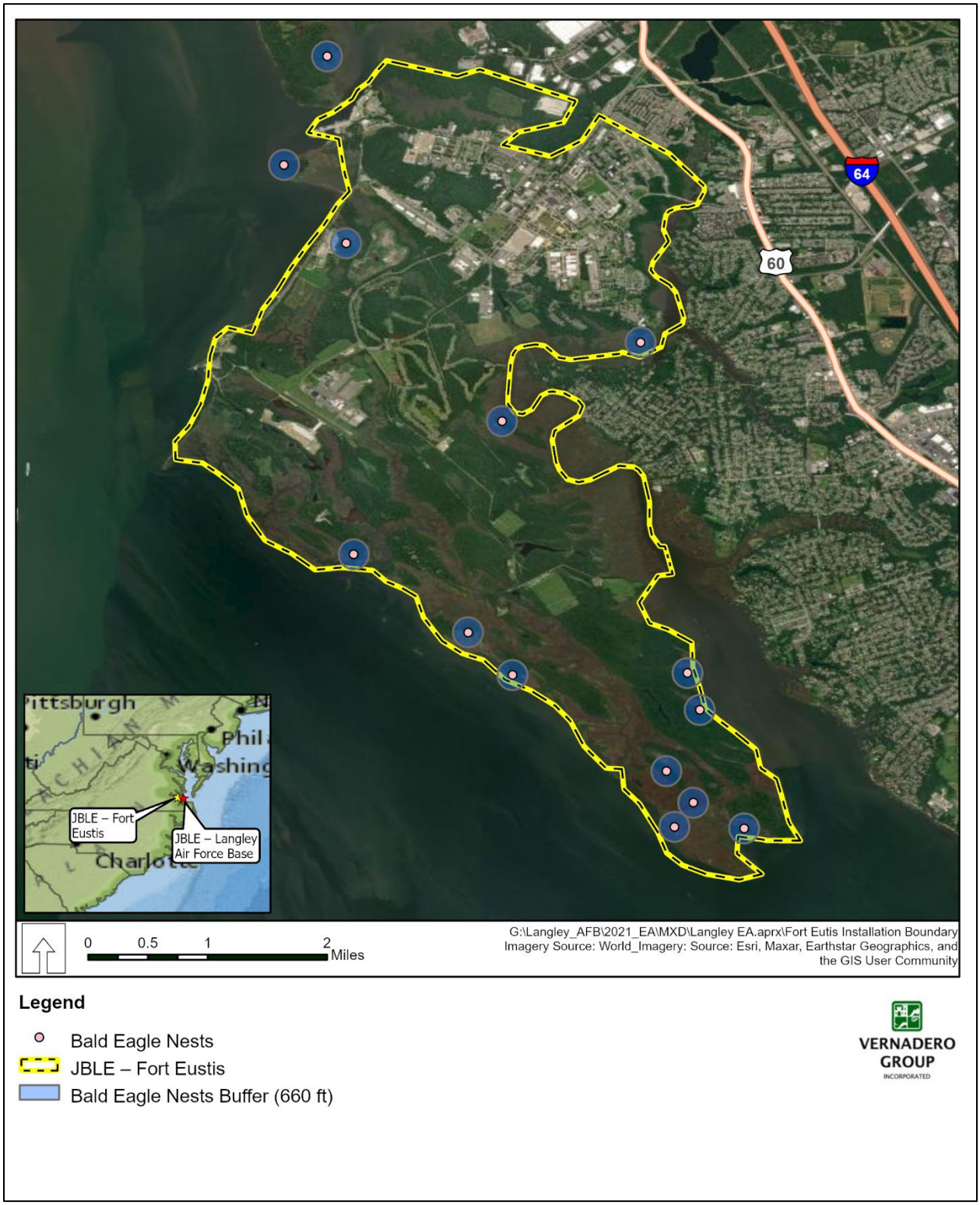


Figure 3-5. Locations of Bald Eagle Nests and Nest Buffers at Joint Base Langley — Eustis

Wildlife species on JBLE – Langley are habitat generalists and are tolerant of disturbance. Many are the same species commonly found on JBLE – Eustis, such as white-tailed deer, raccoon, red fox, Virginia opossum, and river otter. Acoustic surveys conducted in 2019 identified a potential for 10 to 11 species of bats on the base, including the species identified on JBLE – Eustis such as the Brazilian free-tailed bat (Carver 2019). Also identified at JBLE – Langley was the Rafinesque's big-eared bat (*Corynorhinus rafinesquii*).

Reptiles that have been observed include the six-lined racerunner (*Cinemidophorus sexlineatus*), eastern hognose snake (*Heterodon platirhinos*), black racer (*Coluber constrictor*), canebrake rattlesnake (*Crotalus horridus*), diamondback terrapin (*Malaclemys terrapin*), and the black rat snake (*Elaphe obsolete*) (JBLE – Langley 2019). The common amphibians on JBLE – Langley include the American bullfrog (*Lithobates catesbeianus*), the green frog, southern leopard frog (*L. sphenocephalus*), green tree frog (*Hyla cinerea*), and squirrel tree frog (*H. squirella*).

More than 150 species of birds have been observed on or near JBLE – Langley during surveys (JBLE – Langley 2019). Songbirds and perching birds observed include species such as savannah sparrow (*Passerculus sandwichensis*), blue jay (*Cyanocitta crista*), American crow (*Corvus brachyrhynchos*), northern cardinal (*Cardinalis cardinalis*), Carolina wren (*Thyothorus ludovicianus*), and pine warbler (*Dendroica pinus*). Shorebirds observed include species such as black-bellied plovers (*Pluvialis squatarola*), semipalmated plover (*Charadrius semipalmatus*), American oystercatcher (*Haematopus palliates*), greater yellowlegs (*Tringa melanoleuca*), willet (*Catoptrophorus semipalmatus*), upland sandpiper (*Bartramia longicauda*), and sanderling (*Calidris alba*). Common waterfowl observed include canvasbacks (*Aythya valisineria*), ruddy ducks (*Oxyura jamaicensis*), greater scaup (*Aythya marila*), lesser scaup (*A. affinis)*, bufflehead (*Bucephala islandica*), common goldeneye (*Bucephala clangula*), Canada goose, and mallard.

Habitat suitable for bald eagle foraging, roosting, and/or nesting occurs among the loblolly pines on the northern side of the base. Recent surveys indicate that foraging by bald eagles occurred to a limited extent within creeks and marshes of JBLE – Langley and on the reservoir. The uniform age/size structure of loblolly pine stands may limit the use of the base as nesting or roosting habitat (JBLE – Langley 2019). One bald eagle nest is located in the forested north marsh on the Main Base, and several other nests have been documented within 3 miles of the base. For bald eagle nests that may be established near the airfield, JBLE – Langley undertakes nonlethal depredation actions to move the nest away from the airfield.

Fish commonly found in the estuarine waters surrounding JBLE – Langley include species such as anchovy (*Anchoa* spp.), silver perch (*Bairdiella chrysoura*), spotted sea trout (*Cynoscion nebulosus*), spot (*Leiostomus xanthurus*), Atlantic croaker (*Micropogonias undulatus*), Atlantic menhaden, Atlantic silverside (*Menidia menidia*), striped bass, white mullet (*Mugil curema*), pigfish (*Orthaopristis chrysoptera*), and summer flounder (*Paralichthys dentatus*) (JBLE – Langley 2019). Blue crab is also commonly found in tidal waters around the base. Other aquatic species include fiddler crabs (*Uca* spp.), an important wildlife food source, as well as eastern oysters and the hard clam (*Mercenaria mercenaria*).

Invasive Species

Past surveys on JBLE – Eustis have documented 24 invasive plant species (JBLE – Eustis 2019). Of the species identified, most tend to occur in upland habitats while the common reed is found in wetland and aquatic habitats. The most problematic of the invasive plant species are common reed, tree of heaven (*Ailanthus altissima*), johnsongrass (*Sorghum halepense*), Chinese privet (*Ligustrum sinense*), and Japanese stiltgrass (*Microstegium vimineum*). Control of common reed in the past has consisted of the treatment of approximately 120 acres with a glyphosate-based

herbicide in 2004. In 2011, an estimated 300 acres were successfully treated with an imazapyr-based herbicide using both aerial and ground application.

Invasive wildlife on JBLE – Eustis includes species such English house sparrow (*Passer domesticus*), Eastern coyote (*Canis latrans* var.), European starling (*Sturnus vulgaris*), and several forest insect pests. In addition to the Asian tiger mosquito (*Aedes albopictus*), other invertebrate invasive species include Japanese beetles (*Popillia japonica*), which are common in wetland areas; European hornets (*Vespa crabro*); and Chinese mantis (*Tenodera sinensis*).

Twenty-one invasive vertebrate and invertebrate species have been identified at JBLE – Langley (Langley Air Force Base 2009). The primary invasive plants species of concern is common reed (phragmites), Japanese honeysuckle (*Lonicera japonica*), privet (*Ligustrum* spp.) and Japanese stiltgrass (*Microstegium vimineum*) (JBLE – Langley 2019). An inventory of common reed was conducted in 2014, and treatment on 150 acres was conducted in 2017. This was the only treatment to have occurred within the last 10 years, and the extent of common reed has expanded (see **Figure 2-4**). Invasive vertebrate species also include nutria and European starling, as well as mute swan (*Cygnus olor*) and snakehead fish (*Channa* spp.). Some of the invasive invertebrates identified, in addition to the Asian tiger mosquito, include emerald ash borer (*Agrilus planipennis*), gypsy moth (*Lymantria dispar*), and fire ant (*Solenopsis invicta* [*S. wagneri*]) (Langley Air Force Base 2009).

Threatened and Endangered Species and/or Species of Concern

A list of species that may occur either within the ROI or within adjacent counties and independent cities was obtained from the USFWS Information for Planning and Consultation (IPaC) website (USFWS 2021; **Appendix C**) and Virginia Department of Wildlife Resources (VDWR) Fish and Wildlife Information Service (FWIS) (VDWR 2022). The JBLE – Eustis INRMP (2019) and JBLE – Langley INRMP (2019) indicate the federal and state listed species that have been documented on the installations during natural resource surveys. The federal and state listed species either documented or with the potential to occur on base or that may be found within the adjacent municipalities are provided in **Table 3-4.**

JBLE – Eustis. The USFWS IPaC only identified the northern long-eared bat and eastern black rail as having the potential to occur on JBLE – Eustis. The northern long-eared bat is the only federally listed species documented at JBLE – Eustis. The federally endangered Indiana bat (*Myotis sodalis*) was identified via acoustic methods in 2016 but was not identified acoustically or by mist-net capture in the succeeding surveys in 2017, 2020, and 2021. This species is deemed to not be present on the installation following consultation with the USFWS.

While listed in the USFWS IPaC as having the potential to occur on JBLE – Eustis, the federally threatened eastern black rail is unlikely to inhabit the tidal and nontidal marshes on the base. Fauna surveys to identify bird species on the base were performed in 1997, 1999, 2004-2005, 2014-2015, and 2020-2021; the eastern black rail was not documented in any of these surveys, nor has it been observed by installation natural resources staff. Additionally, the encroachment of common reed could be a factor limiting the black rail from the installation.

The VDWR FWIS identifies the potential for four state threatened birds to occur on or near JBLE – Eustis: loggerhead shrike (*Lanius ludovicianus*), migrant loggerhead shrike (*L. l. migrans*), peregrine falcon (*Falco peregrinus*), and Henslow's sparrow (*Ammodramus henslowii*). Previous fauna surveys have not documented these species on the base.

Table 3-4. Potential Occurrence of Federal and State Listed Species on Joint Base Langley-Eustis, Virginia

Species	Federal Status[1]	State Status	JBLE – Eustis	JBLE – Langley
Birds				
Eastern Black Rail (*Laterallus jamaicensis* ssp. *jamaicensis*)	T	E	Unlikely	Potential
Piping Plover (*Charadrius melodus*)	T	T	--	Potential
Red Knot (*Calidris canutus rufa*)	T	T	--	Observed
Roseate Tern (*Sterna dougallii)*	E	E	--	Potential
Loggerhead Shrike (*Lanius ludovicianus*)	--	T	Potential	Potential
Loggerhead Shrike, Migrant (*L. ludovicianus migrans*)	--	T	Potential	Potential
Peregrine Falcon (*Falco peregrinus*)	--	T	Potential	Potential
Gull-Billed Tern (*Sterna niloticai*)	--	T	--	Observed
Wilson's Plover (*Charadrius wilsonia*)	--	E	--	Potential
Henslow's Sparrow (*Ammodramus henslowii*)	--	T	Potential	Potential
Mammals				
Northern Long-Eared Bat (*Myotis septentrionalis*)	T	T	Observed	Acoustic
Little Brown Bat (*Myotis lucifugus*)		E	Observed	Acoustic
Tricolored Bat (*Perimyotis subflavus*)	C	E	Observed	Observed[2]
Rafinesque's Eastern Big-Eared Bat (*Corynorhinus rafinesquii macrotis*)	--	E	Unlikely	Acoustic
West Indian Manatee (*Trichechus manatus*)	E	E	--	Unlikely
Reptiles				
Kemp's (= Atlantic) Ridley Turtle (*Lepidochelys kempii*)	E	E	--	Unlikely
Green Sea Turtle (*Chelonia mydas*)	E	E	--	Unlikely
Leatherback Turtle (*Dermochelys coriacea*)	E	E	--	Unlikely
Loggerhead Turtle (*Caretta caretta*)	T	T	--	Unlikely
Canebrake Rattlesnake (*Crotalus horridus*)	--	E	Unlikely	Unlikely
Amphibians				
Eastern Tiger Salamander (*Ambystoma tigrinum*)	--	E	Unlikely	Unlikely
Mabee's Salamander (*Ambystoma mabeei*)	--	T	Unlikely	Unlikely

Species	Federal Status[1]	State Status	JBLE – Eustis	JBLE – Langley
Fish				
Atlantic Sturgeon (*Acipenser oxyrinchus oxyrinchus*)	E	E	Potential[3]	Potential[3]
Plants				
Harper's Fimbristylis (*Fimbristylis perpusilla*)	--	E	--	Unlikely
Insects				
Northeastern Beach Tiger Beetle (*Cicindela dorsalis dorsalis*)	T	T	--	Unlikely
Rusty Patched Bumblebee (*Bombus affinis*)	E	--	Unlikely[4]	Unlikely[4]

JBLE – Eustis – Joint Base Langley-Eustis, Fort Eustis; **JBLE – Langley** – Joint Base Langley-Eustis, Langley Air Force Base; **E** – endangered; **T** – threatened;
Sources: JBLE – Eustis 2019; JBLE – Langley 2019; USFWS 2021; VDWR 2022
Notes:

1. The northern long-eared bat and eastern black rail were the only federally listed species identified in the USFWS IPaC. Only the federally listed species identified in the USFWS IPaC and/or the installation's INRMP as previously observed or having the potential to be on the installations are identified above. While some federally listed species that are also state listed are included in the VDWR FWIS identified within a 3-mile radius of the base are listed, these are not considered as having the potential to occur on base unless also identified in the IPaC, INRMPs, or some other resource.
2. The tricolored bat has the potential to occur on Main Base Langley but was only observed visually at the Langley Big Bethel Reservoir during the 2019 acoustic and mist-net surveys.
3. May occur in the rivers adjacent to the installations.
4. Listed in the 2017 US Air Force *Pollinator Conservation Reference Guide* as possibly present; however, distribution in Virginia appears to be in counties north and west of the tidewater region of southeast Virginia (82 *Federal Register* 3186, Endangered and Threatened Wildlife and Plants; Endangered Species Status for Rusty Patched Bumblebee; Final Rule)

Recent bat surveys have documented the state listed little brown bat (*Myotis lucifugus*) and tricolored bat (*Permyotis subflavus*). One state listed reptile, the canebrake rattlesnake (*Crotalus horridus*) and two state listed amphibians, the eastern tiger salamander (*Ambystoma tigrinum*) and Mabee's salamander (*Ambystoma mabeei*), may occur in the local area near JBLE – Eustis (see **Table 3-4**). However, there is little optimal habitat for these species on the installation. Surveys for reptiles and amphibians were conducted in 1997, 2004-2005, 2007, 2014-2015 and 2020-2021, but no state listed species were identified (JBLE – Eustis 2019).

The federally and state endangered Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*) is an anadromous fish that is dependent on large estuaries, and it may occur adjacent to the base in the James River and Skiffs Creek (JBLE – Eustis 2019; VDWR 2022). The James River is designated critical habitat for the Atlantic sturgeon (NOAA 2019). The critical habitat for Atlantic sturgeon consists of four physical or biological features (PBFs):

1. Hard bottom substrate (e.g., rock, cobble, gravel, limestone, boulder, etc.) in low-salinity waters (i.e., 0.0 to 0.5 parts per thousand [ppt] range) for settlement of fertilized eggs, refuge, growth, and development of early life stages;
2. Aquatic habitat with a gradual downstream salinity gradient of 0.5 up to as high as 30 ppt and soft substrate (e.g., sand, mud) between the river mouth and spawning sites for juvenile foraging and physiological development;
3. Water of appropriate depth and absent physical barriers to passage (e.g., locks, dams, thermal plumes, turbidity, sound, reservoirs, gear, etc.) between the river mouth and spawning sites necessary to support: (1) unimpeded movements of adults to and from spawning sites; (2) seasonal and physiologically dependent movement of juvenile Atlantic sturgeon to appropriate salinity zones within the river estuary, and; (3) staging, resting, or holding of subadults or spawning condition adults. Water depths in main river channels must also be deep enough (e.g., at least 1.2 meters) to ensure continuous flow in the main channel at all times when any sturgeon life stage would be in the river; and,
4. Water, between the river mouth and spawning sites, especially in the bottom meter of the water column, with the temperature, salinity, and oxygen values that, combined, support (1) spawning; (2) annual and interannual adult, subadult, larval, and juvenile survival; and (3) larval, juvenile, and subadult growth, development, and recruitment.

The historic range of rusty patched bumblebee (*Bombus affinis*) included southeast Virginia and was identified by the 2017 US Air Force *Pollinator Conservation Reference Guide* as possibly present on JBLE – Eustis (DAF 2017). However, the Final Rule listing the rusty patched bumblebee as endangered (82 *Federal Register* 3186) does not include the tidewater region of southeast Virginia within the currently known distribution, and the VDWR has only documented this species in Fauquier, Augusta, Bath, Highland, and Rockingham counties in northern Virginia (VDWR 2020).

JBLE – Langley. Twenty-six federal and state listed species may occur on JBLE – Langley or in the adjacent counties and incorporated cities (JBLE – Langley 2019; USFWS 2021; VDWR 2022). To date, six listed species have been documented on the base through observation or with acoustic surveys; these include two birds and four bats (see **Table 3-4**).

The eastern black rail was the only federally listed species identified in the USFWS IPaC. The federally threatened eastern black rail could be present in coastal marshes on and near JBLE – Langley. This species is a small, secretive bird and is limited to areas with dense wetland vegetation. The federally listed red knot (*Calidris canutus rufa*) has been documented on the base shoreline (JBLE – Langley 2019). This species may temporarily forage in this area as a transient

during migration. There is no suitable nesting or foraging habitat on JBLE – Langley for the federally listed piping plover (*Charadrius melodus*) or roseate tern (*Sterna dougallii*).

State listed birds include the state threatened peregrine falcon (*Falco peregrinus*; delisted from the federal endangered species list), upland sandpiper, gull-billed tern (*Sterna nilotica*), and loggerhead shrike *(Lanius ludovicianus*), including the migrant subspecies (*L. l. migrans*). JBLE – Langley may be used by these bird species for foraging or roosting, but none are known to nest on the base. To date, only the gull-billed tern has been documented on the Main Base as a transient (JBLE – Langley 2019).

Surveys have documented the presence of five species of federal and state listed bats on the base, which includes the northern long-eared, Indiana, little brown, and tricolored bats, as well as the state endangered Rafinesque's eastern big-eared bat (*Corynorhinus rafinesquii macrotis*). Of the bats identified on JBLE – Langley, only the tricolored bat has been netted, which was on the Big Bethel Reservoir, not the Main Base (Carver 2019). Acoustic surveys on JBLE – Langley preliminarily identified the Indiana bat in 2017 on Big Bethel Reservoir; however, follow-up surveys in 2019 did not identify this species (Carver 2019). The JBLE – Langley INRMP indicates that four species of federally listed sea turtle occasionally occur in the nearby Chesapeake Bay; however, surveys conducted from 2016 to 2017 did not document nesting or signs of their presence (JBLE – Langley 2019; Virginia Herpetological Society 2022). Similarly, the West Indian manatee (*Trichechus manatus*) is a very rare visitor within the Chesapeake Bay and is highly unlikely to be found in the Back Bay. Other state listed species identified with the potential to occur on JBLE – Langley are Harper's fimbristylis (*Fimbristylis perpusilla*), canebrake rattlesnake, eastern tiger salamander, and Mabee's salamander (JBLE – Langley 2019). These species have not been documented on the Main Base, and optimal habitat for these five species is not located on the Main Base (JBLE – Langley 2019).

While the JBLE – Langley INRMP indicates the threatened northeastern beach tiger beetle (*Cicindela dorsalis dorsalis*) has the potential to occur on the installation, it has not been documented during past natural resource surveys and the broad sandy beach habitat for this species does not occur on the base (JBLE – Langley 2019). The closest known population is located along the shoreline of the Plumtree Island National Wildlife Refuge (USFWS 1994), which is located over 2 miles from the ROI. The rusty patched bumblebee was also identified in the 2017 US Air Force *Pollinator Conservation Reference Guide* as possibly being present on JBLE – Langley (DAF 2017). However, as discussed for JBLE – Eustis, the distribution of the rusty patched bumblebee does not include the tidewater region of southeast Virginia.

3.8.2 Environmental Consequences

3.8.2.1 Preferred Alternative

Mosquito Treatment

Under the Proposed Action, there would be up to three annual applications of a pesticide that is registered by the USEPA, authorized for use in Virginia, and deemed necessary for aerial application by the IPMC. Currently, naled products are the preferred method for the control of adult mosquitoes (adulticides), however other pesticides may include pyrethrin and pyrethroids, or malathion to control adult mosquitoes. In addition, Bti and B.s. may also be used to control mosquito larvae (larvicides). All pesticides would be applied in strict accordance with the specific label instructions and the procedures outlined in the installation's IPMP. Adherence to the precautions outlined in the JBLE – Eustis and JBLE – Langley IPMPs would minimize the use of pesticide applications to the areas and times necessary to control mosquitoes and would only be

undertaken when environmental conditions are conducive to minimize exposure to wildlife, and drift and runoff to nontargeted areas. In addition, adherence to the pesticide label would further reduce the chance for impacts on nontarget species and runoff into nontarget areas. Aerial application would be at an elevation of 300 feet with ULV application nozzles. ULV application nozzles are designed to dispense very fine aerosol droplets that contain a small quantity of pesticide mixed with water that kill mosquitos on contact (USEPA 2021). If needed. the formulated pesticide would only be mixed with adjuvants that are approved on the specific pesticide label and only used in locations approved for their use. Application of adulticides would not occur directly over wetlands or waterways, whereas the Bti and B.s. larvicides are specifically formulated for application over water to treat mosquito larvae. All pesticides proposed for use and included in this EA are certified by the USEPA. Label applications levels are 3 to 4 orders of magnitude below the no observable effect level prescribed by the USEPA. That translates into 1,000 to 10,000 times below any application rate based on area or volume that would fundamentally effect mammalians, fish (with aquatic exceptions), or any other test species used to determine risk factor by USEPA.

Naled Products

No impacts on terrestrial, semiaquatic, or aquatic vegetation under the Proposed Action from naled use is expected. The use of the ULV application method results in very fine aerosol droplets that stay aloft, and the amount of naled that reaches the ground is small and dissipates rapidly (Hanson et al. 2018; USEPA 2021). The rate of degradation is further enhanced by sunlight and temperature (Jones et al. 2020). Depending on the environment, the half-life of naled typically ranges from 30 minutes to 2 hours, residue may persist on the surface of vegetation for several days, it is typically undetectable after three days (Hanson et al. 2018). Naled is routinely used for pest control in agricultural areas and, while some crop damage may occur, such as spots and burns (USEPA 2008a), those applications are done at much higher concentrations that would be applied under the Proposed Action. While naled and its anaerobic soil degradate DDVP may be taken up by plants, they are quickly broken down by soil microorganisms and light and do not appear to build up over time (Hanson et al. 2018; USEPA 2020a). Tests on the effects of both dry and semiaquatic monocot and dicot exposure, as well on vascular and nonvascular aquatic plants, to aerial application and drift from agricultural use concentrations indicated a low toxicity (USEPA 2020a).

Potential short-term, minor, adverse impacts on birds may occur under the Proposed Action. Naled may be moderately to highly toxic if consumed by birds, and long-term repeated exposure may lead to reduction in egg production, egg survival, and hatchling survival (Hanson et al. 2018). However, aspects such as low application rates and the short persistence of naled would minimize its risk to birds (Davis et al. 2007; USEPA 2021).

Potential short-term, minor impacts on mammals may occur under the Proposed Action due to the low application rate and short persistence (USEPA 2021). While small animals in the immediate area could be exposed, long-term adverse impacts are not expected. The studies completed by Davis et al. (2007) found that the acute and chronic exposure to naled applications resulted in risks below the level of concern in shrew, mouse, vole, and rat.

Specific studies on the potential impacts of naled on reptiles and amphibians have not been undertaken. The impacts on birds are used as surrogate data for impacts on reptiles and terrestrial-phase amphibians (USEPA 2008a); thus, the potential impacts would be short term and minor. Moreover, most species are ground dwelling and would likely not be exposed to direct contact with insecticides. Data for impacts on fish are used as a surrogate for aquatic-phase amphibians, discussed below, and would be short term and minor. In addition, the avoidance of

application of adulticides over surface water would further minimize potential impacts on aquatic-phase amphibians.

Potential adverse effects on fish would be short term and minor. While fish and other aquatic organisms may be exposed to naled from drift and runoff from treated areas, application in accordance with label requirements, specifically to avoid application over waterbodies and applying during weather conditions that would reduce the potential for drift would minimize this potential. When used at concentrations for public health, no adulticide, concerns to freshwater fish have been identified (USEPA 2020a).

Treatment near tidal wetlands may lead to a short-term increase in the mortality of some aquatic invertebrates from drift or runoff. The USEPA (2004, 2020a) classified naled as highly to very highly toxic to freshwater and estuarine invertebrates. Adherence to label requirements would minimize this potential, and the risk to aquatic invertebrates and would be further minimized due to the rapid dissipation of naled in flowing water (USEPA 2004). No impacts on blue crab are expected since aerial application of naled does not increase mortality (NOAA 1971).

Flying insects would be the most likely group of nontarget organisms that may be negatively affected by the Proposed Action, especially those active near sunset and sunrise such as moths, many beetles, and fireflies. Due to the limited treatment areas and limited number of annual treatments proposed, this impact would be short-term and minor. Naled is very highly toxic to bees through direct contact or indirect contact with plants and may be highly toxic up to one hour after application (Hanson et al. 2018; USEPA 2020a). Three hours after treatment, toxicity was found to be low to moderate. Adherence to the label application instructions and the measures outlined in the JBLE – Eustis and JBLE – Langley IPMPs, such as applying before at or after sunset when bees are not active and notifying local beekeepers beforehand, would minimize potential adverse impacts on honeybees and some other nontarget insects.

Pyrethrin / Pyrethroid Products

Pyrethrins are pesticides that naturally occur in some chrysanthemum flowers, whereas pyrethroids are synthetic variations of pyrethrin formulated to produce more persistent insecticides (NPIC 2014). The most common pyrethroids used for public health mosquito control are Permethrin, Resmethrin, Sumithrin, Prallethrin, and Etofenprox (USEPA 2022a). Pyrethrins typically dissipate rapidly in the presence of sunlight, with half-lives of less than one day (USEPA 2006b). In the absence of sunlight this process occurs more slowly in water and may take up to 14 to 17 days. In addition, pyrethrin that enters the water tends to bind to sediment.

No impacts on vegetation from the use of pyrethrins or pyrethroids is expected. While plant toxicity data were not available for the USEPA registration eligibility decision process, risks to plants from pyrethroids are not anticipated due to the neural toxic mode of action and lack of studies demonstrating adverse effects (USEPA 2016). Likewise, pyrethrin and pyrethroids pose no risk to aquatic or semiaquatic plants.

When applied following label instructions for mosquito control programs, the pyrethrins and pyrethroids commonly used for public health mosquito control do not pose unreasonable risks to wildlife or the environment (USEPA 2022a). Potential adverse impacts on birds and mammals would be negligible to minor and short term. Pyrethrins and pyrethroids are practically nontoxic to birds and have a low toxicity to mammals (NPIC 2014; USEPA 2016, 2022). The infrequent application and adherence to label requirements would further reduce the potential for adverse impacts on birds and mammals.

Potential adverse impacts on aquatic organisms from the aerial application of pyrethrins and pyrethroids may be short term and minor. Some pyrethroids have been found to be toxic to fish

at very low concentrations and would likely be equally toxic to aquatic-phase amphibians (NPIC 2014; USEPA 2008b, 2016). Pyrethrin and pyrethroids are also highly toxic to aquatic organisms such as lobster, shrimp, and oysters (NPIC 2014; USEPA 2016). Label requirements restrict the use of application of pyrethrins and pyrethroids over bodies of water and their use only when weather conditions facilitate the movement of the application away from waterbodies to minimize incidental deposition (USEPA 2006b). Due to the limited number of applications that may occur and adherence to label requirements, the potential for adverse impacts on aquatic organisms would be minimized.

Potential adverse impacts on nontarget terrestrial insects may be short term and minor. Pyrethrins and pyrethroids are highly to very highly toxic to terrestrial insects at low concentrations, including from drift from aerial applications (NPIC 2014; USEPA 2016). Risk to nontarget species would be diminished due to pyrethroid's slight repellent activity and its rapid degradation on surfaces. In addition, label requirements restrict direct application and to apply in a method that does not allow drift to blooming crops or plants except to control a threat to public or animal health as determined by the responsible health control agency. Due to the limited number of times of applications and the adherence to label requirements, the potential for adverse impacts on nontarget insects would be minimized.

Malathion

No adverse impacts on vegetation from the aerial application of malathion would be expected. While malathion has a low toxicity to most plants, studies indicate that adverse effects do not occur until application rates exceed the recommended program treatment amount (USDA 2019b). In addition, due to the lack of toxicity to terrestrial plants, toxic effects on aquatic plants are not expected from program application rates (USDA 2019b).

Potential adverse impacts on birds would be short term and minor. While malathion is slightly to moderately toxic to birds, acute and chronic effects are expected to be minimal (USDA 2019b). While malathion can persist in the environment for several days, it is unlikely that birds would feed exclusively on items while residue is present. Additionally, the infrequent application, low concentration for aerial application, and adherence to label requirements would further reduce potential impacts.

The application of malathion is expected to have negligible short-term impacts on mammals. Malathion is considered to have slight acute toxicity to mammals through dietary exposure (USEPA 2009a). As described for birds, it is unlikely that mammals would feed exclusively on food items while residue is present. Moreover, mammals are efficient at detoxifying malathion. Due to the infrequent application, low concentration for aerial application, and adherence to label requirements, potential impacts on mammals would be reduced. The potential impact on reptiles is the same as that for mammals.

Potential adverse impacts on amphibians are expected to be minor and short term. Exposure of amphibians could occur through surface water contamination due to runoff or drift, dermal absorption from drift, or ingestion. Studies on the toxicity of malathion to amphibians is limited, although it is classified as very highly toxic to aquatic-phase amphibians (USEPA 2009a). However, studies have found that residues in aquatic habitats are well below the most sensitive acute toxicity value when malathion is applied in accordance with label requirements, indicating low direct acute effects (USDA 2019b). Metabolites can occur in aquatic environments; however, most only occur in trace amounts, and are not considered to be a toxicological concern (USDA 2019b). The metabolite malaoxon can also form in aquatic environments, and while it is several times more toxic to amphibians than malathion, due to its low percentage of occurrence and rapid

dissipation in aquatic systems it is not considered to pose a greater risk. Based on toxicity data for fish, aquatic invertebrates, and plants, no indirect effects on amphibians due to loss of habitat or prey is anticipated (USDA 2019b).

Adverse impacts on fish would be minor and short term. Malathion has been found to be moderately to very highly toxic to fish, with the least susceptible fish being the catfish and minnow families and the most susceptible fish being the trout, salmon, perch, and sunfish families (USDA 2019b). As described above, when applied in accordance with label requirements designed to reduce exposure, such as aquatic application buffers, would minimize the potential for exposure of fish and other aquatic organisms and the residue that may reach aquatic habitats would be well below the most acute sensitive toxicity value. These measures and expected toxicity in aquatic habitats suggest that no indirect effects on aquatic habitat or prey would occur

Malathion is classified as highly toxic to bees and other beneficial insects. Due to the limited treatment areas and limited number of annual treatments proposed, this impact would be short-term and minor. The risk to non-target terrestrial invertebrates has been shown to decrease when reduced applications are made with a reduced coverage for ULV formulation of malathion (USDA 2019b). In addition, due to the short toxicity of malathion residues, the potential for long-term exposure and effects is minimal.

Bti and B.s.

No adverse impacts on plants from the use of either Bti or B.s. are expected. Both Bti and B.s. are naturally occurring soil bacteria. Bti is rapidly broken down by sunlight, acidic soil, and microbial activity (NPIC 2015). There is no evidence Bti has any deleterious effects on plants; therefore, the USEPA has determined there is minimal risk to terrestrial, semiaquatic, and aquatic plants (USEPA 1998). B.s. has not been found to have adverse impacts on nontarget species (USEPA 2014).

No potential adverse impacts on most nontarget fauna from the aerial application of Bti is expected. Studies reviewed by the USEPA indicate that Bti is not toxic to birds, fish, or shrimp and poses minimal to nonexistent risks to mammals (USEPA 1998). In addition, little to no toxicity has been found to nontarget insects, including honeybees, shelled invertebrates, or earthworms. Some aquatic insects may have minor, short-term adverse impacts from the application of Bti, which has been shown to be moderately toxic to water fleas (*Daphnia* spp.). The potential for adverse impacts on aquatic insects would be minimized through infrequent application, low concentrations for aerial application, and adherence to label requirements.

No potential adverse impacts on nontarget plants or fauna would occur from the aerial application of B.s. Studies reviewed by the USEPA and the World Health Organization (WHO) found no expected harm to nontarget organisms from the application of B.s. (USEPA 2014; WHO No date).

The Proposed Action for mosquito control may result in long-term beneficial effects for birds. A reduction in the mosquito population may decrease the spread of mosquito-borne zoonotic disease such as West Nile virus, known to infect over 500 species of native birds in the US, with corvids (e.g., crows, ravens, and blue jays) and raptors (e.g., eagles, hawks, falcons) being most vulnerable (CDC 2021c; North Carolina State University Veterinary Medicine 2022).

While several birds such as swallows, warblers, and sparrows consume mosquitoes, these birds eat a wide variety of insects and mosquitoes only make up a small portion of their diet and would not likely be impacted by a drop in the mosquito population at JBLE (Fang 2010). The loss of nontarget insects in the ROI may temporarily reduce the prey base for insectivorous birds, potentially reducing dietary intake and causing birds to increase their foraging activities until the

nontarget species' numbers recover. Because aerial mosquito control would only occur once annually, the potential for adverse effects on birds is low.

As with the potential impacts described for birds, insectivorous mammals such as bats may experience a temporary decline in their prey base. However, studies indicate that mosquitos (Culicdea) make up a very small portion of bat diets, only about 2 percent depending on the species; instead, the majority of their prey comprises other flies (Diptera), beetles (Coleoptera), moths (Lepidoptera), scarab beetles (Scarabaeidae), and leafhoppers (Cicadellidae) (Fang 2010; Moosman et al. 2012; Whitaker 2004). While some of the prey may be impacted by treatment, most of the insects preyed on are nocturnal and would not be out at the time of treatment. In addition, since bats are nocturnal foragers and would not emerge or would return to their roosts before treatment occurs, they would be unlikely to be directly exposed to pesticides. Bats may also experience the same potential adverse and beneficial effects described for birds, resulting from the temporary reduction in prey base and the reduction in mosquito-borne zoonotic disease, respectively.

There is a small potential for aircraft strikes with birds during aerial applications. This can occur during takeoff and landing, as well as during flight. Due to the timing of the flights, two hours before sunset to sunset or from sunrise to two hours after sunrise, birds may be active. However, because only up to three annual potential aerial applications may occur, the increased potential for aircraft strikes is low. Moreover, the C-130 aircraft would comply with a BASH prevention program that implements measures to reduce BASH risk and incidents. The BASH program goal is increased safety for pilots and military aircraft while reducing strikes with birds and other wildlife. Potential strikes to bats are not expected since insectivorous bats are nocturnal and would not be foraging at the time of treatment.

Low-altitude overflights during pesticide application may startle nesting and fledging bald eagles, but this is expected to be minor and short term. Active bald eagle nests would be identified on aerial application maps prior to any mission for avoidance or proper approval for treatment. A literature review of the effects of aircraft noise on raptors found that most raptors did not display adverse reactions to overflights, and most negative responses were primarily associated with rotor-winged aircraft or jet aircraft that repeatedly passed within 0.5 mile of a nest (Manci et al. 1988). Ellis et al. (1991) found that reoccupancy and productivity of nesting raptors, including bald eagles, were not adversely affected when exposed to low-level military jet aircraft. Further, golden eagles were found to show little effects due to low-altitude aircraft overflights during nest surveys (Pagel et al. 2010).

There is the potential for short-term, minor, adverse impacts on the EFH identified in the James River. This would include the direct impacts from the presence of pesticide in the water because of drift or runoff or indirect effects from the potential negative impacts on the aquatic invertebrate prey. However, as previously discussed, application of adulticides in accordance with label requirements would avoid application over waterbodies. Further, the label specifications would offer safeguards that would facilitate the movement of the aerially applied pesticides away from waterbodies and would minimize incidental deposition into aquatic environments. Therefore, the potential harm to fish and aquatic organisms is low. The potential for prey species in the area to be negatively impacted may be minor and short term.

Potential impacts on federal and state listed birds and mammals documented or with the potential to occur on JBLE – Eustis or JBLE – Langley from the aerial of application of naled, pyrethrin, pyrethroid, Bti, and B.s. products would be short term and negligible. The USEPA reduces the acute regulatory level of risk for endangered species but maintains the same level of concern for chronic exposure for all other listed species. For naled products, tested surrogate birds and

mammals were below the acute and chronic level of concern for endangered species (Davis et al. 2007), indicating the listed birds and mammals with the potential to be located within the ROI (see **Table 3-4)** would not likely experience direct, adverse impacts. Screening of pyrethrin and pyrethroid studies found no potential for direct, acute effects on threatened and endangered birds or mammals (USEPA 2006b). In addition, neither Bti nor B.s. has been shown to have any adverse effects on birds, and they pose minimal risks to mammals (USEPA 1998, 2014). The use of malathion products, however, may have adverse, short-term, moderate impacts on threatened and endangered birds and mammals. The USEPA Registration Eligibility Decision screening process found that malathion may harm all taxa of threatened and endangered birds and mammals (USEPA 2009a). With the infrequent application, low concentration for aerial application, and adherence to label requirements, the potential for adverse impacts on listed birds, mammals, and reptiles would be reduced.

There may be a short-term, minor, localized impact on insects preyed upon by listed birds because of insecticide application. As previously discussed, birds eat a wide variety of insects, and mosquitoes make up only a small portion of their diet; therefore, birds would be unlikely to be impacted by a drop in mosquito populations (Fang 2010). The loss of nontarget insects may temporarily reduce dietary intake and cause birds to increase their foraging activities and range until nontarget species numbers recover.

Potential impacts on listed bats would be short term and negligible. Listed bats would not be active at the time of treatment and would likely not be directly exposed to treatment. The insect prey base for listed bats may be temporarily reduced after treatment. As discussed above, mosquitoes make up only a small percentage of insects consumed by bats; the insects commonly preyed on by bats in the US are moths, beetles, and flies (Moosman et al. 2012; Ober 2008; Whitaker 2004). The abundance of prey base may be temporarily reduced after treatment that may necessitate bats to expand their foraging areas until insect abundance recovers. The final 4(d) rule under the ESA for northern long-eared bats allows incidental take from otherwise lawful activities in areas not yet affected by white-nose syndrome (WNS) and sets protections during the periods when bats are vulnerable to infection (i.e., maternity and hibernacula sites) within the WNS-affected area. According to the most recent WNS zone map, all of Virginia lies within the WNS-affected areas (USFWS 2019). Within affected areas, the northern long-eared bat 4(d) rule prohibits incidental take that may occur within a hibernaculum or that results from tree removal, none of which would occur under the Proposed Action.

As previously discussed, while the number of low-level flights for pesticide application is limited to three per year, there is a slight potential for aircraft strikes with federal threatened and endangered birds and bats on the bases. Additionally, while the VDWR (2022) indicates several listed birds may be present on JBLE – Eustis, none have been documented during multiple surveys (JBLE – Eustis 2019). Similarly, only the red knot and the gull-billed tern have been observed on JBLE – Langley as occasional transient visitors.

There are no potential impacts on listed reptiles, amphibians, or insects since these listed species are unlikely to be present on either JBLE – Eustis or JBLE – Langley and multiple surveys have not documented their presence on base (JBLE – Eustis 2019; JBLE – Langley 2019).

Potential adverse effects on the federally endangered Atlantic sturgeon would be short term and minor. Naled, pyrethroid, and malathion products are ranked as being highly to very highly toxic to anadromous fish such as the Atlantic sturgeon (Gianou 2012). To decrease the potential for adverse impacts of these adulticides in marine habitats, application would strictly comply with label requirements to avoid application over waterbodies and accomplish aerial application only when weather conditions are optimal to avoid potential drift and runoff. In addition, the limited

number of annual applications would further reduce risks. Neither Bti nor B.s. has been shown to have adverse effects on fish. The Proposed Action does not have the potential to impact the PBFs for the Atlantic sturgeon's designated critical habitat in the James River. JBLE – Eustis has made a no effects determination for the Atlantic sturgeon's designated critical habitat.

Short-term and moderate beneficial effects under the Proposed Action are expected. Populations of invasive mosquitoes such as the Asian tiger mosquito and other target species known to be disease vectors would be reduced. The reduction in mosquito populations would also be beneficial for several species of wildlife since mosquitoes are also vectors for zoonotic diseases such as West Nile virus and eastern equine encephalitis. There would be no adverse effects, such as the spread or proliferation of invasive species, from mosquito control activities.

Under the Proposed Action for mosquito control, JBLE – Eustis has made a no effect determination for the eastern black rail because it is unlikely to occur and has not been documented on base. While the proposed aerial spraying may have direct and indirect negligible and short-term adverse effects on the northern long-eared bat due to the potential of aerial insecticide application and the extremely low probably for aircraft strikes during treatment operations, any take is not prohibited under the ESA Section 4(d) rule. JBLE – Eustis has also made a may affect, not likely to adversely affect determination for the Atlantic sturgeon due to the potential minor and short-term adverse effects due to the low potential for drift or runoff of insecticides into adjacent waterways. No potential impacts on PBFs in the Atlantic sturgeon's designated critical habitat in waters near JBLE – Eustis were identified. The rusty patched bumblebee would not be impacted because these species because the currently known range of this species does not include JBLE – Eustis.

Under the Proposed Action for the species listed in the USFWS IPaC, JBLE – Langley has made a may affect, not likely to adversely affect determination for the eastern black rail due to potential effects from the aerial insecticide application and the low probably for aircraft strikes during treatment operations. Similarly, for those species not included in the USFWS IPaC, JBLE – Langley has made a may affect, not likely to adversely affect determination for the piping plover, red knot, roseate tern, and northern long-eared bat for the same reasons stated above. The West Indian manatee, listed sea turtles, the northeastern beach tiger beetle, and the rusty patched bumblebee are unlikely to occur and have not been documented on the base. There is no designated critical habitat for any of the listed sea turtles in the vicinity of JBLE – Eustis or JBLE – Langley.

JBLE – Langley has also made a may affect, not likely to adversely affect determination for the Atlantic sturgeon due to the potential minor and short-term adverse effects due to the low potential for drift or runoff of insecticides into adjacent waterways. No potential impacts on PBFs in the Atlantic sturgeon's designated critical habitat in waters near JBLE – Langley were identified.

Letters for JBLE – Eustis and JBLE - Langley requesting concurrence with determinations were sent to the USFWS for those species identified in the USFWS IPaC and NOAA Fisheries (**Appendix A**). All correspondence and concurrence received from the USFWS and NOAA Fisheries regarding the DAF's determinations are provided in Appendix A.

Common Reed Treatment

Glyphosate is a broad-spectrum herbicide used to control broadleaf, sedge, and grass weeds with minimal residual toxicity to nontarget vegetation (USEPA 2020b). Imazapyr is a nonselective herbicide used for the pre- and post-emergence control of a broad range of terrestrial and aquatic weeds (USEPA 2006a). Only the technical herbicides, those without surfactants, would be used for treatment. JBLE – Eustis would treat specific areas where aerial applications would be feasible

within the 600 acres of common reed on the installation (see **Figure 2-3**), and approximately 145 acres of common reed would be treated at JBLE – Langley (see **Figure 2-4**). Treatment would occur only once each year within a one- or two-day window from August through October. Common reed continues to grow in the late summer and early fall when most other plants in the surrounding areas go dormant. Application would be targeted using aerial application from a helicopter.

The Proposed Action may have long-term and direct adverse impacts on the target species located within the treatment areas, either killing or slowing their growth. While some nontarget vegetation within the treatment area may also be adversely affected, common reed forms dense monotypic stands that exclude other plants, and as such the number and diversity of native plants within the treatment areas would be sparse to nonexistent. The greatest risk is to nontarget vegetation adjacent to the treated areas that may be adversely impacted from drift. For glyphosate, the distance for nontarget plants to be below the toxicity threshold is dependent on the species and may be over 1,000 feet from the edge of the treatment area (USEPA 2009b). Similarly, sensitive species of terrestrial plants, primarily dicots, may be adversely impacted up to 900 feet downwind from the application of imazapyr (US Forest Service [USFS] 2011). The USEPA determined that language added to Registration Eligibility Decisions and pesticide labels to specifically address drift would substantially reduce, though perhaps not eliminate, risks to nontarget plants (USEPA 2006a). Adherence to requirements for aerial application of glyphosate and imazapyr would minimize drift and adverse effects on nontarget vegetation. These requirements include avoiding treatment at specified wind speed thresholds, maintaining swath displacement distances from the upwind and downwind edges of the treatment area depending on wind speed, maintaining boom height no higher than 10 feet from the vegetation canopy (adjusted for pilot safety), and setting nozzle and pressure to control droplet size. In addition, labels warn against treating areas that may impact nontarget pollinator nectar plants and habitat. There would be long-term, minor, beneficial impacts on nontarget vegetation from removing or reducing growth and the spread of common reed and allowing for reestablishment of desired native vegetation in and around treated areas.

Studies indicate a low likelihood of risk to submerged aquatic and nonvascular plants from the application of glyphosate products at the label concentrations and formulations to an aquatic environment (USEPA 2009b). Similarly, there is minimal risk to nonvascular aquatic plants from the application of imazapyr when used at label specifications (USEPA 2006a). However, there is the potential for major adverse impacts on nontarget emergent vascular plants from the use of both glyphosate and imazapyr, which is expected to be the same as that described for terrestrial vascular plants (USEPA 2006a, 2009b). The precautions to limit drift described above would reduce the potential impacts on nontarget aquatic vegetation; therefore, moderate adverse impacts on nontarget emergent vascular plants near the treatment areas are expected.

Potential direct impacts on birds and mammals may be short term and negligible. The USEPA identified limited risk from the application of glyphosate for mammals and birds that may be located within treatment areas or the areas near the treated sites (USEPA 2009b, 2020b). The potential risk involved a slight reduction in body weight for birds and mammals and reduced reproduction for mammals. The USEPA has determined that imazapyr acid and its salts are practically nontoxic to birds and mammals, so there is minimal risk (USEPA 2006a).

There is a small potential for direct adverse impacts on birds during aerial applications from helicopter rotorwash or aircraft strikes. This can occur if helicopter overflights flush birds during treatment. However, because treatment would occur only once annually for one to two days, this potential risk would be short term and low.

Direct impacts on reptiles and amphibians would be short term and negligible. The USEPA did not identify potential risks to aquatic-phase amphibians (USEPA 2020b). The potential risks to reptiles and terrestrial-phase amphibians are the same as those described above for birds. Birds are used as surrogates in ecological risks assessments to characterize risks to reptiles and terrestrial-phase amphibians for both glyphosate and imazapyr due to the lack of data (USEPA 2019; USFS 2011). There is, however, uncertainty as to the toxicity of imazapyr to reptiles and terrestrial-phase amphibians due to the lack of open literature and studies submitted to the USEPA (USFS 2011).

The USEPA has not identified potential direct risks to freshwater or estuarine/marine fish, aquatic invertebrates, or aquatic-phase amphibians from the application of technical glyphosate from a single maximum concentration application (USEPA 2020b). Similarly, data indicate that imazapyr acid and its salts are practically nontoxic to freshwater fish and invertebrates (USEPA 2006a). There is, however, uncertainty as to the effects of imazapyr on estuarine/marine fish and invertebrates due to the lack of studies, although they are assumed to have similar sensitivity as freshwater fish and invertebrates.

Potential direct impacts from herbicide application to terrestrial invertebrates are expected to be short term and minor. Studies do not indicate acute adverse effects on honeybees, which are used as surrogates for terrestrial invertebrates, from the use of glyphosate at rates below 5.7 pounds acid equivalence per acre; however, the risks at higher application rates are uncertain (USEPA 2020b). Therefore, there may be adverse effects on terrestrial invertebrates within or near areas being treated with glyphosate. Studies indicate imazapyr acid and salt are practically nontoxic to honeybees (USEPA 2006a). No adverse effects on terrestrial invertebrates from the use of imazapyr are expected.

There would be long-term, beneficial impacts from the Proposed Action for the control of common reed by allowing the growth and propagation of native species. Removal or reducing growth and spread of common reed and allowing for the reestablishment of desired native vegetation in and around treated areas would likely provide improved habitat for wildlife. While common reed provides limited habitat for mammals, waterfowl, songbirds, and fishes, it displaces native species such as sedges, rushes, and cattails, which results in reduced wildlife habitat diversity and a decrease in food and shelter for wildlife (Gucker 2008; Sturtevant et al. 2022). A wide variety of birds use common reed for forage areas, nesting, and roosting, although the dense, monotypic stands have been found to support a lower diversity of birds when compared to native aquatic vegetation (Gucker 2008). Stands of common reed can provide shade, shelter, and food for fishes, as well as other aquatic organisms such as mollusks, crustaceans, and aquatic insects. However, studies indicate that larval and juvenile fish can be negatively affected because the abundant litter produced by common reed reduces the mobility of juvenile fish (Sturtevant et al. 2022).

Potential impacts on federal and state listed birds and mammals documented or with the potential to occur on JBLE – Eustis or JBLE – Langley from aerial common reed treatment would be negligible and short term. The USEPA has determined that there is a limited risk to mammals and birds from the application of glyphosate (USEPA 2009b, 2020b). Similarly, the USEPA has determined that imazapyr acid and its salts are practically nontoxic to birds and mammals (USEPA 2006a). Impacts would likely be limited to treatment areas or the areas near treated sites. On JBLE – Langley, if listed birds are present during treatment, there is a potential for adverse impacts from helicopter rotorwash or potential aircraft strikes; however, this potential would be negligible. Birds would most likely attempt to avoid the helicopter as it approached, or they could remain within vegetation until the helicopter passed. The potential improvement of marsh habitat

from the control of common reed may result in long-term, beneficial impacts on the eastern black rail if it is present.

Potential adverse effects on the Atlantic sturgeon are expected to be short term and negligible. No potential direct risks from glyphosate to estuarine/marine fish have been identified and, while the effects of imazapyr on estuarine/marine fish have not been characterized, they are assumed to have similar sensitivity (practically nontoxic) as freshwater fish. The Proposed Action for common reed control may provide long-term beneficial effects on designated critical habitat PBFs for the Atlantic sturgeon in the James River. As discussed above for fish, while fish may use common reed for cover and shade, the plant is often detrimental to the mobility of juvenile fish. The reduction of common reed and potential reestablishment of native tidal marsh vegetation may improve juvenile sturgeon habitat.

There are no potential impacts on listed reptiles, amphibians, or insects since listed species are unlikely to be present on either JBLE – Eustis or JBLE – Langley, and multiple surveys have not documented their presence on the base (JBLE – Eustis 2019; JBLE – Langley 2019). Similarly, no adverse effects on Harper's fimbristylis are expected. While this species is listed with the potential to be found on JBLE – Langley, it has not been identified on the base and is unlikely to occur due to the heavy manipulation and grounds maintenance on the base (JBLE – Langley 2019). If Harper's fimbristylis is identified on the base, actions would be taken to avoid drift from proposed aerial herbicide treatment activities.

Under the Proposed Action for aerial herbicide application for the species listed in the USFWS IPaC, JBLE – Eustis has made a no effect determination for the eastern black rail because these species are unlikely to occur and have not been documented on the base. In addition, the northern long-eared bat would likely not be present during treatment and treatment is not likely to negatively impact prey that may be located over stands of common reed while bats are foraging. In addition, any potential take is not prohibited under the ESA Section 4(d) rule. JBLE – Eustis has also made a may affect, not likely to adversely affect determination for the Atlantic sturgeon from the potential negligible and short-term adverse effects due to the low toxicity to marine fish of proposed herbicides. While vegetation would be temporarily reduced after treatment that provides cover and shade for fish, the reestablishment of native tidal marsh vegetation would provide long-term beneficial impacts on designated critical habitat biological features. The rusty patched bumblebee would not be impacted because these species because the currently known range of this species does not include JBLE – Eustis.

Under the Proposed Action for aerial herbicide application for the species listed in the USFWS IPaC, JBLE – Langley a may affect, not likely to adversely affect determination for the eastern black rail from aerial herbicide application and the extremely low probably for aircraft strikes during treatment operations. JBLE – Langley has also made a may affect, not likely to adversely affect determination for the Atlantic sturgeon as described above for JBLE – Eustis.

Similarly, for those species not listed in the USFWS IPAC, JBLE – Langley has made a no effect determination for the West Indian manatee, listed sea turtles, the northeastern beach tiger beetle, and the rusty patched bumblebee because these species are unlikely to occur and have not been documented on the base. In addition, JBLE – Langley has also made a no effect determination for the northern long-eared bat as it would not be present during treatment and because treatment is not likely to negatively impact prey that may be located over stands of common reed while bats are foraging, and any potential take is not prohibited under the ESA Section 4(d) rule. JBLE – Langley has made a may affect, not likely to adversely affect determination for the piping plover, red knot, and roseate tern from aerial herbicide application and the extremely low probably for aircraft strikes during treatment operations.

Letters for JBLE – Eustis and JBLE - Langley requesting concurrence with these determinations were sent to the USFWS for those species identified in the USFWS IPaC and NOAA Fisheries (**Appendix A**). All correspondence and concurrence received from the USFWS and NOAA Fisheries Service regarding the DAF's determinations are provided in **Appendix A**.

3.8.2.2 Alternative 2

Impacts on biological resources would be similar to, but less than those described for the Preferred Alternative since only one aerial application for mosquitoes and one aerial application for common reed would occur every other year under Alternative 2.

3.8.2.3 Cumulative Effects

Potential cumulative environmental impacts on biological resources from the Preferred Alternative are negligible to moderate both on their own and when added to impacts on biological resources from the other reasonably foreseeable future actions (**Appendix B**).

Potential negligible cumulative impacts on EFH may occur from the dredging associated with the planned third-port maintenance and extension dredging activities on JBLE – Eustis; dredging may temporarily increase downstream siltation and turbidity, which when combined with pesticide application, may adversely impact EFH and Atlantic sturgeon's critical habitat. The adherence to all USEPA, VDEQ, VDH, and Chesapeake Bay Preservation Act regulations and guidance along with the use of BMPs and protective measures during project activities would minimize the potential to impact the environment in a cumulatively significant way.

3.8.2.4 No Action Alternative

Under the No Action Alternative, adult mosquitoes would be allowed to flourish on JBLE, and a late-fall egg base of disease-vector mosquitoes would not be reduced, potentially resulting in a large emergence the following year. The potential adverse and beneficial effects from the aerial application of insecticides on biological resources would not occur. Nontarget insects, such as honeybees, would not be adversely affected by the aerial application of insecticide.

Under the No Action Alternative for the control of common reed, herbicides would not be applied and native vegetation in adjacent areas would continue to decline. If common reed is allowed to persist, plant diversity would continue to decrease, along with prey-species diversity. Additionally, long-term, minor, adverse impacts would be expected because of the reduction of native plant species over time, the clogging of wetlands and waterbodies from the spread of common reed. Additional long-term, indirect effects are expected as common reed would continue to invade and alter natural stream and wetland functions and hydrology. Long-term, minor adverse impacts on wildlife and fish that depend on marsh habitats would be expected. While common reed does provide minor beneficial habitat for wildlife and fish, and the abundance of this habitat would increase under the No Action Alternative, any potential benefit provided by common reed is less than that of native vegetative communities.

3.9 HEALTH AND SAFETY

A safe environment is necessary to prevent or reduce the potential for death, serious injury and illness, or property damage. Human health and safety addresses potential health risks under routine and accidental exposure scenarios to public and occupational receptors. Public use exposure scenarios involve public receptors using lands open to the public that are treated with pesticides. Routine use exposure scenarios involve a public receptor which is exposed to pesticide active ingredient(s) that have drifted outside the area of application. Accidental

scenarios include instances where public receptors may prematurely enter a targeted application area, be sprayed directly, or contact waterbodies that have accidentally been sprayed directly or into which a pesticide active ingredient has accidentally been spilled. Routine exposures for occupational receptors include dermal and inhalation exposures that could occur by a worker during an application of the pesticide. Accidental exposures for occupational receptors could occur via spills or direct application onto a worker.

Chemical pesticides can be human skin irritants, eye irritants, and irritants that can cause allergic skin reactions after prolonged and repeated contact. Serious toxicological health effects can occur in humans, if exposed to high enough concentrations and for a prolonged duration. This would most likely occur as a result of occupational exposure due to mishandling of the material.

Health also relates to the potential for the transmission of disease by mosquitoes. In Virginia, the mosquito-borne disease includes West Nile virus, eastern equine encephalitis, St. Louis encephalitis, La Crosse virus, and Jamestown Canyon virus (VDH 2022). The mosquito vectors for each of these diseases have been identified on JBLE.

3.9.1 Existing Conditions

The pest management programs at JBLE are outlined in each site's IPMP (JBLE – Eustis 2020; JBLE – Langley 2021a). These plans provide a framework through which IPM is defined and accomplished on the installation, as well as providing details on safe pesticide storage, transportation, use, and disposal. The IPMP is used as a tool to reduce reliance on pesticides, to enhance environmental protection and personnel safety, and to maximize the use of IPM techniques.

The IPM programs at JBLE are based on federal, state, and local laws. When a federal law is not in agreement with a state or local law, the more stringent law is followed.

3.9.1.1 Summary of JBLE – Eustis IPMP Pesticide Procedures

The goal of the JBLE – Eustis IPM Program is to provide maximum pest control relief to meet mission requirements while limiting the application of pesticides and maximizing the use of nonchemical control strategies (JBLE – Eustis 2020). JBLE – Eustis' goal is that, through the end of fiscal year 2024, JBLE – Eustis will maintain the achieved reduction in annual pesticide use. By achieving this goal, less pesticide will be released into the environment and installation personnel will experience reduced pesticide exposures.

All pesticide applications accomplished at JBLE – Eustis must be performed by personnel who are employees of the federal government holding current DoD pesticide application certifications or contract personnel holding current pesticide application certifications issued by the Virginia Department of Agriculture and Consumer Services (VDACS). All pesticide applications are monitored by the JBLE – Eustis IPMC. All pest control activities including all pesticide applications are approved by the IPMC prior to the actual work. The Air Force Civil Engineer Center Command entomologist approves the IPMP and reviews and approves, as applicable, pesticide use requests received from the IPMC. All contracts involving pest control must be approved through the IPMC, and the contractor must provide copies of its Virginia Pesticide Business License and VDACS pesticide applicator certifications for all who will apply pesticides on JBLE – Eustis.

Pesticides and other substances used in pest control operations may pose hazards to pest control personnel, other personnel/the JBLE – Eustis community, and emergency responders. As required by law, all pesticides are applied only by certified applicators on the installation and must be done in strict conformance to the given pesticide label. Currently, only Building 1422 (Pest

Control Shop) and Building 3515 (The Pine Golf Course maintenance facility) are authorized for pesticide storage and pesticide mixing. All pesticide storage, pesticide equipment/storage, and mixing areas are locked when not in use.

The Base Operations Support contractor ensures its pest control personnel receive initial and annual physical examinations. The natural resources staff and Pines Golf Course staff who apply pesticides enter the medical surveillance programs administered by the McDonald Army Health Center prior to application of pesticides.

Safety Data Sheets (SDSs) and labels for authorized pesticides (whether or not a given quantity is on hand) are maintained at Building 1422, Building 1386 (Post/Base Exchange), and Building 3515 (Pines Golf Course), and are readily accessible to all pesticide applicators. Copies of SDSs and labels shall be maintained in organized SDS books, and copies shall accompany pesticide applicators when the given pesticide is being used or transported on the installation. Copies of all SDSs and labels shall be provided to the IPMC.

Appropriate personal protective equipment (PPE) and related protective clothing are required for all individuals applying pesticides. The appropriate PPE/clothing is used as stated by the given pesticide label. Such PPE would be obtained, and appropriate training completed before applicators use the PPE and apply the pesticide. Respirators, when required, are to be cleaned daily after use, to have cartridges changed after eight hours of actual use, and to be stored when not used in a sealed container. Pest controllers are instructed on the proper fitting of respirators and will be clean-shaven when respirators are worn. Annually, the pest controllers will be medically evaluated for respirator wear and shall be fit-tested by the installation's Safety Office or by a licensed industrial hygienist using a quantitative procedure. Pest control personnel shall not wear street clothing while applying pesticides. All clothing worn during pesticide application must be laundered at the Pest Control Shop or Golf Course (or by using a laundry service). At no time will such clothing be worn home or laundered at home. Additionally, all pesticide applicators shower at the end of the workday using installation shower facilities. An emergency eyewash is placed on each pest control vehicle. An emergency eyewash fountain and deluge shower are located in the pesticide mixing room and pesticide storage room. Safety is given top priority, especially when applying and handling pesticides and limiting pesticide exposure to all installation personnel.

For outdoor pesticide applications, preventing incidental pesticide exposure to personnel in and around the treatment site is of primary importance. Treatment sites are controlled to prevent personnel entering the site during the pesticide application and until the pesticide has dried or dissipated. Prior to commencing seasonal adult mosquito control and immediately prior to each aerial mosquito control mission, the public is notified of control activities. For aerial fogging missions, local beekeepers are individually notified of the aerial fogging mission and proper precautions for their beehives. While ground fogging, the vehicle and fogger stop operations when pedestrians are encountered until they have moved safely out of the treatment area. Coordination with stakeholders and other components of the installation community is also required for aerial treatments using herbicides, such as might occur with larger area coverage against certain invasive vegetation.

FES are notified of the pesticides stored in Approved Pesticide Storage Facilities (Buildings 1422, 1386, and 3515) and this information is part of the Pre-Fire Plan for these facilities. The McDonald Army Health Center provides emergency medical support in the event of accidental pesticide poisoning. The clinic emergency room has been notified of the pesticide types used on JBLE – Eustis. In event of an emergency, both a pesticide label and a SDS for the pesticide causing the poisoning will be provided with the patient.

All pest control activities including pesticide applications must comply with JBLE Instruction 32-101, respective EMPs, and the IPMP. As pesticides are considered hazardous materials, their acquisition, storage, and use are subject to EMP 4.4.6.6. This ensures appropriate documentation exists to comply with the provisions of EPCRA.

All pesticides used by the bases' Pest Control Shop under the contract and special cases where Environmental Element staff directly apply pesticides for habitat management shall be registered through the HazMart. All pesticides brought onto or used on the installation are registered through the HazMart and are on the HazMart Authorized Use List.

Pesticide spills (or any condition or event where the release/discharge of a pesticide was not done so in accordance with its respective label) will be reported to FES immediately by the individual(s) responsible for the spill (or any person witnessing such a spill). FES responds to pesticide spills as it does for any hazardous material. Additionally, unauthorized releases/discharges of pesticides into surface waters, wetlands, or storm drains will be reported to the National Response Center and VDEQ immediately.

All pesticides intended for use on the installation must exist on the JBLE – Eustis List of Approved Pesticides. The IPMC maintains this list, which is updated periodically because some pesticides may no longer be registered by the USEPA and/or no longer authorized for use in Virginia. Additionally, DoD policies may ban the use of given pesticides from use on military installations. Furthermore, JBLE – Eustis may deem certain pesticides not to be appropriate on the installation based on unique issues, even when such pesticides are approved for use in Virginia. This list is specific to the JBLE – Eustis environment and supersedes any other authorized list. The list is found in Appendix A of the JBLE – Eustis IPMP.

Aerial application of pesticides represents a tool in controlling certain arthropod and vegetation pests when such pests pose significant impacts on the military mission. Such applications are typically used when other techniques are not feasible and when aerial techniques can be employed without significant risks to the installation community and its ecology. Personnel performing the applications must be certified in the aerial application category. Pesticides used must be formulated for aerial applications, and pesticide labels are followed as with any application. Coordination with tenant activities is performed in advance. Additionally, installation-wide notifications are needed. For aerial applications of mosquito control pesticides, notification to local beekeepers and citizens in the local area is required.

3.9.1.2 Summary of JBLE – Langley IPMP Pesticide Procedure

The IPMP states that nonchemical control efforts will be used to the maximum extent possible before pesticides are used (JBLE – Langley 2021a). JBLE – Langley has a IPMC who is responsible for the overall pest management program. The IPMC ensures that all personnel applying pesticides are either certified or are trained and applying under the direct supervision of a certified applicator. The coordinator also manages the training and retraining of these individuals, ensuring that personnel are trained and recertified as required by law. Additionally, the IPMC works with all agencies that buy, sell, store, or apply pesticides on JBLE – Langley; confirms pesticides are stored and applied correctly; and ensures appropriate records are kept.

All personnel who apply pesticides on JBLE – Langley are included in a medical surveillance program. This program is overseen by the Occupational Health Section of Public Health at 633 MDG. Installation pest management personnel are given hazard communication training, to include hazardous materials in the workplace by the workplace supervisor or a designated representative. SDSs for all pesticides and other toxic substances used in the pest management program can be found in the Pest Control Shop Office, Building 1309. Additionally, SDSs are kept

in the golf course maintenance facility (Building 1301). Copies of SDSs are kept on each pest control vehicle for pesticides used that day.

Adequate and approved PPE is available in the Pest Control Shop and is used and maintained by pest control personnel. The Bioenvironmental Engineering Section approves all PPE. Contractors are required to provide their own PPE as required by the pesticide label and the law. PPE is used as required during the mixing and application of pesticides. Pesticide-contaminated protective clothing is not laundered at home. The clothing is laundered at the Pest Control Shop. Severely contaminated clothing is not laundered but is considered a pesticide-related waste and disposed of by the Hazardous Waste Section of the Installation Management Environmental Element in accordance with current regulatory requirements.

Building 1309 contains the majority of pesticides used on JBLE – Langley. The golf course also stores pesticides in Building 1301. The Pest Management Shop has provided floor plans for these two pesticide storage facilities to the fire department. In addition, pesticide inventories are sent to the fire department monthly.

The Pest Management Shop is authorized to have two telephone maintenance trucks (with a self-contained air conditioner and lockable compartments), a stake-body pickup truck, and a farm tractor. These vehicles are used for pest control purposes only. Care is taken to secure pesticides to prevent damage to the containers and spillage of the chemicals. At no time are pesticides left unsecured in the vehicles when unattended. Pesticides or contaminated equipment are not placed in the cabs of the vehicles. A portable eye station and spill kit are carried in each pest control vehicle when in use. Vehicles are washed on a hard stand located at the Pest Management Shop. All rinsate is processed through a filtration system and reused during pesticide mixing.

Storage facilities are properly secured, warning signs are posted, and areas are well ventilated (at least two complete air changes per hour). The mixing area is also well ventilated (at least six complete changes per hour). All lighting and electrical components are sparkproof. Application equipment is properly marked as contaminated with either insecticides or herbicides, depending on its use. Emergency deluge showers, eye washers, and fire extinguishers are strategically located throughout the building. There is a containment barrier around the outside storage lot, and there is adequate outside equipment storage. All pesticide mixing is performed at the Pest Management Shop. The IPMC requires contractors to mix at this facility also. All pesticide storage, pesticide equipment/storage, and mixing areas are locked when not in use.

All chemicals that are ordered for the Pest Control Shop have been approved through the Enterprise Environmental, Safety and Occupational Health Management Information System. Any pesticide that is declared a hazardous waste is properly disposed of. Any requests for nonstandard chemicals are forwarded according to AFMAN 32-1053 to the Major Command (MAJCOM) Pest Management Professional for approval prior to purchase.

Precautions are taken during pesticide application to protect the public, on and off the installation. Pesticides are not applied outdoors when the wind speed exceeds 10 miles per hour. Whenever pesticides are applied outdoors, care is taken to make sure that any drift is kept away from individuals, including the applicator. The JBLE – Langley Pest Management Shop has all the necessary supplies and equipment to clean up and contain pesticide spills. The spill plan for the Building 1309 can be found in Appendix N of the JBLE – Langley IPMP (JBLE – Langley 2021a).

Daily records of pest surveillance and control operations will be logged on the Integrated Pest Management Information System, or an approved equivalent, by Pest Management Shop personnel. Monthly computer summaries will be forwarded to the MAJCOM Pest Management

Professional for review and subsequent submission to Headquarters ACC, according to AFMAN 32-1053.

According to DoD Instruction 4150.07, each applicator who applies pesticides on a federal installation shall be certified with the appropriate certification to apply that pesticide. DoD employees must be DoD certified within two years of employment. Further, they must recertify every three years subsequently. Contractors must be certified in the state they are applying for the contract with a state-approved certification program before applying for the contract. They must present this certification before being awarded the contract. In the state of Virginia, the pesticide license must be renewed every two years.

3.9.2 Environmental Consequences

3.9.2.1 Preferred Alternative

Human health risks from potential pesticides used would be minimized by following all pesticide label instructions and IPMP guidance for each site to prevent accidental exposures and protect human health. The following measures would always be used at JBLE:

- Use the lowest effective application rate where feasible to reduce risk to occupational and public receptors.
- Use PPE as directed by the pesticide label.
- Observe restricted entry intervals specified by the pesticide label.
- Provide public notification where the potential exists for public exposure.
- Have a copy of SDSs at work sites.
- Notify local emergency personnel of proposed treatments.
- Contain and clean up spills and request help as needed.
- Secure containers during transport.
- Follow label directions for use and storage.
- Dispose of unwanted pesticides promptly and correctly.

<u>Mosquito Treatment</u>

The USEPA's 2020 draft human health risk assessment for naled identifies potential risks immediately following aerial application for wide-area public health mosquito control. Potential outdoor surface residues could pose a risk to young children if a child contacts an outdoor surface where naled was deposited shortly after aerial application (USEPA 2020a). Importantly, naled and its degradate DDVP degrade extremely rapidly on surfaces; therefore, the USEPA's assessment shows that surface residues decline to a level that does not pose any potential concern within 5 minutes to 3.4 hours after application, depending on different factors related to how the pesticide is applied, including application rate, release height, droplet size, and wind speed at the time of application (USEPA 2021). Because the USEPA's draft human health risk assessment for naled identifies potential risks for up to four hours of application, the USEPA recommends that young children not be allowed to play outdoors until four hours after application. AFMAN 52-1053 requires and the USEPA encourages mosquito control districts to inform residents at least 24 hours before application will take place.

Exposure to pyrethrin and pyrethroids can occur during application activities through contact or inhalation. Generally, pyrethrins, and pyrethroids have a low toxicity to humans (ATSDR 2003a; NPIC 2014). While poorly absorbed through the skin, contact may cause irritation. In addition, if inhaled by individuals with preexisting respiratory ailments, symptoms such as wheezing, coughing, and difficulty breathing may occur. It is not expected that a typical exposure to

pyrethrins or pyrethroids through normal use would result in an exposure that would cause symptoms or health concerns (ATSDR 2003a). However, if pyrethrins enter the body, they are quickly broken down into inactive products and removed from the body. While children may be more sensitive to pesticides when compared to adults, no studies have found that children are more sensitive to pyrethrins specifically. The use of pyrethrins and pyrethroids with adherence to label requirements substantially reduces potential risk to human health.

As with other aerially applied insecticides, typical exposure to malathion may be through inhalation or contact with the skin; malathion is readily taken into the body through the skin (NPIC 2010). Once within the body, malathion travels to the kidneys and liver and affects the nervous system; however, it is quickly broken down and removed from the body. Malathion is considered hazardous to humans, although those at greatest risk are those who work directly with the chemical (ATSDR 2003b). Exposure would be avoided by following all handling and PPE requirements specified on product labels. Exposure from the aerial application of malathion products in accordance with labels would minimize the potential for exposure of people living or working in areas where aerial application would occur. Exposure can be reduced by remaining indoors during treatment; AFMAN 52-1053 requires and the USEPA encourages mosquito control districts to inform residents at least 24 hours before application will take place.

Common Reed Treatment

In the USEPA's latest human health risk assessment for imazapyr, dietary risks (food and drinking water) are below the agency's level of concern. Residential handler dermal and inhalation risks for all scenarios are also below the agency's level of concern, as are residential post-application exposures (including incidental oral exposure of toddlers and oral and dermal exposure from swimming activities in treated lake water). Aggregate risks (food, drinking water, and residential exposure) are also below the agency's level of concern. There is a potential for exposure to workers through handling and applying imazapyr as well as exposure to post-application residues (USEPA 2006a). This exposure is avoided by following all handling, PPE, and reentry intervals as identified on the pesticide label.

In the USEPA's 2020 Interim Registration Review Decision for glyphosate, it is stated that "EPA [USEPA] has thoroughly evaluated potential human health risk associated with exposure to glyphosate and determined that there are no risks to human health from the current registered uses of glyphosate and that glyphosate is not likely to be carcinogenic to humans" (USEPA 2020b). The agency concluded that there are no residential, nonoccupational bystander, aggregate, dietary, or occupational risks of concern for glyphosate.

The quantities of pesticide proposed for application at JBLE via aerial application are not considered to present a threat to human health at ground level when applied at the label's recommended rates. Personnel in the areas proposed for pesticide application would be notified ahead of time and asked to avoid the areas during applications.

The formulated pesticide would only be mixed with surfactants/adjuvants that are approved on the pesticide label. Aerial applications of the pesticides proposed for use typically do not require the use of surfactants/adjuvants. Aerial pesticide application would not occur when conditions could increase the likelihood of drift (e.g., high or gusty winds, high temperatures, low humidity, or temperature inversions) and droplet size would also be controlled per specimen label instructions to minimize drift.

By implementing all applicable safety precaution measures summarized in the site-specific IPMPs and BMPs described in **Appendix C,** the impacts of the Proposed Action on health and safety would be negligible in both the short term and long term. In addition, short-term and long-term

beneficial impacts on health from proposed mosquito control would occur from the reduction of disease-vector mosquitoes.

3.9.2.2 Alternative 2

Impacts on health and safety would be similar to, but less than those described for the Preferred Alternative since only one aerial application for mosquitoes and one aerial application for common reed would occur every other year under Alternative 2.

3.9.2.3 Cumulative Effects

The Preferred Alternative would not result in significant long-term cumulative impacts on health or safety. Potential cumulative impacts on health or safety from the Preferred Alternative are negligible on their own and when added to impacts on health or safety from the other reasonably foreseeable future actions (**Appendix B**). Cumulative health impacts on workers from pesticide application is monitored through existing medical surveillance programs. Utilization of these programs, along with adherence to all requirements for the application of pesticides, would result in no long-term health impacts on workers from current and future pesticide applications.

3.9.2.4 No Action Alternative

Under the No Action Alternative, there would be no aerial application of pesticides to control mosquitoes and common reed. The public health concerns associated with mosquitoes, such as biting nuisance and risk of disease transmission, would not be controlled as effectively during times when mosquito numbers are high. When ground treatments are not sufficient, JBLE would not have an additional alternative for controlling the mosquito population and mosquito-borne diseases in humans would potentially increase. Additionally, continued widespread growth of common reed would create large, thick stands that pose potential wildland fire risks and compromise force protection and security. Therefore, negligible to minor, long-term, adverse impacts on health and safety would be expected from implementation of the No Action Alternative.

4.0 LIST OF PREPARERS

This EA has been prepared under the direction of the DAF Civil Engineer Center, DAF, and JBLE. The individuals who contributed to the preparation of this EA are listed in Table 4-1.

Table 4-1. List of Preparers

Name/Organization	Education	Resource Area	Years of Experience
Maggie Fulton Vernadero Group Inc.	BS, English	Technical Editing and Review	36
Travis Gaussoin Vernadero Group Inc.	BA, Anthropology	GIS and Figure Creation	7
Carey Lynn Perry Vernadero Group Inc.	BS, Marine Science, Marine Biology Concentration MS, Oceanography and Coastal Sciences	EA Preparation; Airspace Management and Use, Aesthetics and Visual Resources	15
Eric Webb, PhD Vernadero Group Inc.	BS, Biology MS, Biology PhD, Oceanography and Coastal Sciences	Technical Review	26
Brian Bishop Versar Inc.	BS, Biology MS, Environmental Science	Biological Resources and Health and Safety	18
Kenneth Erwin Versar Inc.	BS, Wildlife Science MS, Natural Resources	Biological Resources	10
Rahul Chettri Versar Inc.	BS, Chemistry MS, Environmental Science	Air Quality	27
Amy Miller Versar Inc.	BA, Economics MS, Water Resources and Environmental Planning	Water Resources, Geologic Resources, and Health and Safety	13
Radhika Narayanan Versar Inc.	BS, Economics MS, Environmental Studies	Air Quality	35
Christa Stumpf Versar Inc.	B.S. Wildland Management MS, Forest resource and Land Use Planning	Technical Review	25

FORMAT PAGE

5.0 REFERENCES

Agency for Toxic Substances and Disease Registry (ATSDR). 2003a. *Toxicological Profile for Pyrethrins and Pyrethroids*. Atlanta, Georgia: US Department of Health and Human Services. September 2003.

Agency for Toxic Substances and Disease Registry (ATSDR). 2003b. *Toxicological Profile for Malathion.* Atlanta, Georgia: US Department of Health and Human Services. September 2003.

AMVEC Chemical Corporation. 2011. Trumpet® EC Insecticide, AMVEC MSDS No.:283_9. December 2011.

Bakke, D. 2007. *Analysis of Issues Surrounding the Use of Spray Adjuvants with Herbicides.* Pacific Southwest Regional Pesticide Use.

Carver, B. D. 2019. *Bat (Chiroptera) Surveys for Midwest AFCEC Installations Task 3 – East Region Tasks Final Report Agreement W9126G-18-2-0057*. Tennessee Tech.

Centers for Disease Control and Prevention (CDC). 2018. *West Nile Virus Disease Cases and Presumptive Viremic Blood Donors by State – United States, 2017.* Accessed 14 September 2021. <https://www.cdc.gov/westnile/resources/pdfs/data/WNV-Disease-Cases-PVDs-by-State-2017-P.pdf>.

Centers for Disease Control and Prevention (CDC). 2019. *West Nile Virus Disease Cases and Presumptive Viremic Blood Donors by State – United States, 2018.* Accessed 14 September 2021. <https://www.cdc.gov/westnile/resources/pdfs/data/WNV-Disease-Cases-PVDs-by-State-2018-P.pdf>.

Centers for Disease Control and Prevention (CDC). 2020. *West Nile Virus Disease Cases and Presumptive Viremic Blood Donors by State – United States, 2019.* Accessed 14 September 2021. <https://www.cdc.gov/westnile/resources/pdfs/data/WNV-Disease-Cases-PVDs-by-State-2019-P.pdf>.

Centers for Disease Control and Prevention (CDC). 2021a. *West Nile Virus Disease Cases and Presumptive Viremic Blood Donors by State – United States, 2020.* Accessed 14 September 2021. <https://www.cdc.gov/westnile/resources/pdfs/data/WNV-Disease-Cases-PVDs-by-State-2020-P.pdf>.

Centers for Disease Control and Prevention (CDC). 2021b. *West Nile Virus Disease Cases and Presumptive Viremic Blood Donors by State – United States, 2021 (as of 7 September 2021).* Accessed 14 September 2021. <https://www.cdc.gov/westnile/resources/pdfs/data/WNV-Disease-Cases-PVDs-by-State-2020-P.pdf>.

Centers for Disease Control and Prevention (CDC). 2021c. *Species of Dead Birds in which West Nile Virus Has Been Detected, United States, 1999-2016.* Accessed 24 January 2022. <https://www.cdc.gov/westnile/dead-birds/index.html>.

Chesapeake Bay Climate Action Network. 2016. *Restoring Wetlands in Maryland: Achieving Cleaner Water and Climate Benefits by Investing in Wetland Restoration in the Chesapeake*. Accessed January 2022. <https://chesapeakeclimate.org/wp-content/uploads/2015/01/Wetlands-Fact-Sheet.pdf>.

Chesapeake Bay Foundation. 2022. *Climate Change*. Accessed January 2022. <https://www.cbf.org/issues/climate-change>.

Cowardin, L. M., V. Carter, F. C. Golet, and E. T. LaRoe. 1979. *Classification of Wetlands and Deepwater Habitats of the United States.* US Department of the Interior, Fish and Wildlife Service Technical Report. 131 pp.

Davis, R. S., R. K. D. Peterson, and P. A. Macedo. 2007. "An Ecological Risk Assessment for Insecticides Used in Adult Mosquito Management." *Integrated Environmental Assessment and Management* 3(3):373-382.

Department of the Air Force (DAF). 2013. *Final Environmental Assessment Addressing Aerial Application of Herbicides at Joint Base Charleston-Weapons Stations, Charleston, SC.* February 2013.

Department of the Air Force (DAF). 2017. *US Air Force Pollinator Conservation Reference Guide*. Air Force Civil Engineer Center, San Antonio, Texas. 182 pp.

Department of the Air Force (DAF). 2019. *Draft Environmental Assessment Combat Air Forces Adversary Air Joint Base Langley-Eustis, Langley Air Force Base, Virginia*. July 2019.

Ellis, D. H., C. H. Ellis, and D. P. Mindell. 1991. "Raptor Responses to Low-Level Jet Aircraft and Sonic Booms." *Environmental Pollution* 74:53–83.

Environmental Laboratory. 1987. *Corps of Engineers Wetlands Delineation Manual.* Wetlands Research Program Technical Report Y-87-1. US Army Corps of Engineers Waterways Experiment Station. January.

Enz J. W., V. Hofman, and A. Thostenson. 2019. *Air Temperature Inversions Causes, Characteristics and Potential Effects on Pesticide Spray Drift. October 2019 (revised).* AE1705. North Dakota State University Extension publication. Accessed January 2022. <https://www.ag.ndsu.edu/publications/crops/air-temperature-inversions-causes-characteristics-and-potential-effects-on-pesticide-spray-drift>.

Fang, J. 2010. *A world without mosquitoes: eradicating any organism would have serious consequences for ecosystems--wouldn't it? Not when it comes to mosquitoes*. Nature Volume 466, Issue 7305. July.

Gianou, K. L. 2012. *Aquatic Pesticide Best Management Practices and Relational Database for the Protection of NOAA Trust Species*. Marine Resource Management Program, College of Earth, Oceanic, and Atmospheric Sciences, Oregon State University. 11 May 2012.

Gucker, C. L. 2008. *Phragmites australis*. In: *Fire Effects Information System*. Website. US Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Accessed 222 January 2022. <https://www.fs.fed.us/database/feis/plants/graminoid/phraus/all.html>.

Hanson, W., A. Cross, and J. Jenkins. 2018. *Naled General Fact Sheet.* National Pesticide Information Center, Oregon State University Extension Services. Accessed 17 January 2022. <npic.orst.edu/factsheets/naledgen.html>.

Joint Base Langley – Eustis (JBLE). 2022. *Fort Eustis Greenhouse Gas Emissions Detail 2021/01/01 to 2022/12/31*. Accessed via Air Program Information Management System (APIMS) on 28 March 2023.

Joint Base Langley – Eustis (JBLE). 2016a. *Joint Base Langley-Eustis Air Installations Compatible Use Zones (AICUZ) Study, Draft (90%).* August 2016.

Joint Base Langley – Eustis (JBLE). 2016b. *Final Environmental Assessment for Installation Development at Joint Base Langley-Eustis, VA.* Headquarters 633d Air Base Wing, Joint Base Langley – Eustis, Virginia. September 2016.

Joint Base Langley – Eustis – Fort Eustis (JBLE – Eustis). 2012. *Supplemental Environmental Assessment for Control of Common Reed (Phragmites ausralis) at Joint Base Langley – Eustis, Fort Eustis, Virginia*. 733 Mission Support Group/Civil Engineer Division, Fort Eustis, Virginia. September 2012.

Joint Base Langley – Eustis – Fort Eustis (JBLE – Eustis). 2019. *Fort Eustis Integrated Natural Resources Management Plan, 2019-23.* Headquarters 633d Air Base Wing, Joint Base Langley – Eustis, Virginia.

Joint Base Langley – Eustis – Fort Eustis (JBLE – Eustis). 2020. *Integrated Pest Management Plan for Joint Base Langley-Eustis (Eustis), Fort Eustis, Virginia, 2020-2024.* May 2020.

Joint Base Langley – Eustis – Fort Eustis (JBLE – Eustis). 2021a. *Final Municipal Separate Storm Sewer System Annual Report, JBLE – Eustis, Permit Year 3.* September 2021.

Joint Base Langley – Eustis – Fort Eustis (JBLE – Eustis). 2021b. *Final Chesapeake Bay Phase II Total Maximum Daily Load Action Plan, JBLE – Eustis, Permit Year 3.* September 2021.

Joint Base Langley – Eustis – Langley Air Force Base (JBLE – Langley). 2014. *JBLE – Langley and Big Bethel Reservoir Integrated Natural Resources Management Plan (INRMP*). Headquarters 633d Air Base Wing, Joint Base Langley – Eustis, Virginia. 2 October 2014.

Joint Base Langley – Eustis – Langley Air Force Base (JBLE – Langley). 2019. *JBLE – Langley Virginia Integrated Natural Resources Management Plan, 2019-24*. Headquarters 633d Air Base Wing, Joint Base Langley – Eustis, Virginia. 2 June 2019.

Joint Base Langley – Eustis – Langley Air Force Base (JBLE – Langley). 2020. *Final CY2019 Air Emissions Inventory.* Joint Base Langley – Eustis, JBLE – Langley, Virginia. September 2020.

Joint Base Langley – Eustis – Langley Air Force Base (JBLE – Langley). 2021a. *Integrated Pest Management Plan for JBLE – Langley, Virginia for Plan Period 1 Oct 2020 to 30 Sep 2025.*

Joint Base Langley – Eustis – Langley Air Force Base (JBLE – Langley). 2021b. *Final Environmental Assessment for Airfield and Drainage Projects at Joint Base Langley – Eustis, Hampton, Virginia.* February 2021.

Joint Base Langley – Eustis – Langley Air Force Base (JBLE – Langley). 2021c. *Final Chesapeake Bay Phase II Total Maximum Daily Load Action Plan, JBLE – Langley, Permit Year 3.* October 2021.

Jones, A. S., D. Cohen, F. Alberdi, A. Sanabria, N. Clausell, M. Roca, A. K. Fionah, N. Kumar, H. M. Solo-Gabriele, and E. Zahran. 2020*. Persistence of Aerially Applied Mosquito-Pesticide, Naled, in Fresh and Marine Waters*. Coral Gables, Florida: Department of Civil, Architectural and Environmental Engineering, University of Miami.

Lamborn, R. H. 1890. *Dragon-flies vs. Mosquitoes. Can the Mosquito Pest Be Mitigated? Studies in the Life History of Irritating Insects, their Natural Enemies, and Artificial Checks.* New York: D. Appleton and Company.

Langley Air Force Base. 2009. *Invasive Species Inventory and Management Plan for Langley Air Force Base*. February 2009.

Manci, K. M., D. N. Gladwin, R. Villella, and M. G. Cavendish. 1988. *Effects of Aircraft Noise and Sonic Booms on Domestic Animals and Wildlife: A Literature Synthesis*. Fort Collins, Colorado: US Fish and Wildlife Service, National Ecology Research Center. NERC-88/29. 88 pp. June.

Meng, A. T., and J. F. Harsh. 1988. *Hydrogeologic Framework of the Virginia Coastal Plain: US Geological Survey Professional Paper 1404-C.* Regional Aquifer-System Analysis. 57 pp.

Minnesota Board of Water and Soil Research. 2019. *Carbon Sequestration in Wetlands*. Accessed January 2022. <https://bwsr.state.mn.us/carbon-sequestration-wetlands>.

Moosman, P. R. Jr., H. T. Thomas, and J. P. Veilleux. 2012. "Diet of the Widespread Insectivorous Bats *Eptesicus fuscus* and *Myotis lucifugus* Relative to Climate and Richness of Bat Communities." *Journal of Mammalogy* 93(2):491-496.

Mount, G. A., T. L. Biery, and D. G. Haile. 1996. "Review of Ultralow-Volume aerial sprays of insecticide for mosquito control." *Journal of the American Mosquito Control Association* 12(4):601-618.

National Oceanic and Atmospheric Administration (NOAA). 1971. *Annotated Bibliography on the Fishing Industry and Biology of the Blue Crab, Callinectus sapidus*. Accessed 3 February 2022. <https://spo.nmfs.noaa.gov/sites/default/files/legacy-pdfs/SSRF640.pdf>.

National Oceanic and Atmospheric Administration (NOAA). 2019. NOAA Fisheries Science and Data. Accessed 12 January 2022. <https://www.fisheries.noaa.gov/science-and-data.>

National Oceanic and Atmospheric Administration (NOAA). 2022. NOAA Fisheries Essential Fish Habitat Mapper; New England and Mid-Atlantic. Accessed 23 January 2022. <https://www.habitat.noaa.gov/apps/efhmapper/?page=page_3&views=view_12>.

National Pesticide Information Center (NPIC). 2010. *Malathion General Fact Sheet*. Oregon State University and the US Environmental Protection Agency. US Environmental Protection Agency Cooperative Agreement # X8-83458501.

National Pesticide Information Center (NPIC). 2014. Pyrethrins General Fact Sheet. Oregon State University and the US Environmental Protection Agency. US Environmental Protection Agency Cooperative Agreement # X8-83560101.

National Pesticide Information Center (NPIC). 2015. *Bacillus thuringiensis* General Fact Sheet. Oregon State University and the US Environmental Protection Agency. US Environmental Protection Agency Cooperative Agreement # X8-83560101.

Natural Resources Conservation Service. 2009. *Pest Management – Invasive Plant Control Common Reed – Phragmites australis.* Conservation Practice Job Sheet NH-595.

Nature Serve. 2022. Explorer. NatureServe Explorer [web application]. NatureServe, Arlington, Virginia. Accessed 12 January 2022.<https://explorer.natureserve.org/>.

North Carolina State University Veterinary Medicine. 2022. West Nile Virus. Accessed 24 January 2022. <https://cvm.ncsu.edu/research/departments/dphp/programs/phm/west-nile-virus/>.

Ober, H. K. 2008. *Insect Pest Management Services Provided by Bats*. Department of Wildlife Ecology and Conservation, UF/IFAS Extension.

Pagel, J. E, D. M. Whittington, and G. T. Allen. 2010. *Interim Golden Eagle Inventory and Monitoring Protocols, and Other Recommendations*. US Fish and Wildlife Service, Division of Migratory Bird Management. February.

Powars, D. S., and T. S. Bruce. 1999. *The Effects of the Chesapeake Bay Impact Crater on the Geological Framework and Correlation of Hydrogeologic Units of the Lower York-James River Peninsula Virginia.* US Geological Survey Professional Paper 1612. 82 pp. <https://pubs.usgs.gov/pp/p1612>.

Resikind, M. H., and M. A. Wund. 2009. "Experimental Assessment of the Impacts of Northern Long-Eared Bats on Ovipositing Culex *(Diptera: Culicidae)* Mosquitoes." *Journal of Medical Entomology* 46(5):1037-1044.

Rydell, J., D. I. Parker McNeill, and J. Ekof. 2002. "Capture Success of Little Brown Bats (*Myotis lucifugus*) Feeding on Mosquitoes." *Journal of Zoology* 256(3):371-381.

Smith, J. A. M. 2013. The Role of *Phragmites australis* in Mediating Inland Salt Marsh Migration in a Mid-Atlantic Estuary. PLOS ONE 8(5): e65091. doi:10.1371/journal.pone.0065091.

Sturtevant, R., A. Fusaro, W. Conard, S. Iott, and L. Wishah. 2022. *Phragmites australis australis* (Cav.) Trin. ex Steud.: US Geological Survey, Nonindigenous Aquatic Species Database, Gainesville, Florida, and NOAA Great Lakes Aquatic Nonindigenous Species Information System, Ann Arbor, Michigan. Revision Date: 10 September 2021. Accessed 22 January 2022. <https://nas.er.usgs.gov/queries/greatlakes/FactSheet.aspx?Species_ID=2937>.

Swearingen, J., B. Slattery, K. Reshetiloff, and S. Zwicker. 2010. *Plant Invaders of Mid-Atlantic Natural Areas*. 4th edition. Washington, DC: National Park Service and US Fish and Wildlife Service. 168 pp.

Tu, M., C. Hurd, and J. M. Randal. 2001. *Weed Control Methods Handbook: Tools and Techniques for Use in Natural Areas*. April 2001.

US Army Corps of Engineers (USACE). 2005. *Final Supplement to the Environmental Assessment for the Aerial Dispersal of Pesticide for Mosquito Control.* Portsmouth, Virginia: US Army Corps of Engineers Craney Island Dredged Material Management Area. February 2005.

US Army Corps of Engineers (USACE). 2008. *Final Environmental Assessment for BRAC 05 Base Realignment Fort Eustis, Virginia*. February 2008.

US Climate Data. 2022a. Climate Data for Hampton, Virginia. Accessed January 2022. <https://www.usclimatedata.com/climate/hampton/virginia/united-states/usva1366>.

US Climate Data. 2022b. Climate Data for Norfolk, Virginia. Accessed January 2022. <https://www.usclimatedata.com/climate/norfolk/virginia/united-states/usva0557>.

US Department of Agriculture (**USDA). 1997.** *Glyphosate, Herbicide Information Profile*. February 1997. US Department of Agriculture, Forest Service, Pacific Northwest Division.

US Department of Agriculture (USDA). 2011. *Final Report Human Health and Ecological Risk Assessment.* US Department of Agriculture, Forest Service, Southern Region. 16 December 2011.

US Department of Agriculture (USDA). 2019a. Web Soil Survey. Natural Resources Conservation Service. Accessed 13 January 2022. <https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm>.

US Department of Agriculture (USDA). 2019b. *Final Human Health and Ecological Risk Assessment for Malathion Rangeland Grasshopper and Mormon Cricket Suppression Applications.* Plant Protection and Quarantine – Policy Management. Animal and Plant Health Inspection Service. November 2019.

US Energy Information Administration (USEIA). 2018. Table 1. In *Energy-Related Carbon Dioxide Emissions by State, 2000-2018*. January 2018.

US Environmental Protection Agency (USEPA). 1991. *Methoprene. EPA Registration Eligibility Document*. Accessed 13 January 2022. <http://www.epa.gov/oppsrrd1/REDs/factsheets/0030fact.pdf >.

US Environmental Protection Agency (USEPA). 1998. *Bacillus thuringiensis* Subspecies *israelensis* Strain EG2215 (006476) Fact Sheet. Accessed 31 March 2022. <https://www3.epa.gov/pesticides/chem_search/reg_actions/registration/fs_PC-006476_01-Oct-98.pdf>.

US Environmental Protection Agency (USEPA). 2004. *Naled Analysis of Risks to Endangered and Threatened Pacific Salmon and Steelhead*. Environmental Field Branch, Office of Pesticide Programs.

US Environmental Protection Agency (USEPA). 2006a. *Reregistration Eligibility Decision (RED) Document for Imazapyr.* Case Number 3078. US Environmental Protection Agency.

US Environmental Protection Agency (USEPA). 2006b. *Reregistration Eligibility Decision (RED) Document for Pyrethrins. List B, Case No. 2580. EPA 738-R-06-004. June 2006.*

US Environmental Protection Agency (USEPA). 2008a. *Risks of Naled Use to Federally Threatened California Red Legged Frog: Pesticide Effects Determination*. Environmental Fate and Effects Division, Office of Pesticide Programs.

US Environmental Protection Agency (USEPA). 2008b. *Risks of Permethrin Use to the Federally Threatened California Red-legged Frog* (*Rana aurora draytonii*) *and Bay Checkerspot Butterfly* (*Euphydryas editha bayensis*), *and the Federally Endangered California Clapper Rail* (*Rallus longirostris* obsoletus), *Salt Marsh Harvest Mouse* (*Reithrodontomys raviventris*), *and San Francisco Garter Snake* (*Thamnophis sirtalis tetrataenia*). Washington, DC: Pesticide Effects Determinations, Environmental Fate and Effects Division, Office of Pesticide Programs. 20 October 2008.

US Environmental Protection Agency (USEPA). 2009a. *Reregistration Eligibility Decision (RED) for Malathion.* Case No. 0248. EPA 738-R-06-030. May 2009.

US Environmental Protection Agency (USEPA). 2009b. *Registration Review - Preliminary Ecological Risk Assessment for Glyphosate and Its Salts*.

US Environmental Protection Agency (USEPA). 2014. Fact Sheet *Bacillus sphaericus* 2362, Serotype H5a5b, Strain ABTS 1743 (PC Code 119803). Accessed 30 March 2022. <https://www3.epa.gov/pesticides/chem_search/reg_actions/registration/fs_PC-119803_06-May-14.pdf>.

US Environmental Protection Agency (USEPA). **2015.** *Registration Review – Preliminary Ecological Risk Assessment for Glyphosate and Its Salts.* Office of Chemical Safety and Pollution Prevention. 8 September 2015.

US Environmental Protection Agency (USEPA). **2016.** *Ecological Risk Management Rationale for Pyrethroids in Registration Review.* Office of Chemical Safety and Pollution Prevention.

US Environmental Protection Agency (USEPA). 2018. *Transportation Conformity Guidance for the South Coast II Court Decision*. EPA-420-B-18-050, November 2018.

US Environmental Protection Agency (USEPA). 2019. *Glyphosate Proposed Interim Registration Review Decision*. Case Number 0178. Docket Number EPA-HQ-OPP-2009-0361.

US Environmental Protection Agency (USEPA). **2020a.** *Draft Ecological Risk Assessment for the Registration Review of Dichlorvos (DDVP), Naled, and Trichlorfon.* Office of Chemical Safety and Pollution Prevention. 17 June 2020.

US Environmental Protection Agency (USEPA). 2020b. *Glyphosate Interim Registration Review Decision*. Case Number 0178. Docket Number EPA-HQ-OPP-2009-0361. January 2020.

US Environmental Protection Agency (USEPA). 2021. *Naled for Mosquito Control*. Accessed 21 January 2022. <https://www.epa.gov/mosquitocontrol/naled-mosquito-control>.

US Environmental Protection Agency (USEPA). 2022a. *Controlling Adult Mosquitoes*. Accessed 31 March 2022. < https://www.epa.gov/mosquitocontrol/controlling-adult-mosquitoes>.

US Environmental Protection Agency (USEPA). 2022b. Revised Conference and Biological Opinion on the Environmental Protection Agency's Registration Review of Pesticide Products Containing Chlorpyrifos, Malathion, and Diazinon. National Marine Fisheries Service Endangered Species Act Section 7 Conference and Biological Opinion. https://doi.org/10.25923/mqyt-xh03.

US Fish and Wildlife Service (USFWS). 1994. *Northeastern Beach Tiger Beetle (Cicindela dorsalis dorsalis) Recovery Plan*. Hadley, Massachusetts. September 1994.

US Fish and Wildlife Service (USFWS). 2019. Northern Long-Eared Bat Range. Accessed 2 February 2022. <https://www.fws.gov/Midwest/Endangered/mammals/nleb/nlebRangeMap.html>.

US Fish and Wildlife Service (USFWS). 2021. *Information for Planning and Consultation.* Accessed 27 October 2021. <https://ecos.fws.gov/ipac/>.

US Forest Service (USFS). 2011. *Imazapyr Human Health and Ecological Risk Assessment.* Final Report. 16 December 2011.

Virginia Department of Environmental Quality (VDEQ). 2019. *2019 Annual Point Source Criteria Pollutant Emissions*. Accessed January 2022. <https://www.deq.virginia.gov/home/showpublisheddocument/5428/637502721591700000>.

Virginia Department of Environmental Quality (VDEQ). 2020. *Virginia Ambient Air Monitoring 2020 Annual Report*. Accessed January 2022. <https://www.deq.virginia.gov/air/air-quality-monitoring-assessments/air-quality-reports>.

Virginia Department of Health (VDH). 2022. “Bugs” & Human Health. Website. Accessed 2 February 2022. <https://www.vdh.virginia.gov/environmental-epidemiology/bugs-human-health>.

Virginia Department of Wildlife Resources (VDWR). 2020. Wildlife Information; Rusty Patched Bumblebee. Website. Accessed January 2022. <https://dwr.virginia.gov/wildlife/information/rusty-patched-bumble-bee/>.

Virginia Department of Wildlife Resources (VDWR). 2022. Fish and Wildlife Information Service. Website. Accessed 20 January 2022. <https://vafwis.dgif.virginia.gov/fwis/?Menu=Home>.

Virginia Herpetological Society. 2022. Turtles of Virginia. Website. Accessed 12 January 2022. <https://www.virginiaherpetologicalsociety.com/reptiles/turtles/turtles_of_virginia.htm>.

Whitaker, J. O., Jr. 2004. “Prey Selection in a Temperate Zone Insectivorous Bat Community.” *Journal of Mammalogy* 85(3):460-469.

World Health Organization (WHO). No date. *WHO Specifications and Evaluations for Public Health Pesticides*: *Bacillus thuringiensis Subspecies israelensis Strain AM65-52 + Bacillus sphaericus Strain ABTS-1743.* Accessed 31 March 2022. <https://www.who.int/pq-vector-control/prequalified-lists/Bacillus_thuringiensis_AM65-52_Bacillus_sphaericus_ABTS-1743.pdf>.

Yuval, B., and A Bouskila. 1993. “Temporal Dynamics of Mating and Predation in Mosquito Swarms.” *Oecologia* 95:65-69.

Appendix A

Early Public Notice and Agency and Tribal Correspondence

FORMAT PAGE

Early Public Notice and Notice of Availability

FORMAT PAGE

VIRGINIA MEDIA

Sold To:
Carey Lynn Perry - CU80128757
3400 S Carrollton Ave, Unit 850752
New Orleans, LA 70185

Bill To:
Carey Lynn Perry - CU80128757
3400 S Carrollton Ave, Unit 850752
New Orleans, LA 70185

Affidavit of Publication

State of Illinois
County of Cook

Order Number: 7077060
Purchase Order: Air Force Public Notice Displa

This day, Jeremy Gates appeared before me and, after being duly sworn, made oath that:

1) He/she is affidavit clerk of Daily Press, a newspaper published by Daily Press, LLC in the city of Newport News and the state of Virginia
2) That the advertisement hereto annexed has been published in said newspaper on the dates stated below
3) The advertisement has been produced on the websites classifieds.pilotonline.com and https://www.publicnoticevirginia.com

Published on: **Nov 05, 2021; Nov 06, 2021**.

Jeremy Gates

Subscribed and sworn to before me in my city and state on the day and year aforesaid this 4 day of February, 2022

My commission expires November 23, 2024

Notary Signature

BRENDAN KOLASA
OFFICIAL SEAL
Notary Public, State of Illinois
My Commission Expires
November 23, 2024

Notary Stamp

EARLY NOTICE OF A PROPOSED ACTIVITY WITH POTENTIAL TO IMPACT FLOODPLAINS AND WETLANDS JOINT BASE LANGLEY-EUSTIS, FORT EUSTIS AND LANGLEY AIR FORCE BASE, VIRGINIA

The Department of the Air Force (DAF) is preparing a Draft Environmental Assessment (EA) t to evaluate potential environmental impacts associated with the proposed aerial application of pesticide for adult mosquito and invasive plant species (primarily common reed [*Phragmites australis*]) control at Joint Base Langley-Eustis (JBLE), which consists of Langley Air Force Base (JBLE – Langley) and Fort Eustis (JBLE – Eustis), Virginia. The purpose of the Proposed Action is to: (1) reduce mosquito (and other pest arthropods) populations to tolerable levels, (2) break the disease transmission cycle caused by vectoring arthropods, and (3) restore habitats impacted by invasive plant species such as common reed. The Proposed Action is needed to control mosquitoes and invasive plant species across large areas of JBLE and to reach remote portions of JBLE that are not reasonably accessible for application by land or watercraft. Large scale application of pesticide would reduce the potential threat of human disease caused by mosquito vectors, mosquito-induced discomfort, hardship, annoyance, and distraction experienced by personnel at JBLE. An outbreak of mosquito-borne illness among base personnel could seriously degrade mission-essential operations and readiness. Additionally, the efficiency of military training, maintenance operations, range management, natural resources management, military police, fire and emergency services, and others who work outdoors may be adversely affected when mosquito populations reach intolerable levels. The use of outdoor bivouac areas and recreation facilities such as the golf course, athletic fields, playgrounds, and picnic areas may decline at times due to intense mosquito activity. Such restrictions reduce productivity and have a negative effect on the morale of assigned personnel, their dependents, transient personnel, and guests and residents of civilian communities. Control of invasive plant species such as common reed in coastal and estuarine wetlands at JBLE would improve the biological diversity and functions of wetlands, increase recreational opportunities, reduce visual restrictions by tall herbaceous vegetation, and support training opportunities and force protection.

The proposed project is subject to Executive Order (EO) 11988, *Floodplain Management*, and EO 11990, *Protection of Wetlands*, requirements and objectives because aerial dispersal would occur within a floodplain and would target select tidal and non-tidal wetland areas containing common reed at JBLE – Eustis (600 acres) and at JBLE – Langley (145 acres). This notice complies with Section 2(a)(4) of EO 11988 and Section 2(b) of EO 11990. The DAF requests advance public comment to determine if there are public concerns regarding the project's potential impacts on floodplains or wetlands. The DAF would also like to solicit public input or comments on potential project alternatives. The proposed project will be analyzed in the forthcoming EA, and the public will have the opportunity to comment on the Draft EA when it is released.

The public comment period is 5 November 2021 to 5 December 2021. Please submit comments or requests for more information to the 633 Civil Engineer Squadron (CES) Environmental Element organization email at 633CES.CEI.Flight@us.af.mil.

VIRGINIA MEDIA

Sold To:
VERNADERO GROUP INCORPORATED - CU80055195
2730 E. Camelback Rd., Suite 210
Phoenix, AZ 85016

Bill To:
VERNADERO GROUP INCORPORATED - CU80055195
2730 E. Camelback Rd., Suite 210
Phoenix, AZ 85016

Affidavit of Publication

State of Illinois
County of Cook

Order Number: 7252118
Purchase Order: Newspaper NOA_JBLE Pesticide E

This day, Jeremy Gates appeared before me and, after being duly sworn, made oath that:

1) He/she is affidavit clerk of Daily Press, a newspaper published by Daily Press, LLC in the city of Newport News and the state of Virginia
2) That the advertisement hereto annexed has been published in said newspaper on the dates stated below
3) The advertisement has been produced on the websites classifieds.pilotonline.com and https://www.publicnoticevirginia.com

Published on: **Jul 22, 2022; Jul 23, 2022.**

Jeremy Gates

Subscribed and sworn to before me in my city and state on the day and year aforesaid this 24 day of October, 2022

My commission expires July 6, 2025

Notary Signature

MARIA JOE
Official Seal
Notary Public - State of Illinois
My Commission Expires Jul 6, 2025

Notary Stamp

CLASSIFIEDS

SATURDAY
JULY 23, 2022

Call (757) 247-4700 to advertise or place your ad online at placeanad.dailypress.com. Now easier than ever!

Dogs, Cats, Other Pets

GERMAN SHEPARD PUPS
AKC registered, 7wks old. $500
Call: 919-709-8124

GERMAN SHEPHERD PUPPIES
SABLE & BLACK/ TAN
Male & Female GSD puppies ready 8/16
Vet checked, UTD, microchipped & socialized.
Repeat breeding w/references avail
(540) 623-6063
www.holyokekennel.com / IG & FB

PUG
Puppies. 9wks. $800. 757-592-6999

SHELTIE
AKC Pups Reg'd, Vet Chkd, Full Collar, Ready 7/1. $1,000. 757-508-8224

YORKIPOOS
8 wks, M & F. Choc, Blk/Tan & Parti Color. Hypoallergenic. Beautiful & playful! Vet checked, shots & wormed. $1,500/ea. 804-832-2950.

Garage/Yard Sales, etc.

EXMORE
ESTATE SALE for the books. 3600 sq.ft. home contents are being sold. Tons of furniture, valuable antiques and other collectibles.

Friday, July 22 nd 1-7pm.
Saturday, July 23 rd 10-6pm.
Sunday, July 24 th 11-6pm.

At 8254 Occohannock Neck Rd. Exmore, Va. 23350

Only 4 miles off Rt. 13

For more information contact David at 757-710-6924

Cash/Debit/Credit Cards accepted: Not responsible for packaging or loading. Arrangements for large items to be picked up at a later date is available.

NEWPORT NEWS
424 Pin Oak Rd.23601,7/23,9-5,rain date7/24,cash only.Electronics, art, art glass, records,furniture, kids toys,collectibles,household items

NEWPORT NEWS
MT CARMEL SCHOOL SAT 7/23
7:30am-11:30am 52 Harpersville Rd inside school gym. Many items for sale: furniture, housewares, books, kids' toys, electronics, holiday, jewelry, and more! + Baked Goods!

NEWPORT NEWS
Estate Garage Sale. Sat. July 23rd 8am - 3pm. 46 Camelot Ct (Off Old Oyster Point Rd.) Freezer, furniture, roll top desk, dishes, wicker set, outdoor table with chairs & tools.

Items Under $250

PROPANE TANK- NEW- 30# FULL
Tractor Supply Manchester brand asking $75. call 757-378-3479

WELDING BOTTLE CART TANDEM STYLE HARPER BRAND
like new 10" solid wheels asking $100.00 call 757-378-3479

Misc. Merchandise For Sale

MOWER FOR SALE
CUB CADET
2016 Cub Cadet Model: RZT 42 Zero Turn Mower, Very Good Condition, $1,300.00, Call: 757-532-2964

Wanted To Buy

AMERICAN ANTIQUE BUYER
RAY HIGGINS
BUYING ANTIQUES & ESTATES, ITEMS OF VALUE
VINTAGE ARTWORK
ALL COINS
STERLING FLATWARE
VINTAGE WRIST WATCHES
ANTIQUE FIREARMS
OLD DECOYS
OLD TOYS
COSTUME JEWELRY
25 YEARS EXPERIENCE
LICENSED, 7 DAYS A WEEK
FREE ESTIMATES
757-617-4043
www.raymondsantiques.com

BASEBALL CARDS 1909-2009
Pokémon + Footbll, Bsktball & Autographs, Ticket Stubs, Coins, Military Patches, Letters, etc Political items, Postcards, Old Magazines 757-851-5151

CAPTURE ATTENTION
Use a Good Headline
When you heighten a reader's interest, the person will be more likely to continue reading the rest of your message. Adding a color border helps to attract attention to your message. Ask your classified sales representative about color.

SHOP THIS CLASSIFIED SECTION and
MOVE ANTIQUES
OUT OF THE PAST AND INTO YOUR HANDS
You will find it fast in the Daily Press classifieds

General Help Wanted

SECURITY MONITOR
Provide 24/7 monitoring and troubleshooting of all closed circuit television systems and associated services installed at designated facilities including the ability to work with computers and the software used. Also the Inventory Control Point for supplies entering the facility. Must be able to possess and maintain a Secret Security Clearance. Must undergo drug testing, criminal background check, and meet company standards for background and reference checks. Must be at least 21 years old, U.S. Citizen, and read, write, and speak English. Ability to interact in a professional manner, dealing effectively with the public, and having good oral and written communication skills. Must have a HS diploma or equivalent. Must have a current Driver's License. Current hourly pay rate is approx.. $23 per hour. Send resume to fax 410-757-5580 or email to tcroke@lmeinc.com

A
Equal Housing Opportunity
All real estate advertising in this newspaper, both sales and rentals, is subject to the Federal Fair Housing Act which makes it illegal to advertise "any preference, limitation, or discrimination because of race, color, religion, sex, handicap, familial status, elderliness, or national origin, or intention to make any such preference, limitation, or discrimination."
We will not knowingly accept any advertising for real estate which is in violation of the law. All persons are hereby informed that all dwellings advertised are available on an equal opportunity basis. To obtain further information on fair housing or to file a housing discrimination complaint, call the HUD toll-free number, 1-800-669-9777; or on the Peninsula, Office of the Human Affairs, 245-5642

Equal Housing Opportunity

Vacation/Resort Property

WILLIAMSBURG
Time Shares, Save 80% Off resort prices! Wyndham/ King's Creek Plantation Liquidation Starting at $2k Call 352-801-9746 FSBO

Wanted Real Estate

STOP!
Don't Sell to Someone Else
We Buy Houses
Areas #1 Homebuyer!
We Pay MORE!
CALL NOW
757-598-1020

Room For Rent

Newport News
East End Room
Unfurnished, large
Remodeled, quiet, private.
$99/wk. 757-921-0078

Newport News
Nice, clean furnished rooms for rent. All utilities included.
Deposit Required.
Starting at $125 per week.
Call for details: 757-245-2919

Townhouse/Condo For Rent

HAMPTON
Direct waterfront condo. Gated, Gorgeous 2 bedroom/2 baths. Pool and pier amenities included. Available Aug 1st. $1800/m 321-258-7706

Houses For Rent

1, 2 and 3 BR's in Hampton and Newport News. Call for details
MERCURY PROPERTY MANAGEMENT (757) 727-0515

WILLIAMSBURG
3BR/2.5BA, 2000 SF, 2 story, 2 car garage, appliances, washer & dryer. $1,800/mo. 757-880-5405 or 808-375-6552

ATTRACT THE BEST EMPLOYEES
With ads that **STAND OUT** in the Daily Press Classifieds. Use your logo and ask about color when you call to place a classified employment ad!
Daily Press

Apartments For Rent

APARTMENTS, HOMES, TOWNHOMES & CONDOS FOR RENT
ABBITT MANAGEMENT
Rental Homes & Apartments
757-926-4405
11835 Fishing Point Dr., Ste. 101
www.abbittrentals.com

1, 2, and 3 Bedroom Apartments and Townhomes, freshly painted and ready for move in!
Affordable rates and move-in deals available with approved credit and 12 month lease!
3 great locations in Denbigh, Hampton and Midtown Newport News!
Call Goldkress today for details on your new home!
(757)595-9201

Autos for Sale

HONDA 2010 ACCORD
Sedan EX. Automatic, 70k miles. Asking $9,800. 757-291-7213

VOLKSWAGEN 2012 PASSAT
SE Model. Black exterior and interior. AM/FM Stereo/CD Player. 230k miles. Leather seats. Very good condition. $7500.757-870-5475.

Place your ad today! 247-4700 or dailypress.com/advertiser

Legal Notice

Notice of Availability
Draft Environmental Assessment for Aerial Application of Pesticide for Mosquito and Invasive Plant Species Control at Joint Base Langley-Eustis, Virginia

A Draft Environmental Assessment (EA) and proposed Finding of No Significant Impact (FONSI)/Finding of No Practical Alternative (FONPA) have been prepared by the Department of the Air Force (DAF) to analyze the potential environmental impacts of aerially applying pesticides for mosquito and invasive plant species (primarily common reed [*Phragmites australis*]) control at Joint Base Langley-Eustis (JBLE), Virginia. The purpose of the Proposed Action is to implement an Integrated Pest Management approach to community health and natural resources management at JBLE to support military missions by: (1) reducing mosquito (and other pest arthropods) populations to tolerable levels, (2) breaking the disease transmission cycle caused by vectoring arthropods, and (3) restoring habitats impacted by invasive plant species such as common reed. The Proposed Action is needed to control mosquitoes and invasive plant species across large areas of JBLE and to reach remote portions of JBLE that are not reasonably accessible from application by land or watercraft. The DAF invites the public to provide comments on the Draft EA and proposed FONSI/FONPA.

The Draft EA and proposed FONSI/FONPA can be found at the JBLE – Eustis and JBLE – Langley public websites: https://www.jble.af.mil/Units/Army/Eustis-Enviromental/ and https://www.jble.af.mil/About-Us/Units/Langley-AFB/Langley-Environmental/. Please send any comments or concerns regarding the proposal or Draft EA or proposed FONSI/FONPA within 30 days of publication of this notice to Ms. Sherry Johnson at sherry.johnson.4@us.af.mil.

PRIVACY ADVISORY NOTICE

This Draft EA and proposed FONSI/FONPA are provided for public comment in accordance with the National Environmental Policy Act (NEPA), the President's Council on Environmental Quality NEPA Regulations (40 Code of Federal Regulations [CFR] Parts 1500-1508), and 32 CFR 989, Environmental Impact Analysis Process (EIAP). The EIAP provides an opportunity for public input on DAF decision making, allows the public to offer inputs on alternative ways for the DAF to accomplish what it is proposing, and solicits comments on the DAF's analysis of environmental effects.

Public commenting allows the DAF to make better-informed decisions. Letters or other written or oral comments provided may be published in the EA. As required by law, comments provided will be addressed in the EA and made available to the public. Providing personal information is voluntary. Any personal information provided will be used only to identify your desire to make a statement during the public comment portion of any public meetings or hearings or to fulfill requests for copies of the EA or associated documents. Private addresses will be compiled to develop a mailing list for those requesting copies of the EA; however, only the names of the individuals making comments and specific comments will be disclosed. Personal home addresses and phone numbers will not be published in the EA.

Agency Coordination Letters

FORMAT PAGE

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 633D AIR BASE WING
JOINT BASE LANGLEY-EUSTIS VA

16 November 2021

Cindy Schulz
U.S. Fish and Wildlife Service - Virginia Field Office
6669 Short Lane
Gloucester, VA 23061
Submitted via email to cindy_schulz@fws.gov and virginiafieldoffice@fws.gov.

Dear Ms. Schulz,

We are contacting you in hopes of obtaining Virginia Field Office inputs on the potential impacts from our Department of the Air Force (DAF) proposal to conduct aerial application of pesticides and herbicides at JBLE-Eustis, VA and JBLE-Langley, VA. These aerial applications would target adult mosquito and invasive plant species (primarily common reed [*Phragmites australis*]) control at both installations, which are located on the site map at Figure 1. In accordance with the National Environmental Policy Act (NEPA) of 1969 (42 United States Code 4321, *et seq.*), the Council of Environmental Quality NEPA Implementing Regulations (40 Code of Federal Regulations [CFR] Parts 1500-1508), and the DAF's Environmental Impact Analysis Process (32 CFR 989), the DAF is in the process of preparing an Environmental Assessment (EA) to assess the potential environmental impacts of the Proposed Action.

The purpose of the Proposed Action is to: (1) reduce mosquito (and other pest arthropods) populations to tolerable levels, (2) break the disease transmission cycle caused by vectoring arthropods, and (3) restore habitats impacted by invasive plant species such as common reed.

The Proposed Action is needed to control mosquitoes and invasive plant species across large areas of JBLE-Eustis and JBLE-Langley and to reach remote portions of the installations that are not reasonably accessible for application by land or watercraft. Large scale application of pesticide would reduce the potential threat of human disease caused by mosquito vectors, mosquito-induced discomfort, hardship, annoyance, and distraction experienced by personnel at JBLE-Eustis. An outbreak of mosquito-borne illness among base personnel could seriously degrade mission-essential operations and readiness. Additionally, the efficiency of military training, maintenance operations, range management, natural resources management, military police, fire and emergency services, and others who work outdoors may be adversely affected when mosquito populations reach intolerable levels. The use of outdoor bivouac areas and recreation facilities such as the golf course, athletic fields, playgrounds, and picnic areas may decline at times due to intense mosquito activity. Such restrictions reduce productivity and have a negative effect on the morale of assigned personnel, their dependents, transient personnel, and guests and residents of civilian communities.

Control of invasive plant species such as common reed in coastal and estuarine wetlands would improve the biological diversity and functions of wetlands, increase recreational opportunities, reduce visual restrictions by tall herbaceous vegetation, and support training opportunities and force protection. Further, populations of common reed currently prevent marsh retreat, making the installation more susceptible to flooding particularly over the next 50 years considering relative sea level rise. Common reed is occupying space in the high marsh and prevents the gradual movement inland of more salt tolerant species. These salt tolerant species are being submerged in some areas as land sinks and oceans rise, pushing tidal river levels up.

The EA will analyze the potential range of environmental impacts that would result from the Proposed Action. The DAF is currently considering two proposed alternatives (the Proposed Action and the No Action Alternative). The Proposed Action supports management of mosquito populations under conditions of disease risk and intolerable levels as well as management of invasive plant species, particularly common reed at JBLE-Eustis and JBLE-Langley. The Proposed Action includes control of adult mosquitoes over all of JBLE – Eustis' approximately 7,900 acres (Figure 2) and over approximately 3,000 acres of JBLE – Langley (Figure 3). The Proposed Action also includes the control of common reed on approximately 600 acres at JBLE – Eustis (Figure 4) and on approximately 145 acres on JBLE – Langley (Figure 5). The No Action Alternative, which reflects the status quo, is analyzed as a benchmark against which effects of the Proposed Action can be evaluated.

In preparation of the EA, we will obtain details of federally listed, proposed, and candidate species or designated or proposed critical habitats that may be in the action area from the US Fish and Wildlife Service Information for Planning and Consultation website. Pursuant to Section 7 of the Endangered Species Act, we request additional information or any comments that may be beneficial in the development of the EA and for determination of potential impacts to listed species or critical habitat. This information and your comments on the Proposed Action will help us develop the scope of our environmental review.

Please forward any comments or questions about this proposal to Ms. Sherry Johnson at sherry.johnson.4@us.af.mil within 30 days of receipt of this letter.

Sincerely

JENNINGS.DAVID.M.1189439110 Digitally signed by JENNINGS.DAVID.M.1189439110 Date: 2021.11.16 13:26:35 -05'00'

DAVID M JENNINGS
Chief, Environmental Element
633d Civil Engineer Squadron

5 Attachments:

1. Figure 1. Regional Location of Joint Base Langley-Eustis, Virginia
2. Figure 2. Proposed Adult Mosquito Treatment Areas at JBLE-Eustis
3. Figure 3. Proposed Adult Mosquito Treatment Areas at JBLE-Langley
4. Figure 4. Proposed Common Reed Treatment Areas at JBLE-Eustis
5. Figure 5. Proposed Common Reed Treatment Areas at JBLE-Langley

DEPARTMENT OF THE AIR FORCE
733D CIVIL ENGINEER SQUADRON
JOINT BASE LANGLEY-EUSTIS VA

1 DEC 2021

Caitlin Rogers
Catawba Indian Nation
Tribal Historic Preservation Office
1536 Tom Steven Road
Rock Hill, SC 29730

Dear Ms. Rogers,

The Department of Air Force (DAF) is preparing an Environmental Assessment (EA) to analyze the potential impacts associated with proposed aerial application of pesticides for adult mosquito and invasive plant species (primarily common reed [Phragmites australis]) control at Joint Base Langley-Eustis (JBLE). Figure 1 (see attached) shows the regional location of JBLE.

The purpose of the Proposed Action is to: (1) reduce mosquito (and other pest arthropods) populations to tolerable levels, (2) break the disease transmission cycle caused by vectoring arthropods, and (3) restore habitats impacted by invasive plant species such as common reed.

The Proposed Action is needed to control mosquitoes across large areas of JBLE (over all of JBLE-Eustis' approximately 7,900 acres and over approximately 3,600 acres of JBLE-Langley), as well as to reach remote portions of JBLE that are not reasonably accessible for application by land or watercraft. Attached Figures 2 and 3 (see attached) present the proposed treatment areas for adult mosquito control at JBLE. Large scale application of pesticide would reduce the potential for mosquito-borne illness to degrade mission-essential operations and readiness; the threat of human disease caused by mosquito vectors; and mosquito-induced discomfort, hardship, annoyance, and distraction.

Control of invasive plant species such as common reed in coastal and estuarine wetlands would improve the biological diversity and functions of wetlands and support training opportunities and force protection (on approximately 600 acres at JBLE-Eustis and on approximately 145 acres on JBLE-Langley). Attached Figures 4 and 5 (see attached) present the proposed common reed treatment areas at JBLE. Further, populations of common reed currently prevent marsh retreat, making the installation more susceptible to flooding especially in light of potential sea level rise.

The EA will be prepared in compliance with the National Environmental Policy Act (NEPA) of 1969 (42 United States Code [USC] 4321, et seq.), the Council of Environmental Quality NEPA Implementing Regulations (40 Code of Federal Regulations [CFR] Parts 1500-1508), and the Air Force Environmental Impact Analysis Process (32 CFR 989). As part of this EA, we request your assistance in identifying any potential areas of environmental impact to be assessed in this analysis.

Please refer any questions about this proposal to Dr. Christopher L. McDaid at christopher.l.mcdaid.civ@mail.mil, and please provide Dr. McDaid any comments by 31 Dec 21 so that we have the opportunity to more fully consider your input.

Sincerely,

Donald W. Calder, Jr.
Chief, Environmental Element
733d Civil Engineer Squadron

Attachments:
Figure 1. Regional Location of Joint Base Langley – Eustis
Figure 2. Proposed Adult Mosquito Treatment Areas at Joint Base Langley-Eustis – Eustis
Figure 3. Proposed Adult Mosquito Treatment Areas at Joint Base Langley-Eustis – Langley
Figure 4. Proposed Common Reed Treatment Areas at Joint Base Langley-Eustis – Eustis
Figure 5. Proposed Common Reed Treatment Areas at Joint Base Langley-Eustis – Langley

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 633D AIR BASE WING
JOINT BASE LANGLEY-EUSTIS VA

16 November 2021

Christopher DeHart
Environmental Services Manager
419 North Armistead Avenue
Hampton, Virgina 23669-3475

Dear Mr. DeHart,

We are contacting you in hopes of obtaining inputs on the potential impacts from our Department of the Air Force (DAF) proposal to conduct aerial application of pesticides and herbicides at JBLE-Eustis, VA and JBLE-Langley, VA. These aerial applications would target adult mosquito and invasive plant species (primarily common reed [*Phragmites australis*]) control at both installations, which are located on the site map at Figure 1. In accordance with the National Environmental Policy Act (NEPA) of 1969 (42 United States Code 4321, *et seq.*), the Council of Environmental Quality NEPA Implementing Regulations (40 Code of Federal Regulations [CFR] Parts 1500-1508), and the DAF's Environmental Impact Analysis Process (32 CFR 989), the DAF is in the process of preparing an Environmental Assessment (EA) to assess the potential environmental impacts of the Proposed Action.

The purpose of the Proposed Action is to: (1) reduce mosquito (and other pest arthropods) populations to tolerable levels, (2) break the disease transmission cycle caused by vectoring arthropods, and (3) restore habitats impacted by invasive plant species such as common reed.

The Proposed Action is needed to control mosquitoes and invasive plant species across large areas of JBLE-Eustis and JBLE-Langley and to reach remote portions of the installations that are not reasonably accessible for application by land or watercraft. Large scale application of pesticide would reduce the potential threat of human disease caused by mosquito vectors, mosquito-induced discomfort, hardship, annoyance, and distraction experienced by personnel at JBLE-Eustis. An outbreak of mosquito-borne illness among base personnel could seriously degrade mission-essential operations and readiness. Additionally, the efficiency of military training, maintenance operations, range management, natural resources management, military police, fire and emergency services, and others who work outdoors may be adversely affected when mosquito populations reach intolerable levels. The use of outdoor bivouac areas and recreation facilities such as the golf course, athletic fields, playgrounds, and picnic areas may decline at times due to intense mosquito activity. Such restrictions reduce productivity and have a negative effect on the morale of assigned personnel, their dependents, transient personnel, and guests and residents of civilian communities.

Control of invasive plant species such as common reed in coastal and estuarine wetlands would improve the biological diversity and functions of wetlands, increase recreational opportunities, reduce visual restrictions by tall herbaceous vegetation, and support training opportunities and force protection. Further, populations of common reed currently prevent marsh retreat, making the installation more susceptible to flooding particularly over the next 50 years considering relative sea level rise. Common reed is occupying space in the high marsh and prevents the gradual movement inland of more salt tolerant species. These salt tolerant species are being submerged in some areas as land sinks and oceans rise, pushing tidal river levels up.

The EA will analyze the potential range of environmental impacts that would result from the Proposed Action. The DAF is currently considering two proposed alternatives (the Proposed Action and the No Action Alternative). The Proposed Action supports management of mosquito populations under conditions of disease risk and intolerable levels as well as management of invasive plant species, particularly common reed at JBLE-Eustis and JBLE-Langley. The Proposed Action includes control of adult mosquitoes over all of JBLE – Eustis' approximately 7,900 acres (Figure 2) and over approximately 3,000 acres of JBLE – Langley (Figure 3). The Proposed Action also includes the control of common reed on approximately 600 acres at JBLE – Eustis (Figure 4) and on approximately 145 acres on JBLE – Langley (Figure 5). The No Action Alternative, which reflects the status quo, is analyzed as a benchmark against which effects of the Proposed Action can be evaluated.

As part of this EA, we request your assistance in identifying any potential areas of environmental impact to be assessed in this analysis. This information and your comments on the Proposed Action will help us develop the scope of our environmental review.

Please forward any comments or questions about this proposal to Ms. Sherry Johnson at sherry.johnson.4@us.af.mil within 30 days of receipt of this letter.

JENNINGS.DAVID.M.1189439110

Digitally signed by JENNINGS.DAVID.M.1189439110
Date: 2021.11.16 13:27:41 -05'00'

DAVID M JENNINGS
Chief, Environmental Element
633d Civil Engineer Squadron

5 Attachments:

1. Figure 1. Regional Location of Joint Base Langley-Eustis, Virginia
2. Figure 2. Proposed Adult Mosquito Treatment Areas at JBLE-Eustis
3. Figure 3. Proposed Adult Mosquito Treatment Areas at JBLE-Langley
4. Figure 4. Proposed Common Reed Treatment Areas at JBLE-Eustis
5. Figure 5. Proposed Common Reed Treatment Areas at JBLE-Langley

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 633D AIR BASE WING
JOINT BASE LANGLEY-EUSTIS VA

16 November 2021

Andrew Griffey
Hampton Wetland Board
22 Lincoln Street
Hampton, Virginia 23669-3522

Dear Mr. Griffey,

We are contacting you in hopes of obtaining inputs on the potential impacts from our Department of the Air Force (DAF) proposal to conduct aerial application of pesticides and herbicides at JBLE-Eustis, VA and JBLE-Langley, VA. These aerial applications would target adult mosquito and invasive plant species (primarily common reed [*Phragmites australis*]) control at both installations, which are located on the site map at Figure 1. In accordance with the National Environmental Policy Act (NEPA) of 1969 (42 United States Code 4321, *et seq.*), the Council of Environmental Quality NEPA Implementing Regulations (40 Code of Federal Regulations [CFR] Parts 1500-1508), and the DAF's Environmental Impact Analysis Process (32 CFR 989), the DAF is in the process of preparing an Environmental Assessment (EA) to assess the potential environmental impacts of the Proposed Action.

The purpose of the Proposed Action is to: (1) reduce mosquito (and other pest arthropods) populations to tolerable levels, (2) break the disease transmission cycle caused by vectoring arthropods, and (3) restore habitats impacted by invasive plant species such as common reed.

The Proposed Action is needed to control mosquitoes and invasive plant species across large areas of JBLE-Eustis and JBLE-Langley and to reach remote portions of the installations that are not reasonably accessible for application by land or watercraft. Large scale application of pesticide would reduce the potential threat of human disease caused by mosquito vectors, mosquito-induced discomfort, hardship, annoyance, and distraction experienced by personnel at JBLE-Eustis. An outbreak of mosquito-borne illness among base personnel could seriously degrade mission-essential operations and readiness. Additionally, the efficiency of military training, maintenance operations, range management, natural resources management, military police, fire and emergency services, and others who work outdoors may be adversely affected when mosquito populations reach intolerable levels. The use of outdoor bivouac areas and recreation facilities such as the golf course, athletic fields, playgrounds, and picnic areas may decline at times due to intense mosquito activity. Such restrictions reduce productivity and have a negative effect on the morale of assigned personnel, their dependents, transient personnel, and guests and residents of civilian communities.

Control of invasive plant species such as common reed in coastal and estuarine wetlands would improve the biological diversity and functions of wetlands, increase recreational opportunities, reduce visual restrictions by tall herbaceous vegetation, and support training opportunities and force protection. Further, populations of common reed currently prevent marsh retreat, making the installation more susceptible to flooding particularly over the next 50 years considering relative sea level rise. Common reed is occupying space in the high marsh and prevents the gradual movement inland of more salt tolerant species. These salt tolerant species are being submerged in some areas as land sinks and oceans rise, pushing tidal river levels up.

The EA will analyze the potential range of environmental impacts that would result from the Proposed Action. The DAF is currently considering two proposed alternatives (the Proposed Action and the No Action Alternative). The Proposed Action supports management of mosquito populations under conditions of disease risk and intolerable levels as well as management of invasive plant species, particularly common reed at JBLE-Eustis and JBLE-Langley. The Proposed Action includes control of adult mosquitoes over all of JBLE – Eustis' approximately 7,900 acres (Figure 2) and over approximately 3,000 acres of JBLE – Langley (Figure 3). The Proposed Action also includes the control of common reed on approximately 600 acres at JBLE – Eustis (Figure 4) and on approximately 145 acres on JBLE – Langley (Figure 5). The No Action Alternative, which reflects the status quo, is analyzed as a benchmark against which effects of the Proposed Action can be evaluated.

As part of this EA, we request your assistance in identifying any potential areas of environmental impact to be assessed in this analysis. This information and your comments on the Proposed Action will help us develop the scope of our environmental review.

Please forward any comments or questions about this proposal to Ms. Sherry Johnson at sherry.johnson.4@us.af.mil within 30 days of receipt of this letter.

JENNINGS.DAVID.M.1189439110

Digitally signed by JENNINGS.DAVID.M.1189439110
Date: 2021.11.16 13:27:41 -05'00'

DAVID M JENNINGS
Chief, Environmental Element
633d Civil Engineer Squadron

5 Attachments:

1. Figure 1. Regional Location of Joint Base Langley-Eustis, Virginia
2. Figure 2. Proposed Adult Mosquito Treatment Areas at JBLE-Eustis
3. Figure 3. Proposed Adult Mosquito Treatment Areas at JBLE-Langley
4. Figure 4. Proposed Common Reed Treatment Areas at JBLE-Eustis
5. Figure 5. Proposed Common Reed Treatment Areas at JBLE-Langley

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 633D AIR BASE WING
JOINT BASE LANGLEY-EUSTIS VA

16 November 2021

Mayor Gordon Helsel
City of Poquoson, Virginia
500 City Hall Avenue
Poquoson, Virginia 23662-1996

Dear Mayor Helsel,

We are contacting you in hopes of obtaining inputs on the potential impacts from our Department of the Air Force (DAF) proposal to conduct aerial application of pesticides and herbicides at JBLE-Eustis, VA and JBLE-Langley, VA. These aerial applications would target adult mosquito and invasive plant species (primarily common reed [*Phragmites australis*]) control at both installations, which are located on the site map at Figure 1. In accordance with the National Environmental Policy Act (NEPA) of 1969 (42 United States Code 4321, *et seq.*), the Council of Environmental Quality NEPA Implementing Regulations (40 Code of Federal Regulations [CFR] Parts 1500-1508), and the DAF's Environmental Impact Analysis Process (32 CFR 989), the DAF is in the process of preparing an Environmental Assessment (EA) to assess the potential environmental impacts of the Proposed Action.

The purpose of the Proposed Action is to: (1) reduce mosquito (and other pest arthropods) populations to tolerable levels, (2) break the disease transmission cycle caused by vectoring arthropods, and (3) restore habitats impacted by invasive plant species such as common reed.

The Proposed Action is needed to control mosquitoes and invasive plant species across large areas of JBLE-Eustis and JBLE-Langley and to reach remote portions of the installations that are not reasonably accessible for application by land or watercraft. Large scale application of pesticide would reduce the potential threat of human disease caused by mosquito vectors, mosquito-induced discomfort, hardship, annoyance, and distraction experienced by personnel at JBLE-Eustis. An outbreak of mosquito-borne illness among base personnel could seriously degrade mission-essential operations and readiness. Additionally, the efficiency of military training, maintenance operations, range management, natural resources management, military police, fire and emergency services, and others who work outdoors may be adversely affected when mosquito populations reach intolerable levels. The use of outdoor bivouac areas and recreation facilities such as the golf course, athletic fields, playgrounds, and picnic areas may decline at times due to intense mosquito activity. Such restrictions reduce productivity and have a negative effect on the morale of assigned personnel, their dependents, transient personnel, and guests and residents of civilian communities.

Control of invasive plant species such as common reed in coastal and estuarine wetlands would improve the biological diversity and functions of wetlands, increase recreational opportunities, reduce visual restrictions by tall herbaceous vegetation, and support training opportunities and force protection. Further, populations of common reed currently prevent marsh retreat, making the installation more susceptible to flooding particularly over the next 50 years considering relative sea level rise. Common reed is occupying space in the high marsh and prevents the gradual movement inland of more salt tolerant species. These salt tolerant species are being submerged in some areas as land sinks and oceans rise, pushing tidal river levels up.

The EA will analyze the potential range of environmental impacts that would result from the Proposed Action. The DAF is currently considering two proposed alternatives (the Proposed Action and the No Action Alternative). The Proposed Action supports management of mosquito populations under conditions of disease risk and intolerable levels as well as management of invasive plant species, particularly common reed at JBLE-Eustis and JBLE-Langley. The Proposed Action includes control of adult mosquitoes over all of JBLE – Eustis' approximately 7,900 acres (Figure 2) and over approximately 3,000 acres of JBLE – Langley (Figure 3). The Proposed Action also includes the control of common reed on approximately 600 acres at JBLE – Eustis (Figure 4) and on approximately 145 acres on JBLE – Langley (Figure 5). The No Action Alternative, which reflects the status quo, is analyzed as a benchmark against which effects of the Proposed Action can be evaluated.

As part of this EA, we request your assistance in identifying any potential areas of environmental impact to be assessed in this analysis. This information and your comments on the Proposed Action will help us develop the scope of our environmental review.

Please forward any comments or questions about this proposal to Ms. Sherry Johnson at sherry.johnson.4@us.af.mil within 30 days of receipt of this letter.

JENNINGS.DAVID.M.1189439110

Digitally signed by JENNINGS.DAVID.M.1189439110
Date: 2021.11.16 13:27:41 -05'00'

DAVID M JENNINGS
Chief, Environmental Element
633d Civil Engineer Squadron

5 Attachments:

1. Figure 1. Regional Location of Joint Base Langley-Eustis, Virginia
2. Figure 2. Proposed Adult Mosquito Treatment Areas at JBLE-Eustis
3. Figure 3. Proposed Adult Mosquito Treatment Areas at JBLE-Langley
4. Figure 4. Proposed Common Reed Treatment Areas at JBLE-Eustis
5. Figure 5. Proposed Common Reed Treatment Areas at JBLE-Langley

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 633D AIR BASE WING
JOINT BASE LANGLEY-EUSTIS VA

16 November 2021

Mayor McKinley L. Price
City of Newport News, Virginia
2400 Washington Avenue
Newport News, Virginia 23607-4301

Dear Mayor Price,

We are contacting you in hopes of obtaining inputs on the potential impacts from our Department of the Air Force (DAF) proposal to conduct aerial application of pesticides and herbicides at JBLE-Eustis, VA and JBLE-Langley, VA. These aerial applications would target adult mosquito and invasive plant species (primarily common reed [*Phragmites australis*]) control at both installations, which are located on the site map at Figure 1. In accordance with the National Environmental Policy Act (NEPA) of 1969 (42 United States Code 4321, *et seq.*), the Council of Environmental Quality NEPA Implementing Regulations (40 Code of Federal Regulations [CFR] Parts 1500-1508), and the DAF's Environmental Impact Analysis Process (32 CFR 989), the DAF is in the process of preparing an Environmental Assessment (EA) to assess the potential environmental impacts of the Proposed Action.

The purpose of the Proposed Action is to: (1) reduce mosquito (and other pest arthropods) populations to tolerable levels, (2) break the disease transmission cycle caused by vectoring arthropods, and (3) restore habitats impacted by invasive plant species such as common reed.

The Proposed Action is needed to control mosquitoes and invasive plant species across large areas of JBLE-Eustis and JBLE-Langley and to reach remote portions of the installations that are not reasonably accessible for application by land or watercraft. Large scale application of pesticide would reduce the potential threat of human disease caused by mosquito vectors, mosquito-induced discomfort, hardship, annoyance, and distraction experienced by personnel at JBLE-Eustis. An outbreak of mosquito-borne illness among base personnel could seriously degrade mission-essential operations and readiness. Additionally, the efficiency of military training, maintenance operations, range management, natural resources management, military police, fire and emergency services, and others who work outdoors may be adversely affected when mosquito populations reach intolerable levels. The use of outdoor bivouac areas and recreation facilities such as the golf course, athletic fields, playgrounds, and picnic areas may decline at times due to intense mosquito activity. Such restrictions reduce productivity and have a negative effect on the morale of assigned personnel, their dependents, transient personnel, and guests and residents of civilian communities.

Control of invasive plant species such as common reed in coastal and estuarine wetlands would improve the biological diversity and functions of wetlands, increase recreational opportunities, reduce visual restrictions by tall herbaceous vegetation, and support training opportunities and force protection. Further, populations of common reed currently prevent marsh retreat, making the installation more susceptible to flooding particularly over the next 50 years considering relative sea level rise. Common reed is occupying space in the high marsh and prevents the gradual movement inland of more salt tolerant species. These salt tolerant species are being submerged in some areas as land sinks and oceans rise, pushing tidal river levels up.

The EA will analyze the potential range of environmental impacts that would result from the Proposed Action. The DAF is currently considering two proposed alternatives (the Proposed Action and the No Action Alternative). The Proposed Action supports management of mosquito populations under conditions of disease risk and intolerable levels as well as management of invasive plant species, particularly common reed at JBLE-Eustis and JBLE-Langley. The Proposed Action includes control of adult mosquitoes over all of JBLE – Eustis' approximately 7,900 acres (Figure 2) and over approximately 3,000 acres of JBLE – Langley (Figure 3). The Proposed Action also includes the control of common reed on approximately 600 acres at JBLE – Eustis (Figure 4) and on approximately 145 acres on JBLE – Langley (Figure 5). The No Action Alternative, which reflects the status quo, is analyzed as a benchmark against which effects of the Proposed Action can be evaluated.

As part of this EA, we request your assistance in identifying any potential areas of environmental impact to be assessed in this analysis. This information and your comments on the Proposed Action will help us develop the scope of our environmental review.

Please forward any comments or questions about this proposal to Ms. Sherry Johnson at sherry.johnson.4@us.af.mil within 30 days of receipt of this letter.

JENNINGS.DAVID.M.1189439110

Digitally signed by JENNINGS.DAVID.M.1189439110
Date: 2021.11.16 13:27:41 -05'00'

DAVID M JENNINGS
Chief, Environmental Element
633d Civil Engineer Squadron

5 Attachments:

1. Figure 1. Regional Location of Joint Base Langley-Eustis, Virginia
2. Figure 2. Proposed Adult Mosquito Treatment Areas at JBLE-Eustis
3. Figure 3. Proposed Adult Mosquito Treatment Areas at JBLE-Langley
4. Figure 4. Proposed Common Reed Treatment Areas at JBLE-Eustis
5. Figure 5. Proposed Common Reed Treatment Areas at JBLE-Langley

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 633D AIR BASE WING
JOINT BASE LANGLEY-EUSTIS VA

16 November 2021

Mayor Donnie Tuck
City of Hampton, Virginia
8th Floor, City Hall
22 Lincoln Street
Hampton, Virgina 23669-3522

Dear Mayor Tuck,

We are contacting you in hopes of obtaining inputs on the potential impacts from our Department of the Air Force (DAF) proposal to conduct aerial application of pesticides and herbicides at JBLE-Eustis, VA and JBLE-Langley, VA. These aerial applications would target adult mosquito and invasive plant species (primarily common reed [*Phragmites australis*]) control at both installations, which are located on the site map at Figure 1. In accordance with the National Environmental Policy Act (NEPA) of 1969 (42 United States Code 4321, *et seq.*), the Council of Environmental Quality NEPA Implementing Regulations (40 Code of Federal Regulations [CFR] Parts 1500-1508), and the DAF's Environmental Impact Analysis Process (32 CFR 989), the DAF is in the process of preparing an Environmental Assessment (EA) to assess the potential environmental impacts of the Proposed Action.

The purpose of the Proposed Action is to: (1) reduce mosquito (and other pest arthropods) populations to tolerable levels, (2) break the disease transmission cycle caused by vectoring arthropods, and (3) restore habitats impacted by invasive plant species such as common reed.

The Proposed Action is needed to control mosquitoes and invasive plant species across large areas of JBLE-Eustis and JBLE-Langley and to reach remote portions of the installations that are not reasonably accessible for application by land or watercraft. Large scale application of pesticide would reduce the potential threat of human disease caused by mosquito vectors, mosquito-induced discomfort, hardship, annoyance, and distraction experienced by personnel at JBLE-Eustis. An outbreak of mosquito-borne illness among base personnel could seriously degrade mission-essential operations and readiness. Additionally, the efficiency of military training, maintenance operations, range management, natural resources management, military police, fire and emergency services, and others who work outdoors may be adversely affected when mosquito populations reach intolerable levels. The use of outdoor bivouac areas and recreation facilities such as the golf course, athletic fields, playgrounds, and picnic areas may decline at times due to intense mosquito activity. Such restrictions reduce productivity and have a negative effect on the morale of assigned personnel, their dependents, transient personnel, and guests and residents of civilian communities.

Control of invasive plant species such as common reed in coastal and estuarine wetlands would improve the biological diversity and functions of wetlands, increase recreational opportunities, reduce visual restrictions by tall herbaceous vegetation, and support training opportunities and force protection. Further, populations of common reed currently prevent marsh retreat, making the installation more susceptible to flooding particularly over the next 50 years considering relative sea level rise. Common reed is occupying space in the high marsh and prevents the gradual movement inland of more salt tolerant species. These salt tolerant species are being submerged in some areas as land sinks and oceans rise, pushing tidal river levels up.

The EA will analyze the potential range of environmental impacts that would result from the Proposed Action. The DAF is currently considering two proposed alternatives (the Proposed Action and the No Action Alternative). The Proposed Action supports management of mosquito populations under conditions of disease risk and intolerable levels as well as management of invasive plant species, particularly common reed at JBLE-Eustis and JBLE-Langley. The Proposed Action includes control of adult mosquitoes over all of JBLE – Eustis' approximately 7,900 acres (Figure 2) and over approximately 3,000 acres of JBLE – Langley (Figure 3). The Proposed Action also includes the control of common reed on approximately 600 acres at JBLE – Eustis (Figure 4) and on approximately 145 acres on JBLE – Langley (Figure 5). The No Action Alternative, which reflects the status quo, is analyzed as a benchmark against which effects of the Proposed Action can be evaluated.

As part of this EA, we request your assistance in identifying any potential areas of environmental impact to be assessed in this analysis. This information and your comments on the Proposed Action will help us develop the scope of our environmental review.

Please forward any comments or questions about this proposal to Ms. Sherry Johnson at sherry.johnson.4@us.af.mil within 30 days of receipt of this letter.

JENNINGS.DAVID.M.1189439110

Digitally signed by JENNINGS.DAVID.M.1189439110
Date: 2021.11.16 13:27:41 -05'00'

DAVID M JENNINGS
Chief, Environmental Element
633d Civil Engineer Squadron

5 Attachments:

1. Figure 1. Regional Location of Joint Base Langley-Eustis, Virginia
2. Figure 2. Proposed Adult Mosquito Treatment Areas at JBLE-Eustis
3. Figure 3. Proposed Adult Mosquito Treatment Areas at JBLE-Langley
4. Figure 4. Proposed Common Reed Treatment Areas at JBLE-Eustis
5. Figure 5. Proposed Common Reed Treatment Areas at JBLE-Langley

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 633D AIR BASE WING
JOINT BASE LANGLEY-EUSTIS VA

16 November 2021

J. Randall Wheeler
City Manager
500 City Hall Avenue
Poquoson, Virginia 23662-1996

Dear Mr. Wheeler,

We are contacting you in hopes of obtaining inputs on the potential impacts from our Department of the Air Force (DAF) proposal to conduct aerial application of pesticides and herbicides at JBLE-Eustis, VA and JBLE-Langley, VA. These aerial applications would target adult mosquito and invasive plant species (primarily common reed [*Phragmites australis*]) control at both installations, which are located on the site map at Figure 1. In accordance with the National Environmental Policy Act (NEPA) of 1969 (42 United States Code 4321, *et seq.*), the Council of Environmental Quality NEPA Implementing Regulations (40 Code of Federal Regulations [CFR] Parts 1500-1508), and the DAF's Environmental Impact Analysis Process (32 CFR 989), the DAF is in the process of preparing an Environmental Assessment (EA) to assess the potential environmental impacts of the Proposed Action.

The purpose of the Proposed Action is to: (1) reduce mosquito (and other pest arthropods) populations to tolerable levels, (2) break the disease transmission cycle caused by vectoring arthropods, and (3) restore habitats impacted by invasive plant species such as common reed.

The Proposed Action is needed to control mosquitoes and invasive plant species across large areas of JBLE-Eustis and JBLE-Langley and to reach remote portions of the installations that are not reasonably accessible for application by land or watercraft. Large scale application of pesticide would reduce the potential threat of human disease caused by mosquito vectors, mosquito-induced discomfort, hardship, annoyance, and distraction experienced by personnel at JBLE-Eustis. An outbreak of mosquito-borne illness among base personnel could seriously degrade mission-essential operations and readiness. Additionally, the efficiency of military training, maintenance operations, range management, natural resources management, military police, fire and emergency services, and others who work outdoors may be adversely affected when mosquito populations reach intolerable levels. The use of outdoor bivouac areas and recreation facilities such as the golf course, athletic fields, playgrounds, and picnic areas may decline at times due to intense mosquito activity. Such restrictions reduce productivity and have a negative effect on the morale of assigned personnel, their dependents, transient personnel, and guests and residents of civilian communities.

Control of invasive plant species such as common reed in coastal and estuarine wetlands would improve the biological diversity and functions of wetlands, increase recreational opportunities, reduce visual restrictions by tall herbaceous vegetation, and support training opportunities and force protection. Further, populations of common reed currently prevent marsh retreat, making the installation more susceptible to flooding particularly over the next 50 years considering relative sea level rise. Common reed is occupying space in the high marsh and prevents the gradual movement inland of more salt tolerant species. These salt tolerant species are being submerged in some areas as land sinks and oceans rise, pushing tidal river levels up.

The EA will analyze the potential range of environmental impacts that would result from the Proposed Action. The DAF is currently considering two proposed alternatives (the Proposed Action and the No Action Alternative). The Proposed Action supports management of mosquito populations under conditions of disease risk and intolerable levels as well as management of invasive plant species, particularly common reed at JBLE-Eustis and JBLE-Langley. The Proposed Action includes control of adult mosquitoes over all of JBLE – Eustis' approximately 7,900 acres (Figure 2) and over approximately 3,000 acres of JBLE – Langley (Figure 3). The Proposed Action also includes the control of common reed on approximately 600 acres at JBLE – Eustis (Figure 4) and on approximately 145 acres on JBLE – Langley (Figure 5). The No Action Alternative, which reflects the status quo, is analyzed as a benchmark against which effects of the Proposed Action can be evaluated.

As part of this EA, we request your assistance in identifying any potential areas of environmental impact to be assessed in this analysis. This information and your comments on the Proposed Action will help us develop the scope of our environmental review.

Please forward any comments or questions about this proposal to Ms. Sherry Johnson at sherry.johnson.4@us.af.mil within 30 days of receipt of this letter.

JENNINGS.DAVID.M.1189439110

Digitally signed by JENNINGS.DAVID.M.1189439110
Date: 2021.11.16 13:27:41 -05'00'

DAVID M JENNINGS
Chief, Environmental Element
633d Civil Engineer Squadron

5 Attachments:

1. Figure 1. Regional Location of Joint Base Langley-Eustis, Virginia
2. Figure 2. Proposed Adult Mosquito Treatment Areas at JBLE-Eustis
3. Figure 3. Proposed Adult Mosquito Treatment Areas at JBLE-Langley
4. Figure 4. Proposed Common Reed Treatment Areas at JBLE-Eustis
5. Figure 5. Proposed Common Reed Treatment Areas at JBLE-Langley

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 633D AIR BASE WING
JOINT BASE LANGLEY-EUSTIS VA

16 November 2021

Nicole Woodward
Regulatory Branch
US Army Corps of Engineers
803 Front Street
Norfolk, Virginia 23510-1011

Dear Ms. Woodward,

We are contacting you in hopes of obtaining inputs on the potential impacts from our Department of the Air Force (DAF) proposal to conduct aerial application of pesticides and herbicides at JBLE-Eustis, VA and JBLE-Langley, VA. These aerial applications would target adult mosquito and invasive plant species (primarily common reed [*Phragmites australis*]) control at both installations, which are located on the site map at Figure 1. In accordance with the National Environmental Policy Act (NEPA) of 1969 (42 United States Code 4321, *et seq.*), the Council of Environmental Quality NEPA Implementing Regulations (40 Code of Federal Regulations [CFR] Parts 1500-1508), and the DAF's Environmental Impact Analysis Process (32 CFR 989), the DAF is in the process of preparing an Environmental Assessment (EA) to assess the potential environmental impacts of the Proposed Action.

The purpose of the Proposed Action is to: (1) reduce mosquito (and other pest arthropods) populations to tolerable levels, (2) break the disease transmission cycle caused by vectoring arthropods, and (3) restore habitats impacted by invasive plant species such as common reed.

The Proposed Action is needed to control mosquitoes and invasive plant species across large areas of JBLE-Eustis and JBLE-Langley and to reach remote portions of the installations that are not reasonably accessible for application by land or watercraft. Large scale application of pesticide would reduce the potential threat of human disease caused by mosquito vectors, mosquito-induced discomfort, hardship, annoyance, and distraction experienced by personnel at JBLE-Eustis. An outbreak of mosquito-borne illness among base personnel could seriously degrade mission-essential operations and readiness. Additionally, the efficiency of military training, maintenance operations, range management, natural resources management, military police, fire and emergency services, and others who work outdoors may be adversely affected when mosquito populations reach intolerable levels. The use of outdoor bivouac areas and recreation facilities such as the golf course, athletic fields, playgrounds, and picnic areas may decline at times due to intense mosquito activity. Such restrictions reduce productivity and have a negative effect on the morale of assigned personnel, their dependents, transient personnel, and guests and residents of civilian communities.

Control of invasive plant species such as common reed in coastal and estuarine wetlands would improve the biological diversity and functions of wetlands, increase recreational opportunities, reduce visual restrictions by tall herbaceous vegetation, and support training opportunities and force protection. Further, populations of common reed currently prevent marsh retreat, making the installation more susceptible to flooding particularly over the next 50 years considering relative sea level rise. Common reed is occupying space in the high marsh and prevents the gradual movement inland of more salt tolerant species. These salt tolerant species are being submerged in some areas as land sinks and oceans rise, pushing tidal river levels up.

The EA will analyze the potential range of environmental impacts that would result from the Proposed Action. The DAF is currently considering two proposed alternatives (the Proposed Action and the No Action Alternative). The Proposed Action supports management of mosquito populations under conditions of disease risk and intolerable levels as well as management of invasive plant species, particularly common reed at JBLE-Eustis and JBLE-Langley. The Proposed Action includes control of adult mosquitoes over all of JBLE – Eustis' approximately 7,900 acres (Figure 2) and over approximately 3,000 acres of JBLE – Langley (Figure 3). The Proposed Action also includes the control of common reed on approximately 600 acres at JBLE – Eustis (Figure 4) and on approximately 145 acres on JBLE – Langley (Figure 5). The No Action Alternative, which reflects the status quo, is analyzed as a benchmark against which effects of the Proposed Action can be evaluated.

As part of this EA, we request your assistance in identifying any potential areas of environmental impact to be assessed in this analysis. This information and your comments on the Proposed Action will help us develop the scope of our environmental review.

Please forward any comments or questions about this proposal to Ms. Sherry Johnson at sherry.johnson.4@us.af.mil within 30 days of receipt of this letter.

JENNINGS.DAVID.M.1189439110

Digitally signed by JENNINGS.DAVID.M.1189439110
Date: 2021.11.16 13:27:41 -05'00'

DAVID M JENNINGS
Chief, Environmental Element
633d Civil Engineer Squadron

5 Attachments:

1. Figure 1. Regional Location of Joint Base Langley-Eustis, Virginia
2. Figure 2. Proposed Adult Mosquito Treatment Areas at JBLE-Eustis
3. Figure 3. Proposed Adult Mosquito Treatment Areas at JBLE-Langley
4. Figure 4. Proposed Common Reed Treatment Areas at JBLE-Eustis
5. Figure 5. Proposed Common Reed Treatment Areas at JBLE-Langley

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 633D AIR BASE WING
JOINT BASE LANGLEY-EUSTIS VA

16 November 2021

Keith Boyd
USDA-NRCS
203 Wimbledon Lane
Smithfield, Virginia 23460-0620

Dear Mr. Boyd,

We are contacting you in hopes of obtaining inputs on the potential impacts from our Department of the Air Force (DAF) proposal to conduct aerial application of pesticides and herbicides at JBLE-Eustis, VA and JBLE-Langley, VA. These aerial applications would target adult mosquito and invasive plant species (primarily common reed [*Phragmites australis*]) control at both installations, which are located on the site map at Figure 1. In accordance with the National Environmental Policy Act (NEPA) of 1969 (42 United States Code 4321, *et seq.*), the Council of Environmental Quality NEPA Implementing Regulations (40 Code of Federal Regulations [CFR] Parts 1500-1508), and the DAF's Environmental Impact Analysis Process (32 CFR 989), the DAF is in the process of preparing an Environmental Assessment (EA) to assess the potential environmental impacts of the Proposed Action.

The purpose of the Proposed Action is to: (1) reduce mosquito (and other pest arthropods) populations to tolerable levels, (2) break the disease transmission cycle caused by vectoring arthropods, and (3) restore habitats impacted by invasive plant species such as common reed.

The Proposed Action is needed to control mosquitoes and invasive plant species across large areas of JBLE-Eustis and JBLE-Langley and to reach remote portions of the installations that are not reasonably accessible for application by land or watercraft. Large scale application of pesticide would reduce the potential threat of human disease caused by mosquito vectors, mosquito-induced discomfort, hardship, annoyance, and distraction experienced by personnel at JBLE-Eustis. An outbreak of mosquito-borne illness among base personnel could seriously degrade mission-essential operations and readiness. Additionally, the efficiency of military training, maintenance operations, range management, natural resources management, military police, fire and emergency services, and others who work outdoors may be adversely affected when mosquito populations reach intolerable levels. The use of outdoor bivouac areas and recreation facilities such as the golf course, athletic fields, playgrounds, and picnic areas may decline at times due to intense mosquito activity. Such restrictions reduce productivity and have a negative effect on the morale of assigned personnel, their dependents, transient personnel, and guests and residents of civilian communities.

Control of invasive plant species such as common reed in coastal and estuarine wetlands would improve the biological diversity and functions of wetlands, increase recreational opportunities, reduce visual restrictions by tall herbaceous vegetation, and support training opportunities and force protection. Further, populations of common reed currently prevent marsh retreat, making the installation more susceptible to flooding particularly over the next 50 years considering relative sea level rise. Common reed is occupying space in the high marsh and prevents the gradual movement inland of more salt tolerant species. These salt tolerant species are being submerged in some areas as land sinks and oceans rise, pushing tidal river levels up.

The EA will analyze the potential range of environmental impacts that would result from the Proposed Action. The DAF is currently considering two proposed alternatives (the Proposed Action and the No Action Alternative). The Proposed Action supports management of mosquito populations under conditions of disease risk and intolerable levels as well as management of invasive plant species, particularly common reed at JBLE-Eustis and JBLE-Langley. The Proposed Action includes control of adult mosquitoes over all of JBLE – Eustis' approximately 7,900 acres (Figure 2) and over approximately 3,000 acres of JBLE – Langley (Figure 3). The Proposed Action also includes the control of common reed on approximately 600 acres at JBLE – Eustis (Figure 4) and on approximately 145 acres on JBLE – Langley (Figure 5). The No Action Alternative, which reflects the status quo, is analyzed as a benchmark against which effects of the Proposed Action can be evaluated.

As part of this EA, we request your assistance in identifying any potential areas of environmental impact to be assessed in this analysis. This information and your comments on the Proposed Action will help us develop the scope of our environmental review.

Please forward any comments or questions about this proposal to Ms. Sherry Johnson at sherry.johnson.4@us.af.mil within 30 days of receipt of this letter.

JENNINGS.DAVID.M.1189439110

Digitally signed by JENNINGS.DAVID.M.1189439110
Date: 2021.11.16 13:27:41 -05'00'

DAVID M JENNINGS
Chief, Environmental Element
633d Civil Engineer Squadron

5 Attachments:

1. Figure 1. Regional Location of Joint Base Langley-Eustis, Virginia
2. Figure 2. Proposed Adult Mosquito Treatment Areas at JBLE-Eustis
3. Figure 3. Proposed Adult Mosquito Treatment Areas at JBLE-Langley
4. Figure 4. Proposed Common Reed Treatment Areas at JBLE-Eustis
5. Figure 5. Proposed Common Reed Treatment Areas at JBLE-Langley

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 633D AIR BASE WING
JOINT BASE LANGLEY-EUSTIS VA

16 November 2021

Tony Watkinson
Chief
Habitat Management Division
Virginia Marine Resources Commission
380 Fenwick Road, Building 96
Fort Monroe, Virginia 23651-1064

Dear Mr. Watkinson,

We are contacting you in hopes of obtaining inputs on the potential impacts from our Department of the Air Force (DAF) proposal to conduct aerial application of pesticides and herbicides at JBLE-Eustis, VA and JBLE-Langley, VA. These aerial applications would target adult mosquito and invasive plant species (primarily common reed [*Phragmites australis*]) control at both installations, which are located on the site map at Figure 1. In accordance with the National Environmental Policy Act (NEPA) of 1969 (42 United States Code 4321, *et seq.*), the Council of Environmental Quality NEPA Implementing Regulations (40 Code of Federal Regulations [CFR] Parts 1500-1508), and the DAF's Environmental Impact Analysis Process (32 CFR 989), the DAF is in the process of preparing an Environmental Assessment (EA) to assess the potential environmental impacts of the Proposed Action.

The purpose of the Proposed Action is to: (1) reduce mosquito (and other pest arthropods) populations to tolerable levels, (2) break the disease transmission cycle caused by vectoring arthropods, and (3) restore habitats impacted by invasive plant species such as common reed.

The Proposed Action is needed to control mosquitoes and invasive plant species across large areas of JBLE-Eustis and JBLE-Langley and to reach remote portions of the installations that are not reasonably accessible for application by land or watercraft. Large scale application of pesticide would reduce the potential threat of human disease caused by mosquito vectors, mosquito-induced discomfort, hardship, annoyance, and distraction experienced by personnel at JBLE-Eustis. An outbreak of mosquito-borne illness among base personnel could seriously degrade mission-essential operations and readiness. Additionally, the efficiency of military training, maintenance operations, range management, natural resources management, military police, fire and emergency services, and others who work outdoors may be adversely affected when mosquito populations reach intolerable levels. The use of outdoor bivouac areas and recreation facilities such as the golf course, athletic fields, playgrounds, and picnic areas may decline at times due to intense mosquito activity. Such restrictions reduce productivity and have a negative effect on the morale of assigned personnel, their dependents, transient personnel, and guests and residents of civilian communities.

Control of invasive plant species such as common reed in coastal and estuarine wetlands would improve the biological diversity and functions of wetlands, increase recreational opportunities, reduce visual restrictions by tall herbaceous vegetation, and support training opportunities and force protection. Further, populations of common reed currently prevent marsh retreat, making the installation more susceptible to flooding particularly over the next 50 years considering relative sea level rise. Common reed is occupying space in the high marsh and prevents the gradual movement inland of more salt tolerant species. These salt tolerant species are being submerged in some areas as land sinks and oceans rise, pushing tidal river levels up.

The EA will analyze the potential range of environmental impacts that would result from the Proposed Action. The DAF is currently considering two proposed alternatives (the Proposed Action and the No Action Alternative). The Proposed Action supports management of mosquito populations under conditions of disease risk and intolerable levels as well as management of invasive plant species, particularly common reed at JBLE-Eustis and JBLE-Langley. The Proposed Action includes control of adult mosquitoes over all of JBLE – Eustis' approximately 7,900 acres (Figure 2) and over approximately 3,000 acres of JBLE – Langley (Figure 3). The Proposed Action also includes the control of common reed on approximately 600 acres at JBLE – Eustis (Figure 4) and on approximately 145 acres on JBLE – Langley (Figure 5). The No Action Alternative, which reflects the status quo, is analyzed as a benchmark against which effects of the Proposed Action can be evaluated.

As part of this EA, we request your assistance in identifying any potential areas of environmental impact to be assessed in this analysis. This information and your comments on the Proposed Action will help us develop the scope of our environmental review.

Please forward any comments or questions about this proposal to Ms. Sherry Johnson at sherry.johnson.4@us.af.mil within 30 days of receipt of this letter.

JENNINGS.DAVID.M.1189439110

Digitally signed by JENNINGS.DAVID.M.1189439110
Date: 2021.11.16 13:27:41 -05'00'

DAVID M JENNINGS
Chief, Environmental Element
633d Civil Engineer Squadron

5 Attachments:

1. Figure 1. Regional Location of Joint Base Langley-Eustis, Virginia
2. Figure 2. Proposed Adult Mosquito Treatment Areas at JBLE-Eustis
3. Figure 3. Proposed Adult Mosquito Treatment Areas at JBLE-Langley
4. Figure 4. Proposed Common Reed Treatment Areas at JBLE-Eustis
5. Figure 5. Proposed Common Reed Treatment Areas at JBLE-Langley

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 633D AIR BASE WING
JOINT BASE LANGLEY-EUSTIS VA

16 November 2021

Bettina Rayfield
Virginia Department of Environmental Quality
Office of Environmental Impact Review
629 East Main Street
Richmond, Virginia 23219-2405

Dear Ms. Rayfield,

We are contacting you in hopes of obtaining inputs on the potential impacts from our Department of the Air Force (DAF) proposal to conduct aerial application of pesticides and herbicides at JBLE-Eustis, VA and JBLE-Langley, VA. These aerial applications would target adult mosquito and invasive plant species (primarily common reed [*Phragmites australis*]) control at both installations, which are located on the site map at Figure 1. In accordance with the National Environmental Policy Act (NEPA) of 1969 (42 United States Code 4321, *et seq.*), the Council of Environmental Quality NEPA Implementing Regulations (40 Code of Federal Regulations [CFR] Parts 1500-1508), and the DAF's Environmental Impact Analysis Process (32 CFR 989), the DAF is in the process of preparing an Environmental Assessment (EA) to assess the potential environmental impacts of the Proposed Action.

The purpose of the Proposed Action is to: (1) reduce mosquito (and other pest arthropods) populations to tolerable levels, (2) break the disease transmission cycle caused by vectoring arthropods, and (3) restore habitats impacted by invasive plant species such as common reed.

The Proposed Action is needed to control mosquitoes and invasive plant species across large areas of JBLE-Eustis and JBLE-Langley and to reach remote portions of the installations that are not reasonably accessible for application by land or watercraft. Large scale application of pesticide would reduce the potential threat of human disease caused by mosquito vectors, mosquito-induced discomfort, hardship, annoyance, and distraction experienced by personnel at JBLE-Eustis. An outbreak of mosquito-borne illness among base personnel could seriously degrade mission-essential operations and readiness. Additionally, the efficiency of military training, maintenance operations, range management, natural resources management, military police, fire and emergency services, and others who work outdoors may be adversely affected when mosquito populations reach intolerable levels. The use of outdoor bivouac areas and recreation facilities such as the golf course, athletic fields, playgrounds, and picnic areas may decline at times due to intense mosquito activity. Such restrictions reduce productivity and have a negative effect on the morale of assigned personnel, their dependents, transient personnel, and guests and residents of civilian communities.

Control of invasive plant species such as common reed in coastal and estuarine wetlands would improve the biological diversity and functions of wetlands, increase recreational opportunities, reduce visual restrictions by tall herbaceous vegetation, and support training opportunities and force protection. Further, populations of common reed currently prevent marsh retreat, making the installation more susceptible to flooding particularly over the next 50 years considering relative sea level rise. Common reed is occupying space in the high marsh and prevents the gradual movement inland of more salt tolerant species. These salt tolerant species are being submerged in some areas as land sinks and oceans rise, pushing tidal river levels up.

The EA will analyze the potential range of environmental impacts that would result from the Proposed Action. The DAF is currently considering two proposed alternatives (the Proposed Action and the No Action Alternative). The Proposed Action supports management of mosquito populations under conditions of disease risk and intolerable levels as well as management of invasive plant species, particularly common reed at JBLE-Eustis and JBLE-Langley. The Proposed Action includes control of adult mosquitoes over all of JBLE – Eustis' approximately 7,900 acres (Figure 2) and over approximately 3,000 acres of JBLE – Langley (Figure 3). The Proposed Action also includes the control of common reed on approximately 600 acres at JBLE – Eustis (Figure 4) and on approximately 145 acres on JBLE – Langley (Figure 5). The No Action Alternative, which reflects the status quo, is analyzed as a benchmark against which effects of the Proposed Action can be evaluated.

As part of this EA, we request your assistance in identifying any potential areas of environmental impact to be assessed in this analysis. This information and your comments on the Proposed Action will help us develop the scope of our environmental review.

Please forward any comments or questions about this proposal to Ms. Sherry Johnson at sherry.johnson.4@us.af.mil within 30 days of receipt of this letter.

JENNINGS.DAVID.M.1189439110

Digitally signed by JENNINGS.DAVID.M.1189439110
Date: 2021.11.16 13:27:41 -05'00'

DAVID M JENNINGS
Chief, Environmental Element
633d Civil Engineer Squadron

5 Attachments:

1. Figure 1. Regional Location of Joint Base Langley-Eustis, Virginia
2. Figure 2. Proposed Adult Mosquito Treatment Areas at JBLE-Eustis
3. Figure 3. Proposed Adult Mosquito Treatment Areas at JBLE-Langley
4. Figure 4. Proposed Common Reed Treatment Areas at JBLE-Eustis
5. Figure 5. Proposed Common Reed Treatment Areas at JBLE-Langley

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 633D AIR BASE WING
JOINT BASE LANGLEY-EUSTIS VA

16 November 2021

Neil Morgan
York County Commissioner
P.O. Box 532
Yorktown, Virginia 23690-0532

Dear Mr. Morgan,

We are contacting you in hopes of obtaining inputs on the potential impacts from our Department of the Air Force (DAF) proposal to conduct aerial application of pesticides and herbicides at JBLE-Eustis, VA and JBLE-Langley, VA. These aerial applications would target adult mosquito and invasive plant species (primarily common reed [*Phragmites australis*]) control at both installations, which are located on the site map at Figure 1. In accordance with the National Environmental Policy Act (NEPA) of 1969 (42 United States Code 4321, *et seq.*), the Council of Environmental Quality NEPA Implementing Regulations (40 Code of Federal Regulations [CFR] Parts 1500-1508), and the DAF's Environmental Impact Analysis Process (32 CFR 989), the DAF is in the process of preparing an Environmental Assessment (EA) to assess the potential environmental impacts of the Proposed Action.

The purpose of the Proposed Action is to: (1) reduce mosquito (and other pest arthropods) populations to tolerable levels, (2) break the disease transmission cycle caused by vectoring arthropods, and (3) restore habitats impacted by invasive plant species such as common reed.

The Proposed Action is needed to control mosquitoes and invasive plant species across large areas of JBLE-Eustis and JBLE-Langley and to reach remote portions of the installations that are not reasonably accessible for application by land or watercraft. Large scale application of pesticide would reduce the potential threat of human disease caused by mosquito vectors, mosquito-induced discomfort, hardship, annoyance, and distraction experienced by personnel at JBLE-Eustis. An outbreak of mosquito-borne illness among base personnel could seriously degrade mission-essential operations and readiness. Additionally, the efficiency of military training, maintenance operations, range management, natural resources management, military police, fire and emergency services, and others who work outdoors may be adversely affected when mosquito populations reach intolerable levels. The use of outdoor bivouac areas and recreation facilities such as the golf course, athletic fields, playgrounds, and picnic areas may decline at times due to intense mosquito activity. Such restrictions reduce productivity and have a negative effect on the morale of assigned personnel, their dependents, transient personnel, and guests and residents of civilian communities.

Control of invasive plant species such as common reed in coastal and estuarine wetlands would improve the biological diversity and functions of wetlands, increase recreational opportunities, reduce visual restrictions by tall herbaceous vegetation, and support training opportunities and force protection. Further, populations of common reed currently prevent marsh retreat, making the installation more susceptible to flooding particularly over the next 50 years considering relative sea level rise. Common reed is occupying space in the high marsh and prevents the gradual movement inland of more salt tolerant species. These salt tolerant species are being submerged in some areas as land sinks and oceans rise, pushing tidal river levels up.

The EA will analyze the potential range of environmental impacts that would result from the Proposed Action. The DAF is currently considering two proposed alternatives (the Proposed Action and the No Action Alternative). The Proposed Action supports management of mosquito populations under conditions of disease risk and intolerable levels as well as management of invasive plant species, particularly common reed at JBLE-Eustis and JBLE-Langley. The Proposed Action includes control of adult mosquitoes over all of JBLE – Eustis' approximately 7,900 acres (Figure 2) and over approximately 3,000 acres of JBLE – Langley (Figure 3). The Proposed Action also includes the control of common reed on approximately 600 acres at JBLE – Eustis (Figure 4) and on approximately 145 acres on JBLE – Langley (Figure 5). The No Action Alternative, which reflects the status quo, is analyzed as a benchmark against which effects of the Proposed Action can be evaluated.

As part of this EA, we request your assistance in identifying any potential areas of environmental impact to be assessed in this analysis. This information and your comments on the Proposed Action will help us develop the scope of our environmental review.

Please forward any comments or questions about this proposal to Ms. Sherry Johnson at sherry.johnson.4@us.af.mil within 30 days of receipt of this letter.

JENNINGS.DAVID.M.1189439110

Digitally signed by JENNINGS.DAVID.M.1189439110
Date: 2021.11.16 13:27:41 -05'00'

DAVID M JENNINGS
Chief, Environmental Element
633d Civil Engineer Squadron

5 Attachments:

1. Figure 1. Regional Location of Joint Base Langley-Eustis, Virginia
2. Figure 2. Proposed Adult Mosquito Treatment Areas at JBLE-Eustis
3. Figure 3. Proposed Adult Mosquito Treatment Areas at JBLE-Langley
4. Figure 4. Proposed Common Reed Treatment Areas at JBLE-Eustis
5. Figure 5. Proposed Common Reed Treatment Areas at JBLE-Langley

Agency Responses

FORMAT PAGE

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 633D AIR BASE WING
JOINT BASE LANGLEY-EUSTIS VA

16 November 2021

Mayor Donnie Tuck
City of Hampton, Virginia
8th Floor, City Hall
22 Lincoln Street
Hampton, Virgina 23669-3522

Dear Mayor Tuck,

We are contacting you in hopes of obtaining inputs on the potential impacts from our Department of the Air Force (DAF) proposal to conduct aerial application of pesticides and herbicides at JBLE-Eustis, VA and JBLE-Langley, VA. These aerial applications would target adult mosquito and invasive plant species (primarily common reed [*Phragmites australis*]) control at both installations, which are located on the site map at Figure 1. In accordance with the National Environmental Policy Act (NEPA) of 1969 (42 United States Code 4321, *et seq.*), the Council of Environmental Quality NEPA Implementing Regulations (40 Code of Federal Regulations [CFR] Parts 1500-1508), and the DAF's Environmental Impact Analysis Process (32 CFR 989), the DAF is in the process of preparing an Environmental Assessment (EA) to assess the potential environmental impacts of the Proposed Action.

The purpose of the Proposed Action is to: (1) reduce mosquito (and other pest arthropods) populations to tolerable levels, (2) break the disease transmission cycle caused by vectoring arthropods, and (3) restore habitats impacted by invasive plant species such as common reed.

The Proposed Action is needed to control mosquitoes and invasive plant species across large areas of JBLE-Eustis and JBLE-Langley and to reach remote portions of the installations that are not reasonably accessible for application by land or watercraft. Large scale application of pesticide would reduce the potential threat of human disease caused by mosquito vectors, mosquito-induced discomfort, hardship, annoyance, and distraction experienced by personnel at JBLE-Eustis. An outbreak of mosquito-borne illness among base personnel could seriously degrade mission-essential operations and readiness. Additionally, the efficiency of military training, maintenance operations, range management, natural resources management, military police, fire and emergency services, and others who work outdoors may be adversely affected when mosquito populations reach intolerable levels. The use of outdoor bivouac areas and recreation facilities such as the golf course, athletic fields, playgrounds, and picnic areas may decline at times due to intense mosquito activity. Such restrictions reduce productivity and have a negative effect on the morale of assigned personnel, their dependents, transient personnel, and guests and residents of civilian communities.

Control of invasive plant species such as common reed in coastal and estuarine wetlands would improve the biological diversity and functions of wetlands, increase recreational opportunities, reduce visual restrictions by tall herbaceous vegetation, and support training opportunities and force protection. Further, populations of common reed currently prevent marsh retreat, making the installation more susceptible to flooding particularly over the next 50 years considering relative sea level rise. Common reed is occupying space in the high marsh and prevents the gradual movement inland of more salt tolerant species. These salt tolerant species are being submerged in some areas as land sinks and oceans rise, pushing tidal river levels up.

The EA will analyze the potential range of environmental impacts that would result from the Proposed Action. The DAF is currently considering two proposed alternatives (the Proposed Action and the No Action Alternative). The Proposed Action supports management of mosquito populations under conditions of disease risk and intolerable levels as well as management of invasive plant species, particularly common reed at JBLE-Eustis and JBLE-Langley. The Proposed Action includes control of adult mosquitoes over all of JBLE – Eustis' approximately 7,900 acres (Figure 2) and over approximately 3,000 acres of JBLE – Langley (Figure 3). The Proposed Action also includes the control of common reed on approximately 600 acres at JBLE – Eustis (Figure 4) and on approximately 145 acres on JBLE – Langley (Figure 5). The No Action Alternative, which reflects the status quo, is analyzed as a benchmark against which effects of the Proposed Action can be evaluated.

As part of this EA, we request your assistance in identifying any potential areas of environmental impact to be assessed in this analysis. This information and your comments on the Proposed Action will help us develop the scope of our environmental review.

Please forward any comments or questions about this proposal to Ms. Sherry Johnson at sherry.johnson.4@us.af.mil within 30 days of receipt of this letter.

JENNINGS.DAVID.M.1189439110 Digitally signed by JENNINGS.DAVID.M.1189439110 Date: 2021.11.16 13:27:41 -05'00'

DAVID M JENNINGS
Chief, Environmental Element
633d Civil Engineer Squadron

5 Attachments:

1. Figure 1. Regional Location of Joint Base Langley-Eustis, Virginia
2. Figure 2. Proposed Adult Mosquito Treatment Areas at JBLE-Eustis
3. Figure 3. Proposed Adult Mosquito Treatment Areas at JBLE-Langley
4. Figure 4. Proposed Common Reed Treatment Areas at JBLE-Eustis
5. Figure 5. Proposed Common Reed Treatment Areas at JBLE-Langley

Figure 1. Regional Location of Joint Base Langley – Eustis

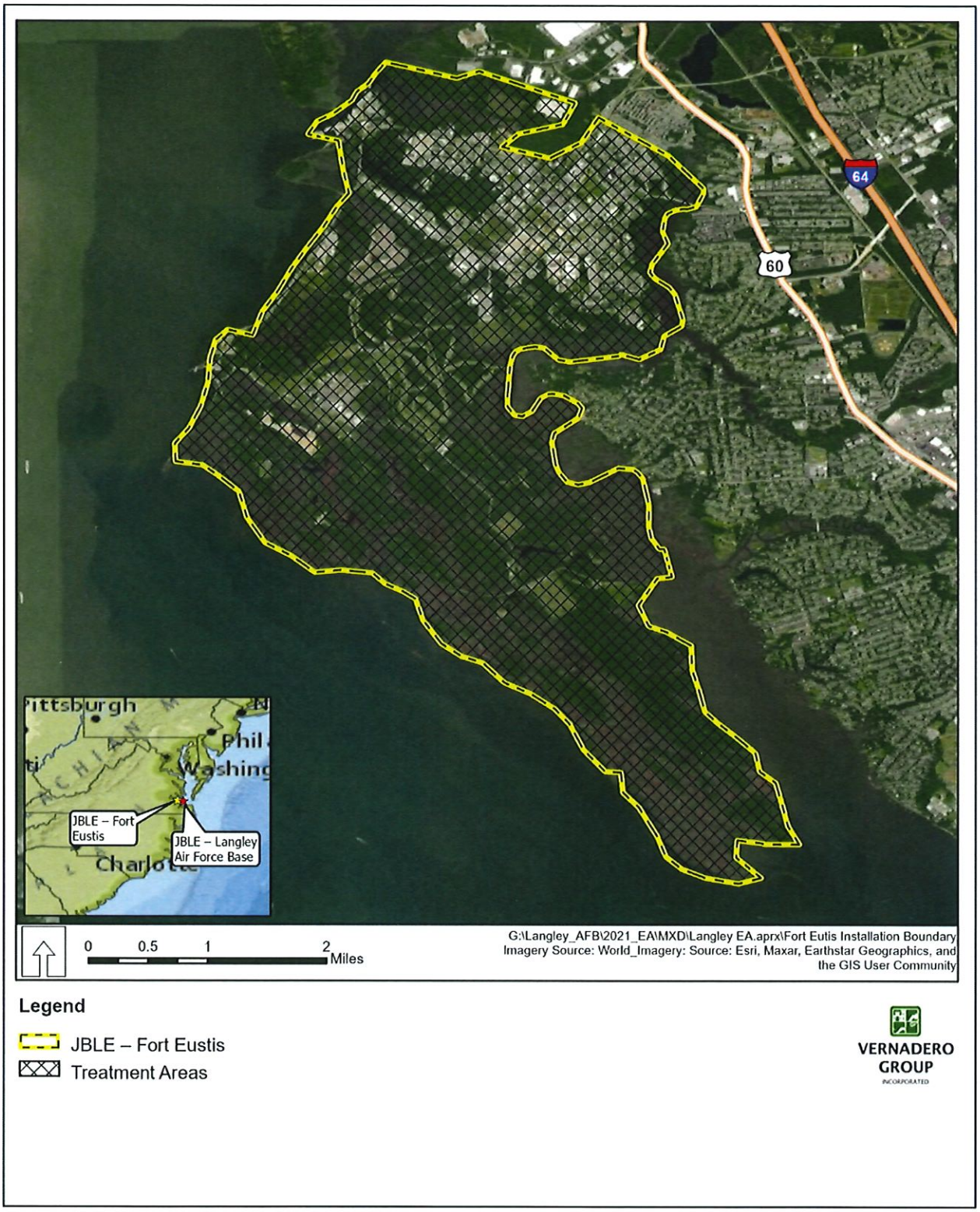


Figure 2. Proposed Adult Mosquito Treatment Areas at Joint Base Langley-Eustis – Eustis

Figure 3. Proposed Adult Mosquito Treatment Areas at Joint Base Langley-Eustis – Langley

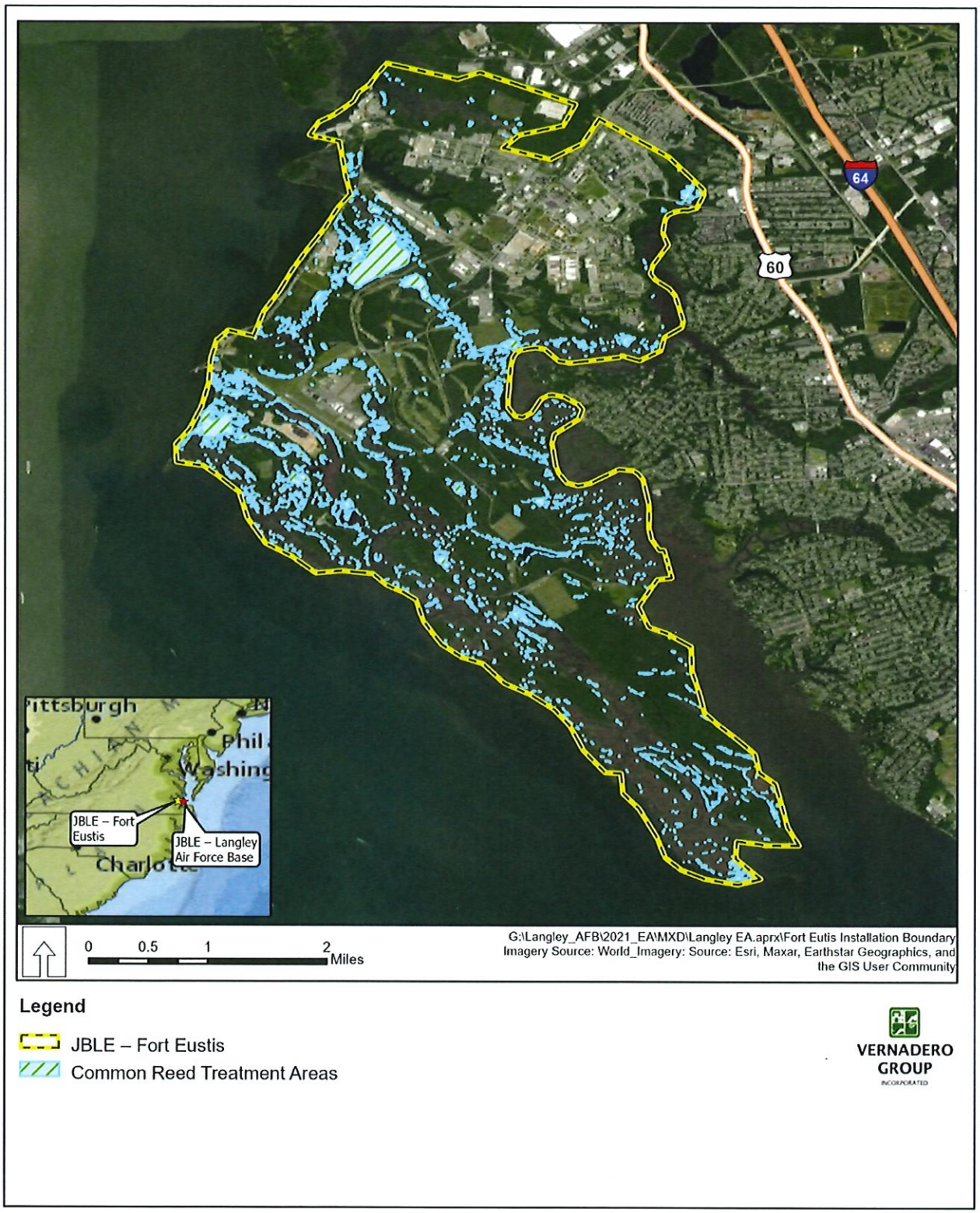


Figure 4. Proposed Common Reed Treatment Areas at Joint Base Langley-Eustis – Eustis

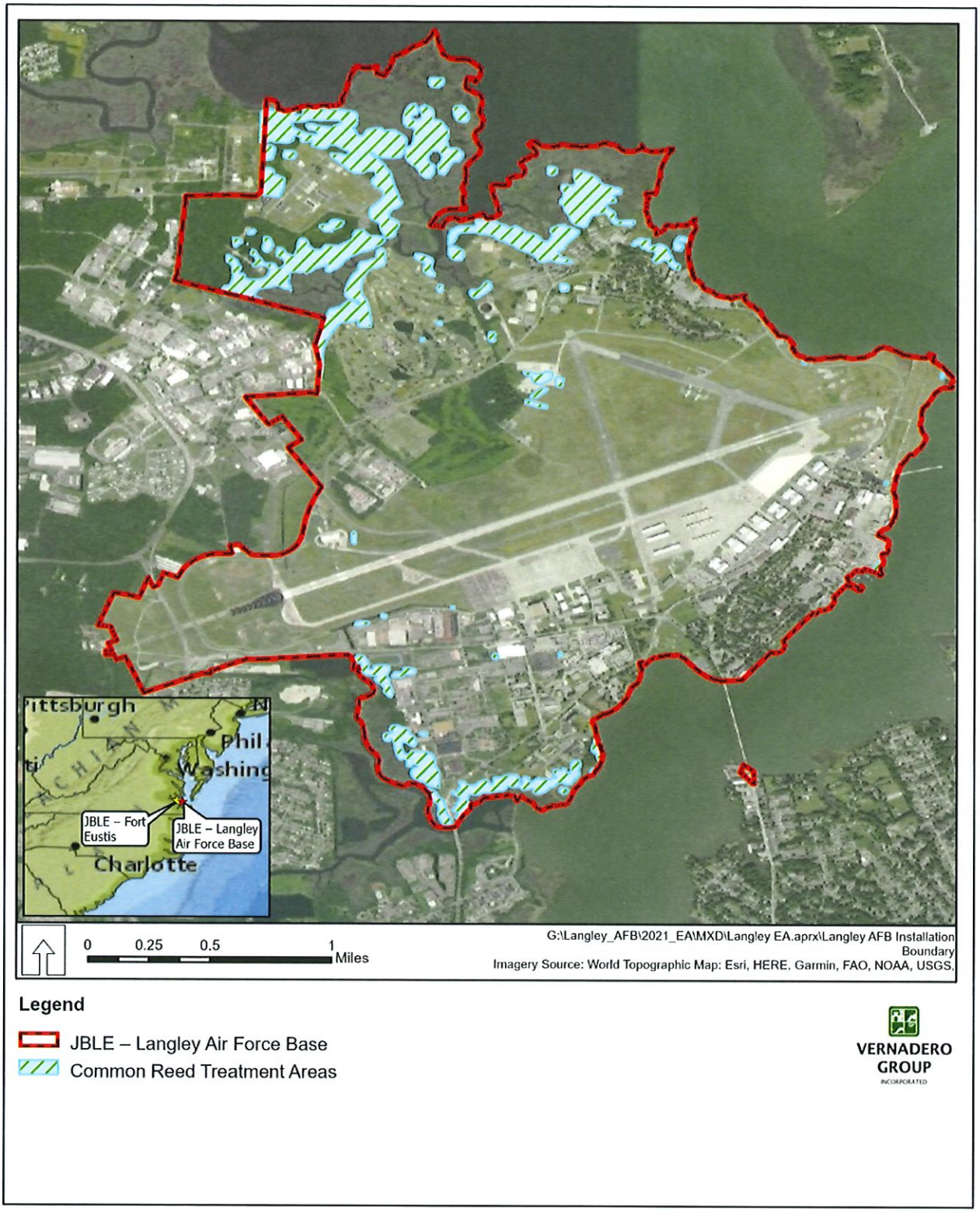


Figure 5. Proposed Common Reed Treatment Areas at Joint Base Langley-Eustis – Langley

Vegetation Control Questions:

1) Both chemical and low level mechanical cutting are required in controlling Phragmites; does DOD expect to control via only chemical applications?
2) What active ingredient will be used to spray the Phragmites?
3) How many applications are expected to gain control?
4) Phragmites suppression may require ongoing preventative maintenance program to maintain control, is that part of this program? Frequent herbicide applications?
5) What types of vegetation are you attempting to reestablish? Native?
6) Tidal flooding over denuded areas can cause severe soil erosion if vegetation is sparse. What is the timeframe for reestablishment?
7) Aerial herbicide applications may not be as precise as ground applications. Has then been a completion of any environmental assessments to insure no endangered non-target flora and fauna will be effected if action is taken?

Mosquito Control Questions:

1) What mosquito species(s) is being targeted?
2) What are the active ingredient(s) in the insecticides that will be used to control adult mosquitoes?
3) What will be the frequency of the aerial sprays? Is historic data or current data the source of spray determination?
4) Have appropriately timed larvicides or growth regulators aimed at juvenile mosquitoes been assessed for possible preventative treatment as an alternative to adult mosquito aerial spraying?
5) Aerial insecticide applications may not be as precise as ground applications. Has there been a completion of any environmental assessments to insure no endangered non-target flora and fauna will be effected if action is taken?

From:	Traver, Carrie
To:	sherry.johnson.4@us.af.mil
Cc:	Nevshehirlian, Stepan; Carey Perry
Subject:	RE: Early Agency Notification -- Department of the Air Force Proposed Aerial Application of Pesticides and Herbicides at JBLE, VA
Date:	Friday, December 17, 2021 2:34:02 PM

Dear Ms. Johnson:

Thank you for providing notice that the United States Department of the Air Force (DAF) is preparing an Environmental Assessment (EA) in accordance with the National Environmental Policy Act (NEPA) of 1969 and the Council on Environmental Quality (CEQ) Regulations for Implementing NEPA (40 CFR 1500-1508). The EA will evaluate the impacts of conducting aerial application of pesticides and herbicides at Joint Base Langley–Eustis (JBLE) in Virginia. These aerial applications would target adult mosquito and invasive plant species at both JBLE-Langley and JBLE Fort Eustis.

The Environmental Protection Agency (EPA) has the following recommendations for areas to address in the development of the EA:

- The aerial spraying of mosquitos and invasive plants appear to be two separate actions as they require different products and management. To support the purpose and need, we recommend that the Study discuss the existing conditions, the proposed treatment frequency for each action, and indicate how they are linked (contracts, equipment, etc.).
- Potential ecological impacts will vary depending on the insecticide(s) and herbicide(s) used. Therefore, identification of the products being considered for both applications is needed to fully assess impacts. Given the extensive aquatic resources in and around JBLE, in most cases the products should be labeled for aquatic use.
- Directions for use, including application and restrictions required by the product labels should also be discussed. The EA should include a discussion of compliance with the requirements of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) and other relevant regulations and guidance.
- Minimizing risk to nontarget species should be carefully evaluated and possible adverse impacts assessed. Potential impacts to state and federally listed species of special concern should be thoroughly assessed. Potential impacts to arthropods, including pollinators such as the Rusty patched bumble bee (*Bombus affinis*), require careful consideration. We recommend consultation with appropriate federal and state agencies be documented in the EA.
- We recommend indicating how the proposed actions fit into JBLE's existing Integrated Pest Management (IPM) Plans.

<u>Mosquito treatment</u>

The stated purpose of the Proposed Action relating to mosquitos is to reduce mosquito and other pest arthropod populations to tolerable levels and to break the disease transmission cycle caused by vectoring arthropods.

- We recommend identifying other targeted pest arthropods, discussing the overall management of mosquitos and other arthropod pests, and specifically discussing occurrence of mosquito-borne/arthropod disease at JBLE.
- Many products for adult mosquitoes cannot be used in aquatic environments. We recommend that the EA consider the range of options, including targeted use of aerial sprays for mosquitos and potential use of larvicides instead of adulticides.
- The Proposed Action includes control of adult mosquitos over 10,900 acres. We recommend evaluation of a variety of control methods, including those already

being conducted in accordance with IPM.
- The notification indicates that use of outdoor bivouac areas and recreation facilities may decline due to intense mosquito activity. We recommend that the EA assess whether more targeted or frequent treatments (e.g., barrier spray or target backpack sprays) may be appropriate for certain recreational areas such as the golf course, athletic fields, playgrounds, and picnic areas.

Invasive plants

The stated purpose for herbicide application is to restore habitats impacted by invasive plant species such as common reed (*Phragmites australis*).

- Other target species should be identified, as management options vary by species.
- Current management of phragmites or other targeted invasive species at JBLE-Langley and JBLE-Eustis should be described.
- The specific management actions proposed, including frequency and timing of spraying, monitoring, and other management actions should be discussed. We note that herbicide application is generally most effective when combined with other control strategies (such as prescribed fire, mechanical treatment, or flooding). See https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb1081651.pdf https://www.invasive.org/publications/PhragBook.pdf
- As part of the impact assessment, the extent of aquatic resources on or immediately surrounding the areas to be treated should be delineated and characterized by vegetation type. Best management practices to prevent spraying or spray drift to native plant communities should be described.
- While we support removal of invasive plants and marsh restoration, we note that phragmites can raise the surface elevation of the marsh more rapidly than slower-growing native vegetation, so it may be more resistant to rapid sea level rise. The notice indicates that phragmites may prevent marsh retreat and appears to state that this is "making the installation more susceptible to flooding." This statement is unclear as marshes protect inland areas from flooding and erosion. The ecological impacts, including any potential loss of wetlands from accelerated erosion or conversion of aquatic resources, should be fully evaluated.
- The EA should include the restoration plan for native vegetation communities.

Surface Water

We recommend that the EA include an evaluation of options that avoid and minimize potential unintended adverse impacts to aquatic resources. The EA would benefit from a narrative discussion of potential impacts to biological, physical, and chemical characteristics of aquatic ecosystems from the proposed spraying and how such impacts can be minimized.

Climate Change and GHG Emissions

Sea level rise is a critical consideration for a coastal restoration project. The range of impacts from climate change on the approximately 745 acres of wetlands to be sprayed should be evaluated in conjunction with the treatment for restoration and in light of any restoration goals. Considerations include but are not limited to sea level rise, marsh retreat, coastal storm impacts, changes in temperature, salinity, currents, and sediment transport.

The Study should evaluate the increase in greenhouse gases that may be generated by the proposed action (including emissions associated with aerial spraying) as well as from any loss of wetlands that may occur with accelerated marsh die-off.

Safety and Community Impacts

- We recommend that the EA assess potential impacts to human safety, including how notification will be made for those who may be within the areas to be sprayed.
- We recommend that the EA include an evaluation of potential for impacts to surrounding communities, including whether any of the activities, such as additional noise or spray/drift of pesticides may affect communities including those of potential environmental justice (EJ) concern. Potential impacts to beekeepers and agricultural operations should be fully assessed.

When the draft EA is available, I would like to request a copy or link to the document via email.

Again, thank you for providing us with notice to provide comments for your consideration in the development of the Study. Please let me know if you would like to discuss any of these comments.

Thank you,

Carrie

Carrie Traver
Life Scientist
Office of Communities, Tribes, & Environmental Assessment
U.S. Environmental Protection Agency, Region 3
1650 Arch Street – 3RA12
Philadelphia, PA 19103
215-814-2772
traver.carrie@epa.gov

From: Carey Perry <cperry@vernadero.com>
Sent: Friday, November 19, 2021 3:59 PM
To: Nevshehirlian, Stepan <Nevshehirlian.Stepan@epa.gov>
Cc: JOHNSON, SHERRY M GS-12 USAF ACC 633 CES/CEIE <sherry.johnson.4@us.af.mil>; Bateman, Joanna G CIV USAF 733 MSG (USA) <joanna.g.bateman.civ@mail.mil>
Subject: Early Agency Notification -- Department of the Air Force Proposed Aerial Application of Pesticides and Herbicides at JBLE, VA

Dear Mr. Nevshehirlian,

On behalf of the Department of the Air Force (DAF), we are contacting you in hopes of obtaining inputs on the potential impacts from the DAF's proposal to conduct aerial application of pesticides and herbicides at JBLE-Eustis, VA and JBLE-Langley, VA. These aerial applications would target adult mosquito and invasive plant species (primarily common reed [*Phragmites australis*]) control at both installations. Attached as early agency notification, in accordance with the National Environmental Policy Act (NEPA) of 1969 (42 United States Code 4321, et seq.), the Council of Environmental

Quality NEPA Implementing Regulations (40 Code of Federal Regulations [CFR] Parts 1500-1508), and the DAF's Environmental Impact Analysis Process (32 CFR 989), is the proposal and notice that the DAF is in the process of preparing an Environmental Assessment (EA) to assess the potential environmental impacts of the Proposed Action.

Please forward any comments or questions about this proposal to Ms. Sherry Johnson at sherry.johnson.4@us.af.mil within 30 days of receipt of this email and the attached letter.

Thank you.
Carey

Carey Lynn Perry
Senior Project Manager / NEPA Specialist

VERNADERO GROUP INCORPORATED
Consulting Planners, Scientists, Engineers and Constructors
Specializing in DoD Infrastructure and Environment

3400 S. Carrollton Ave. #850752
New Orleans, LA 70185

(504) 584-7366 direct
(225) 235-2140 mobile
(866) 708-7640 toll free
www.vernadero.com

From: Warren, Arlene <arlene.warren@vdh.virginia.gov>
Sent: Monday, January 3, 2022 11:55 AM
To: JOHNSON, SHERRY M GS-12 USAF ACC 633 CES/CEIE <sherry.johnson.4@us.af.mil>
Cc: Fulcher, Valerie <valerie.fulcher@deq.virginia.gov>
Subject: [Non-DoD Source] Re: NEW SCOPING Pesticide and Herbicide Proposal, JBLE-Eustis and JBLE-Langley, Virginia

Project Name: NEW SCOPING Pesticide and Herbicide Proposal, JBLE-Eustis and JBLE-Langley
Project #: N/A
UPC #: N/A
Location: JBLE-Eustis and JBLE-Langley, Virginia

VDH – Office of Drinking Water has reviewed the above project. Below are our comments as they relate to proximity to **public drinking water sources** (groundwater wells, springs and surface water intakes). Potential impacts to public water distribution systems or sanitary sewage collection systems **must be verified by the local utility.**

The following public groundwater wells are located within a 1 mile radius of the project site:

PWS ID Number	City/County	System Name	Facility Name
3700500	NEWPORT NEWS	NEWPORT NEWS_ CITY OF	WELL 1A
3700500	NEWPORT NEWS	NEWPORT NEWS_ CITY OF	WELL 1B
3700500	NEWPORT NEWS	NEWPORT NEWS_ CITY OF	WELL 3A
3700500	NEWPORT NEWS	NEWPORT NEWS_ CITY OF	WELL 3B

The following surface water intakes are located within a 5 mile radius of the project site:

PWS ID Number	System Name	Facility Name
3700500	NEWPORT NEWS_ CITY OF	LEE HALL
3700500	NEWPORT NEWS_ CITY OF	SKIFFES CREEK

There are no apparent impacts to public drinking water sources due to this project.

Best Management Practices should be employed, including Erosion & Sedimentation Controls and Spill Prevention Controls & Countermeasures on the project site.

Materials should be managed while on site and during transport to prevent impacts to nearby surface water.

The Virginia Department of Health – Office of Drinking Water appreciates the opportunity to provide comments. If you have any questions, please let me know.

Best Regards,

Arlene Fields Warren

GIS Program Support Technician

Office of Drinking Water

Virginia Department of Health

109 Governor Street

Richmond, VA 23219

(804) 864-7781

On Mon, Dec 6, 2021 at 2:14 PM Fulcher, Valerie <valerie.fulcher@deq.virginia.gov> wrote:

> **Good afternoon—attached is a request for scoping comments on the following:**
>
> **Pesticide and Herbicide Proposal, JBLE-Eustis and JBLE-Langley, Virginia**
>
> **If you choose to make comments, please send them directly to the project sponsor (sherry.johnson.4@us.af.mil) and copy the DEQ Office of Environmental Impact Review: eir@deq.virginia.gov. We will coordinate a review when the environmental document is completed.**

DEQ-OEIR's scoping response is also attached.

If you have any questions regarding this request, please email our office at eir@deq.virginia.gov.

Valerie

--

Valerie A. Fulcher, CAP, OM, Admin/Data Coordinator Senior

Department of Environmental Quality

Environmental Enhancement - Office of Environmental Impact Review

1111 East Main Street

Richmond, VA 23219

804/698-4330

Email: Valerie.Fulcher@deq.virginia.gov

https://www.deq.virginia.gov/permits-regulations/environmental-impact-review

OUR ENFORCEABLE POLICIES HAVE BEEN UPDATED FOR 2021: https://www.deq.virginia.gov/permits-regulations/environmental-impact-review/federal-consistency

For program updates and public notices please subscribe to Constant Contact: https://lp.constantcontact.com/su/MVcCump/EIR

COMMONWEALTH of VIRGINIA

Marine Resources Commission
380 Fenwick Road
Bldg 96
Fort Monroe, VA 23651-1064

Ann F. Jennings
Secretary of Natural and Historic Resources

Steven G. Bowman
Commissioner

January 5, 2022

Department of the Air Force
Attn: Sherry Johnson

Re: Pesticide and Herbicide Proposal, JBLE-Eustis and JBLE-Langley, Virginia

Dear Ms. Johnson,

This will respond to the request for comments regarding the Pesticide and Herbicide Proposal, prepared by the Department of the Air Force. Specifically, the Department of the Air Force has proposed to apply herbicide and pesticide aerially at JBLE-Eustis and JBLE-Langley in Newport News and Hampton, Virginia.

We reviewed the provided project documents and found the proposed project is outside the jurisdictional areas of the Virginia Marine Resources Commission (VMRC) and will not require a permit from this agency but may require approval from the local wetlands boards of Newport News and Hampton.

Phragmites is a jurisdictional tidal wetlands plant when it is located within 1 ½ times the mean tide range above mean low water. The decision of whether a permit is required for Phragmites removal is generally left up to the wetlands board and may depend upon a specific plan. VMRC would likely discourage killing or removal of Phragmites within a jurisdictional tidal wetland without a plan for re-vegetation with other wetland species.

Please be advised that the VMRC pursuant to Chapters 12, 13 and 14 of Title 28.2 of the Code of Virginia, administers permits required for submerged lands, tidal wetlands, and beaches and dunes. Any jurisdictional impacts will be reviewed by the VMRC during the Joint Permit Application process. Should the proposed project change, a new review by this agency may be required relative to these jurisdictional areas.

Please contact me at (757) 247-8027 or by email at ben.nettleton@mrc.virginia.gov if you have questions. Thank you for the opportunity to comment.

Sincerely,

Ben Nettleton

BN/cg
HM

Tribal Coordination Emails and Letters

FORMAT PAGE

From: Calder, Donald W Jr CIV USAF 733 MSG (USA) <donald.w.calder.civ@mail.mil>
Sent: Wednesday, December 1, 2021 2:19 PM
To: Keith Anderson <keith.anderson@nansemond.org>
Cc: McDaid, Christopher L CIV USAF 733 MSG (USA) <christopher.l.mcdaid.civ@mail.mil>; Bateman, Joanna G CIV USAF 733 MSG (USA) <joanna.g.bateman.civ@mail.mil>
Subject: Environmental Assessment for Aerial Spraying at JBLE (UNCLASSIFIED)

CLASSIFICATION: UNCLASSIFIED

Dear Mr. Anderson,

The Department of Air Force (DAF) is preparing an Environmental Assessment (EA) to analyze the potential impacts associated with proposed aerial application of pesticides for adult mosquito and invasive plant species (primarily common reed [*Phragmites australis]*) control at Joint Base Langley-Eustis (JBLE). Figure 1 (see attached) shows the regional location of JBLE.

The purpose of the Proposed Action is to: (1) reduce mosquito (and other pest arthropods) populations to tolerable levels, (2) break the disease transmission cycle caused by vectoring arthropods, and (3) restore habitats impacted by invasive plant species such as common reed.

The Proposed Action is needed to control mosquitoes across large areas of JBLE (over all of JBLE-Eustis' approximately 7,900 acres and over approximately 3,600 acres of JBLE-Langley), as well as to reach remote portions of JBLE that are not reasonably accessible for application by land or watercraft. Attached Figures 2 and 3 (see attached) present the proposed treatment areas for adult mosquito control at JBLE. Large scale application of pesticide would reduce the potential for mosquito-borne illness to degrade mission-essential operations and readiness; the threat of human disease caused by mosquito vectors; and mosquito-induced discomfort, hardship, annoyance, and distraction.

Control of invasive plant species such as common reed in coastal and estuarine wetlands would improve the biological diversity and functions of wetlands and support training opportunities and force protection (on approximately 600 acres at JBLE-Eustis and on approximately 145 acres on JBLE-Langley). Attached Figures 4 and 5 (see attached) present the proposed common reed treatment areas at JBLE. Further, populations of common reed currently prevent marsh retreat, making the installation more susceptible to flooding especially in light of potential sea level rise.

The EA will be prepared in compliance with the National Environmental Policy Act (NEPA) of 1969 (42 United States Code [USC] 4321, *et seq.*), the Council of Environmental Quality NEPA Implementing Regulations (40 Code of Federal Regulations [CFR] Parts 1500-1508), and the Air Force Environmental Impact Analysis Process (32 CFR 989). As part of this EA, we request your assistance in identifying any potential areas of environmental impact to be assessed in this analysis.

Please forward any comments or questions about this proposal to Dr. Christopher L. McDaid at christopher.l.mcdaid.civ@mail.mil. Providing any comments to Dr. McDaid within 30 days of receipt of this letter will provide us the opportunity to more fully consider your input. Respectfully,

//Don C.//
Donald W. Calder, Jr.
Chief, Environmental Element (CEIE)
Installation Management Flight
733d Civil Engineer Division
1407 Washington Boulevard
JBLE-Eustis, VA 23604
Donald.W.Calder.Civ@mail.mil

Attachment:
Map Figures of EA

From: Calder, Donald W Jr CIV USAF 733 MSG (USA) <donald.w.calder.civ@mail.mil>
Sent: Wednesday, December 1, 2021 2:13 PM
To: wayne.adkins@chickahominytribe.org
Cc: McDaid, Christopher L CIV USAF 733 MSG (USA) <christopher.l.mcdaid.civ@mail.mil>; Bateman, Joanna G CIV USAF 733 MSG (USA) <joanna.g.bateman.civ@mail.mil>
Subject: Environmental Assessment for Aerial Spraying at JBLE (UNCLASSIFIED)

CLASSIFICATION: UNCLASSIFIED

Dear Chief Adkins

The Department of Air Force (DAF) is preparing an Environmental Assessment (EA) to analyze the potential impacts associated with proposed aerial application of pesticides for adult mosquito and invasive plant species (primarily common reed [*Phragmites australis]*) control at Joint Base Langley-Eustis (JBLE). Figure 1 (see attached) shows the regional location of JBLE.

The purpose of the Proposed Action is to: (1) reduce mosquito (and other pest arthropods) populations to tolerable levels, (2) break the disease transmission cycle caused by vectoring arthropods, and (3) restore habitats impacted by invasive plant species such as common reed.

The Proposed Action is needed to control mosquitoes across large areas of JBLE (over all of JBLE-Eustis' approximately 7,900 acres and over approximately 3,600 acres of JBLE-Langley), as well as to reach remote portions of JBLE that are not reasonably accessible for application by land or watercraft. Attached Figures 2 and 3 (see attached) present the proposed treatment areas for adult mosquito control at JBLE. Large scale application of pesticide would reduce the potential for mosquito-borne illness to degrade mission-essential operations and readiness; the threat of human disease caused by mosquito vectors; and mosquito-induced discomfort, hardship, annoyance, and distraction.

Control of invasive plant species such as common reed in coastal and estuarine wetlands would improve the biological diversity and functions of wetlands and support training opportunities and force protection (on approximately 600 acres at JBLE-Eustis and on approximately 145 acres on JBLE-Langley). Attached Figures 4 and 5 (see attached) present the proposed common reed treatment areas at JBLE. Further, populations of common reed currently prevent marsh retreat, making the installation more susceptible to flooding especially in light of potential sea level rise.

The EA will be prepared in compliance with the National Environmental Policy Act (NEPA) of 1969 (42 United States Code [USC] 4321, *et seq.*), the Council of Environmental Quality NEPA Implementing Regulations (40 Code of Federal Regulations [CFR] Parts 1500-1508), and the Air Force Environmental Impact Analysis Process (32 CFR 989). As part of this EA, we request your assistance in identifying any potential areas of environmental impact to be assessed in this analysis.

Please forward any comments or questions about this proposal to Dr. Christopher L. McDaid at christopher.l.mcdaid.civ@mail.mil. Providing any comments to Dr. McDaid within 30 days of receipt of this letter will provide us the opportunity to more fully consider your input.

Respectfully,

Don C.
Donald W. Calder, Jr.
Chief, Environmental Element (CEIE)
Installation Management Flight
733d Civil Engineer Division
1407 Washington Boulevard
JBLE-Eustis, VA 23604
Donald.W.Calder.Civ@mail.mil

Attachment:
Map Figures for EA

From: Calder, Donald W Jr CIV USAF 733 MSG (USA) <donald.w.calder.civ@mail.mil>
Sent: Wednesday, December 1, 2021 2:23 PM
To: epaden@delawarenation-nsn.gov; klucas@delawarenation-nsn.gov
Cc: McDaid, Christopher L CIV USAF 733 MSG (USA) <christopher.l.mcdaid.civ@mail.mil>; Bateman, Joanna G CIV USAF 733 MSG (USA) <joanna.g.bateman.civ@mail.mil>
Subject: Environmental Assessment for Aerial Spraying at JBLE (UNCLASSIFIED)

CLASSIFICATION: UNCLASSIFIED

Dear Director Paden,

The Department of Air Force (DAF) is preparing an Environmental Assessment (EA) to analyze the potential impacts associated with proposed aerial application of pesticides for adult mosquito and invasive plant species (primarily common reed [*Phragmites australis]*) control at Joint Base Langley-Eustis (JBLE). Figure 1 (see attached) shows the regional location of JBLE.

The purpose of the Proposed Action is to: (1) reduce mosquito (and other pest arthropods) populations to tolerable levels, (2) break the disease transmission cycle caused by vectoring arthropods, and (3) restore habitats impacted by invasive plant species such as common reed.

The Proposed Action is needed to control mosquitoes across large areas of JBLE (over all of JBLE-Eustis' approximately 7,900 acres and over approximately 3,600 acres of JBLE-Langley), as well as to reach remote portions of JBLE that are not reasonably accessible for application by land or watercraft. Attached Figures 2 and 3 (see attached) present the proposed treatment areas for adult mosquito control at JBLE. Large scale application of pesticide would reduce the potential for mosquito-borne illness to degrade mission-essential operations and readiness; the threat of human disease caused by mosquito vectors; and mosquito-induced discomfort, hardship, annoyance, and distraction.

Control of invasive plant species such as common reed in coastal and estuarine wetlands would improve the biological diversity and functions of wetlands and support training opportunities and force protection (on approximately 600 acres at JBLE-Eustis and on approximately 145 acres on JBLE-Langley). Attached Figures 4 and 5 (see attached) present the proposed common reed treatment areas at JBLE. Further, populations of common reed currently prevent marsh retreat, making the installation more susceptible to flooding especially in light of potential sea level rise.

The EA will be prepared in compliance with the National Environmental Policy Act (NEPA) of 1969 (42 United States Code [USC] 4321, *et seq.*), the Council of Environmental Quality NEPA Implementing Regulations (40 Code of Federal Regulations [CFR] Parts 1500-1508), and the Air Force Environmental Impact Analysis Process (32 CFR 989). As part of this EA, we request your assistance in identifying any potential areas of environmental impact to be assessed in this analysis.

Please forward any comments or questions about this proposal to Dr. Christopher L. McDaid at christopher.l.mcdaid.civ@mail.mil. Providing any comments to Dr. McDaid within 30 days of receipt of this letter will provide us the opportunity to more fully consider your input. Respectfully,

//Don C.//
Donald W. Calder, Jr.
Chief, Environmental Element (CEIE)
Installation Management Flight
733d Civil Engineer Division
1407 Washington Boulevard
JBLE-Eustis, VA 23604
Donald.W.Calder.Civ@mail.mil

Attachment:
Map Figures from EA

From: Calder, Donald W Jr CIV USAF 733 MSG (USA) <donald.w.calder.civ@mail.mil>
Sent: Wednesday, December 1, 2021 2:20 PM
To: Shaleigh Howells <shaleigh.howells@pamunkey.org>
Cc: McDaid, Christopher L CIV USAF 733 MSG (USA) <christopher.l.mcdaid.civ@mail.mil>; Bateman, Joanna G CIV USAF 733 MSG (USA) <joanna.g.bateman.civ@mail.mil>
Subject: Environmental Assessment for Aerial Spraying at JBLE (UNCLASSIFIED)

CLASSIFICATION: UNCLASSIFIED

Dear Ms. Howells,

The Department of Air Force (DAF) is preparing an Environmental Assessment (EA) to analyze the potential impacts associated with proposed aerial application of pesticides for adult mosquito and invasive plant species (primarily common reed [*Phragmites australis]*) control at Joint Base Langley-Eustis (JBLE). Figure 1 (see attached) shows the regional location of JBLE.

The purpose of the Proposed Action is to: (1) reduce mosquito (and other pest arthropods) populations to tolerable levels, (2) break the disease transmission cycle caused by vectoring arthropods, and (3) restore habitats impacted by invasive plant species such as common reed.

The Proposed Action is needed to control mosquitoes across large areas of JBLE (over all of JBLE-Eustis' approximately 7,900 acres and over approximately 3,600 acres of JBLE-Langley), as well as to reach remote portions of JBLE that are not reasonably accessible for application by land or watercraft. Attached Figures 2 and 3 (see attached) present the proposed treatment areas for adult mosquito control at JBLE. Large scale application of pesticide would reduce the potential for mosquito-borne illness to degrade mission-essential operations and readiness; the threat of human disease caused by mosquito vectors; and mosquito-induced discomfort, hardship, annoyance, and distraction.

Control of invasive plant species such as common reed in coastal and estuarine wetlands would improve the biological diversity and functions of wetlands and support training opportunities and force protection (on approximately 600 acres at JBLE-Eustis and on approximately 145 acres on JBLE-Langley). Attached Figures 4 and 5 (see attached) present the proposed common reed treatment areas at JBLE. Further, populations of common reed currently prevent marsh retreat, making the installation more susceptible to flooding especially in light of potential sea level rise.

The EA will be prepared in compliance with the National Environmental Policy Act (NEPA) of 1969 (42 United States Code [USC] 4321, *et seq.*), the Council of Environmental Quality NEPA Implementing Regulations (40 Code of Federal Regulations [CFR] Parts 1500-1508), and the Air Force Environmental Impact Analysis

Process (32 CFR 989). As part of this EA, we request your assistance in identifying any potential areas of environmental impact to be assessed in this analysis.

Please forward any comments or questions about this proposal to Dr. Christopher L. McDaid at christopher.l.mcdaid.civ@mail.mil. Providing any comments to Dr. McDaid within 30 days of receipt of this letter will provide us the opportunity to more fully consider your input. Respectfully,

//Don C.//
Donald W. Calder, Jr.
Chief, Environmental Element (CEIE)
Installation Management Flight
733d Civil Engineer Division
1407 Washington Boulevard
JBLE-Eustis, VA 23604
Donald.W.Calder.Civ@mail.mil

Attachment:
Map Figure from EA

From: Calder, Donald W Jr CIV USAF 733 MSG (USA) <donald.w.calder.civ@mail.mil>
Sent: Wednesday, December 1, 2021 2:22 PM
To: environment@umitribe.org
Cc: McDaid, Christopher L CIV USAF 733 MSG (USA) <christopher.l.mcdaid.civ@mail.mil>; Bateman, Joanna G CIV USAF 733 MSG (USA) <joanna.g.bateman.civ@mail.mil>
Subject: Environmental Assessment for Aerial Spraying at JBLE (UNCLASSIFIED)

CLASSIFICATION: UNCLASSIFIED

Dear Ms. Mitchell,

The Department of Air Force (DAF) is preparing an Environmental Assessment (EA) to analyze the potential impacts associated with proposed aerial application of pesticides for adult mosquito and invasive plant species (primarily common reed [*Phragmites australis]*) control at Joint Base Langley-Eustis (JBLE). Figure 1 (see attached) shows the regional location of JBLE.

The purpose of the Proposed Action is to: (1) reduce mosquito (and other pest arthropods) populations to tolerable levels, (2) break the disease transmission cycle caused by vectoring arthropods, and (3) restore habitats impacted by invasive plant species such as common reed.

The Proposed Action is needed to control mosquitoes across large areas of JBLE (over all of JBLE-Eustis' approximately 7,900 acres and over approximately 3,600 acres of JBLE-Langley), as well as to reach remote portions of JBLE that are not reasonably accessible for application by land or watercraft. Attached Figures 2 and 3 (see attached) present the proposed treatment areas for adult mosquito control at JBLE. Large scale application of pesticide would reduce the potential for mosquito-borne illness to degrade mission-essential operations and readiness; the threat of human disease caused by mosquito vectors; and mosquito-induced discomfort, hardship, annoyance, and distraction.

Control of invasive plant species such as common reed in coastal and estuarine wetlands would improve the biological diversity and functions of wetlands and support training opportunities and force protection (on approximately 600 acres at JBLE-Eustis and on approximately 145 acres on JBLE-Langley). Attached Figures 4 and 5 (see attached) present the proposed common reed treatment areas at JBLE. Further, populations of common reed currently prevent marsh retreat, making the installation more susceptible to flooding especially in light of potential sea level rise.

The EA will be prepared in compliance with the National Environmental Policy Act (NEPA) of 1969 (42 United States Code [USC] 4321, *et seq.*), the Council of Environmental Quality NEPA Implementing Regulations (40 Code of Federal Regulations [CFR] Parts 1500-1508), and the Air Force Environmental Impact Analysis Process (32 CFR 989). As part of this EA, we request your assistance in identifying any potential areas of environmental impact to be assessed in this analysis.

Please forward any comments or questions about this proposal to Dr. Christopher L. McDaid at christopher.l.mcdaid.civ@mail.mil. Providing any comments to Dr. McDaid within 30 days of receipt of this letter will provide us the opportunity to more fully consider your input. Respectfully,

//Don C.//

Donald W. Calder, Jr.
Chief, Environmental Element (CEIE)
Installation Management Flight
733d Civil Engineer Division
1407 Washington Boulevard
JBLE-Eustis, VA 23604
Donald.W.Calder.Civ@mail.mil

Attachment:
Map Figures from EA

DEPARTMENT OF THE AIR FORCE
733D CIVIL ENGINEER SQUADRON
JOINT BASE LANGLEY-EUSTIS VA

1 DEC 2021

Caitlin Rogers
Catawba Indian Nation
Tribal Historic Preservation Office
1536 Tom Steven Road
Rock Hill, SC 29730

Dear Ms. Rogers,

The Department of Air Force (DAF) is preparing an Environmental Assessment (EA) to analyze the potential impacts associated with proposed aerial application of pesticides for adult mosquito and invasive plant species (primarily common reed [Phragmites australis]) control at Joint Base Langley-Eustis (JBLE). Figure 1 (see attached) shows the regional location of JBLE.

The purpose of the Proposed Action is to: (1) reduce mosquito (and other pest arthropods) populations to tolerable levels, (2) break the disease transmission cycle caused by vectoring arthropods, and (3) restore habitats impacted by invasive plant species such as common reed.

The Proposed Action is needed to control mosquitoes across large areas of JBLE (over all of JBLE-Eustis' approximately 7,900 acres and over approximately 3,600 acres of JBLE-Langley), as well as to reach remote portions of JBLE that are not reasonably accessible for application by land or watercraft. Attached Figures 2 and 3 (see attached) present the proposed treatment areas for adult mosquito control at JBLE. Large scale application of pesticide would reduce the potential for mosquito-borne illness to degrade mission-essential operations and readiness; the threat of human disease caused by mosquito vectors; and mosquito-induced discomfort, hardship, annoyance, and distraction.

Control of invasive plant species such as common reed in coastal and estuarine wetlands would improve the biological diversity and functions of wetlands and support training opportunities and force protection (on approximately 600 acres at JBLE-Eustis and on approximately 145 acres on JBLE-Langley). Attached Figures 4 and 5 (see attached) present the proposed common reed treatment areas at JBLE. Further, populations of common reed currently prevent marsh retreat, making the installation more susceptible to flooding especially in light of potential sea level rise.

The EA will be prepared in compliance with the National Environmental Policy Act (NEPA) of 1969 (42 United States Code [USC] 4321, et seq.), the Council of Environmental Quality NEPA Implementing Regulations (40 Code of Federal Regulations [CFR] Parts 1500-1508), and the Air Force Environmental Impact Analysis Process (32 CFR 989). As part of this EA, we request your assistance in identifying any potential areas of environmental impact to be assessed in this analysis.

Please refer any questions about this proposal to Dr. Christopher L. McDaid at christopher.l.mcdaid.civ@mail.mil, and please provide Dr. McDaid any comments by 31 Dec 21 so that we have the opportunity to more fully consider your input.

Sincerely,

CALDER.DONALD.W.JR.1021845686 Digitally signed by CALDER.DONALD.W.JR.1021845686 Date: 2021.12.01 14:08:51 -05'00'

Donald W. Calder, Jr.
Chief, Environmental Element
733d Civil Engineer Squadron

Attachments:
Figure 1. Regional Location of Joint Base Langley – Eustis
Figure 2. Proposed Adult Mosquito Treatment Areas at Joint Base Langley-Eustis – Eustis
Figure 3. Proposed Adult Mosquito Treatment Areas at Joint Base Langley-Eustis – Langley
Figure 4. Proposed Common Reed Treatment Areas at Joint Base Langley-Eustis – Eustis
Figure 5. Proposed Common Reed Treatment Areas at Joint Base Langley-Eustis – Langley

Figure 1. Regional Location of Joint Base Langley – Eustis

Figure 2. Proposed Adult Mosquito Treatment Areas at Joint Base Langley-Eustis – Eustis

Figure 3. Proposed Adult Mosquito Treatment Areas at Joint Base Langley-Eustis – Langley

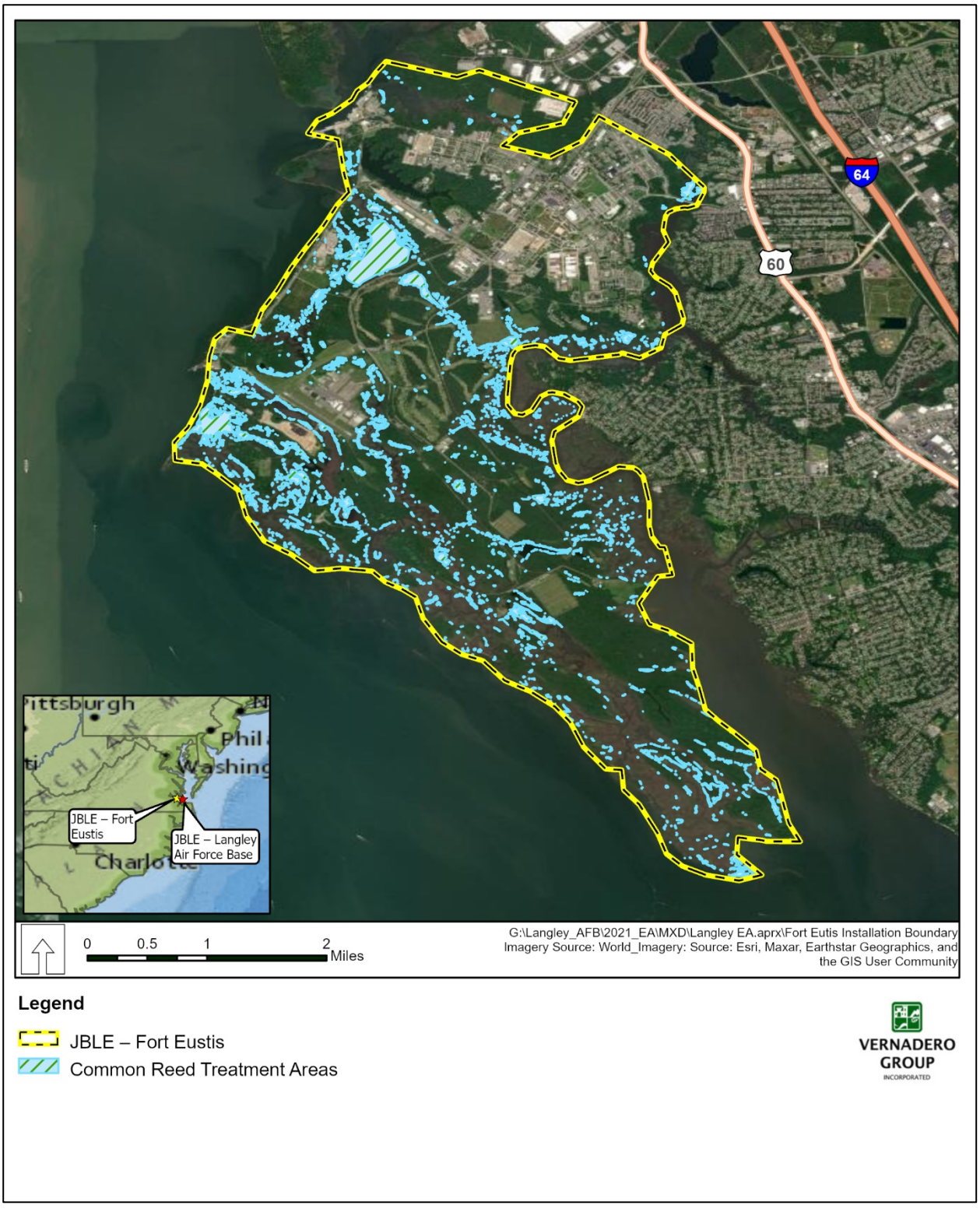


Figure 4. Proposed Common Reed Treatment Areas at Joint Base Langley-Eustis – Eustis

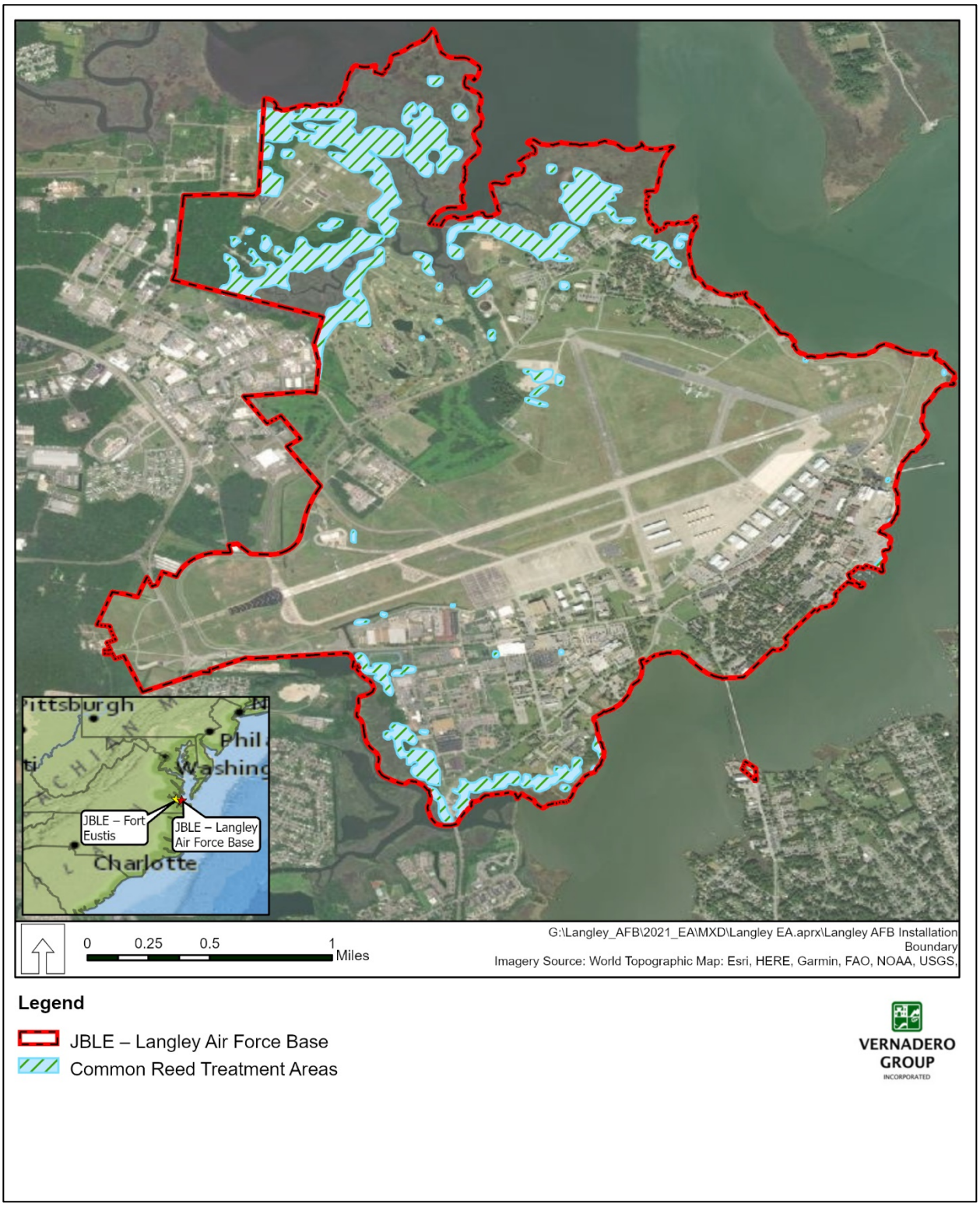


Figure 5. Proposed Common Reed Treatment Areas at Joint Base Langley-Eustis – Langley

FORMAT PAGE

Tribal Responses

FORMAT PAGE

From: Shaleigh Howells <shaleigh.howells@pamunkey.org>
Sent: Thursday, December 9, 2021 12:02 PM
To: Warren Taylor <warren.taylor@pamunkey.org>
Cc: McDaid, Christopher L CIV USAF 733 MSG (USA) <christopher.l.mcdaid.civ@mail.mil>; Bateman, Joanna G CIV USAF 733 MSG (USA) <joanna.g.bateman.civ@mail.mil>; Calder, Donald W Jr CIV USAF 733 MSG (USA) <donald.w.calder.civ@mail.mil>
Subject: [Non-DoD Source] FW: Environmental Assessment for Aerial Spraying at JBLE (UNCLASSIFIED)

Forwarding to the Tribe's Natural Resource Manager, Warren Taylor, to also review.

Respectfully,

Shaleigh R. Howells
"SHAY-lee" ¦ she/her/hers
Cultural Resource Director and Museum Director
Pamunkey Indian Tribal Resource Office

1054 Pocahontas Trail, King William, VA 23086
Phone: 804.843.2038 Fax: 866.422.3387
Caution-www.pamunkey.org < Caution-http://www.pamunkey.org/ >

From: Calder, Donald W Jr CIV USAF 733 MSG (USA) <donald.w.calder.civ@mail.mil>
Sent: Wednesday, December 1, 2021 2:20 PM
To: Shaleigh Howells <shaleigh.howells@pamunkey.org>
Cc: McDaid, Christopher L CIV USAF 733 MSG (USA) <christopher.l.mcdaid.civ@mail.mil>; Bateman, Joanna G CIV USAF 733 MSG (USA) <joanna.g.bateman.civ@mail.mil>
Subject: Environmental Assessment for Aerial Spraying at JBLE (UNCLASSIFIED)

CLASSIFICATION: UNCLASSIFIED

Dear Ms. Howells,

The Department of Air Force (DAF) is preparing an Environmental Assessment (EA) to analyze thepotential impacts associated with proposed aerial application of pesticides for adult mosquito and invasive plant species (primarily common reed [*Phragmites australis]*) controlat Joint Base Langley-Eustis (JBLE). Figure 1 (see attached) shows the regional location of JBLE.

The purpose of the Proposed Action is to: (1) reduce mosquito (and other pest arthropods) populations to tolerable levels, (2) break the disease transmission cycle caused by vectoring arthropods, and (3) restore habitats impacted by invasive plant species such as common reed.

The Proposed Action is needed to control mosquitoes across large areas of JBLE (over all of JBLE-Eustis' approximately 7,900 acres and over approximately 3,600 acres of JBLE-Langley), as well as to reach remote portions of JBLE that are not reasonably accessible for application by land or watercraft. Attached Figures 2 and 3 (see attached) present the proposed treatment areas for adult mosquito control at JBLE. Large scale application of pesticide would reduce the potential for mosquito-borne illness to degrade mission-essential operations and readiness; the threat of human disease caused by mosquito vectors; and mosquito-induced discomfort, hardship, annoyance, and distraction.

Control of invasive plant species such as common reed in coastal and estuarine wetlands wouldimprove the biological diversity and functions of wetlands and support training opportunities and force protection (on approximately 600 acres at JBLE-Eustis and on approximately 145 acres on JBLE-Langley). Attached Figures 4 and 5 (see attached) present the proposed common reed treatment areas at JBLE. Further, populations of common reed currently prevent marsh retreat, making the installation more susceptible to flooding especially in light of potential sea level rise.

The EA will be prepared in compliance with the National Environmental Policy Act (NEPA) of 1969 (42 United States Code [USC] 4321,*et seq.*), the Council of Environmental Quality NEPA Implementing Regulations (40 Code of Federal Regulations [CFR] Parts 1500-1508), and the Air Force Environmental Impact Analysis Process (32 CFR 989). As part of this EA, we request your assistance in identifying any potential areas of environmental impact to be assessed in this analysis.

Please forward any comments or questions about this proposal to Dr. Christopher L. McDaid atchristopher.l.mcdaid.civ@mail.mil < Caution-mailto:christopher.l.mcdaid.civ@mail.mil > . Providing any comments to Dr. McDaid within 30 days of receipt of this letter will provide us the opportunity to more fully consider your input. Respectfully,

//Don C.//
Donald W. Calder, Jr.
Chief, Environmental Element (CEIE)
Installation Management Flight
733d Civil Engineer Division
1407 Washington Boulevard
JBLE-Eustis, VA 23604
Donald.W.Calder.Civ@mail.mil < Caution-mailto:Donald.W.Calder.Civ@mail.mil >

Attachment:
Map Figure from EA

From: Keith Anderson <keith.anderson@nansemond.org>
Sent: Monday, December 6, 2021 4:26 PM
To: Calder, Donald W Jr CIV USAF 733 MSG (USA) <donald.w.calder.civ@mail.mil>
Cc: McDaid, Christopher L CIV USAF 733 MSG (USA) <christopher.l.mcdaid.civ@mail.mil>; Bateman, Joanna G CIV USAF 733 MSG (USA) <joanna.g.bateman.civ@mail.mil>
Subject: [Non-DoD Source] Re: Environmental Assessment for Aerial Spraying at JBLE (UNCLASSIFIED)

Thank you for the updates. We have no pending issues regarding the proposed project.
Thanks

Keith F. Anderson
Environmental Program Director
Nansemond Indian Nation
1001 Pembroke Lane
Suffolk, VA. 23434
keith.anderson@nansemond.org < Caution-mailto:keith.anderson@nansemond.org >
(757) 619-0670

On Wed, Dec 1, 2021 at 2:19 PM Calder, Donald W Jr CIV USAF 733 MSG (USA) <donald.w.calder.civ@mail.mil < Caution-mailto:donald.w.calder.civ@mail.mil > > wrote:

> CLASSIFICATION: UNCLASSIFIED
>
> Dear Mr. Anderson,
>
> The Department of Air Force (DAF) is preparing an Environmental Assessment (EA) to analyze thepotential impacts associated with proposed aerial application of pesticides for adult mosquito and invasive plant species (primarily common reed [*Phragmites australis]*) controlat Joint Base Langley-Eustis (JBLE). Figure 1 (see attached) shows the regional location of JBLE.
>
> The purpose of the Proposed Action is to: (1) reduce mosquito (and other pest arthropods) populations to tolerable levels, (2) break the disease transmission cycle caused by vectoring arthropods, and (3) restore habitats impacted by invasive plant species such as common reed.
>
> The Proposed Action is needed to control mosquitoes across large areas of JBLE (over all of JBLE-Eustis' approximately 7,900 acres and over approximately 3,600 acres of JBLE-Langley), as well as to reach remote portions of JBLE that are not reasonably accessible for application by land or watercraft. Attached Figures 2 and 3 (see attached) present the proposed treatment areas for adult mosquito control at JBLE. Large scale application of pesticide would reduce the potential for mosquito-borne illness to degrade mission-essential operations and readiness; the threat of human disease caused by mosquito vectors; and mosquito-induced discomfort, hardship, annoyance, and distraction.
>
> Control of invasive plant species such as common reed in coastal and estuarine wetlands wouldimprove the biological diversity and functions of wetlands and support training opportunities and force protection (on approximately 600 acres at JBLE-Eustis and on approximately 145 acres on JBLE-Langley). Attached Figures 4 and 5 (see attached) present the proposed common reed treatment areas at JBLE. Further, populations of common reed currently prevent marsh retreat, making the

installation more susceptible to flooding especially in light of potential sea level rise.

The EA will be prepared in compliance with the National Environmental Policy Act (NEPA) of 1969 (42 United States Code [USC] 4321,*et seq.*), the Council of Environmental Quality NEPA Implementing Regulations (40 Code of Federal Regulations [CFR] Parts 1500-1508), and the Air Force Environmental Impact Analysis Process (32 CFR 989). As part of this EA, we request your assistance in identifying any potential areas of environmental impact to be assessed in this analysis.

Please forward any comments or questions about this proposal to Dr. Christopher L. McDaid at christopher.l.mcdaid.civ@mail.mil < Caution-mailto:christopher.l.mcdaid.civ@mail.mil > . Providing any comments to Dr. McDaid within 30 days of receipt of this letter will provide us the opportunity to more fully consider your input. Respectfully,

//Don C.//

Donald W. Calder, Jr.

Chief, Environmental Element (CEIE)

Installation Management Flight

733d Civil Engineer Division

1407 Washington Boulevard

JBLE-Eustis, VA 23604

Donald.W.Calder.Civ@mail.mil < Caution-mailto:Donald.W.Calder.Civ@mail.mil >

Attachment:
Map Figures of EA

CLASSIFICATION: UNCLASSIFIED

CLASSIFICATION: UNCLASSIFIED

From: Shaleigh Howells <shaleigh.howells@pamunkey.org>
Sent: Thursday, December 9, 2021 12:02 PM
To: Warren Taylor <warren.taylor@pamunkey.org>
Cc: McDaid, Christopher L CIV USAF 733 MSG (USA) <christopher.l.mcdaid.civ@mail.mil>; Bateman, Joanna G CIV USAF 733 MSG (USA) <joanna.g.bateman.civ@mail.mil>; Calder, Donald W Jr CIV USAF 733 MSG (USA) <donald.w.calder.civ@mail.mil>
Subject: [Non-DoD Source] FW: Environmental Assessment for Aerial Spraying at JBLE (UNCLASSIFIED)

Forwarding to the Tribe's Natural Resource Manager, Warren Taylor, to also review.

Respectfully,

Shaleigh R. Howells
"SHAY-lee" ¦ she/her/hers
Cultural Resource Director and Museum Director
Pamunkey Indian Tribal Resource Office

1054 Pocahontas Trail, King William, VA 23086
Phone: 804.843.2038 Fax: 866.422.3387
Caution-www.pamunkey.org < Caution-http://www.pamunkey.org/ >

From: Calder, Donald W Jr CIV USAF 733 MSG (USA) <donald.w.calder.civ@mail.mil>
Sent: Wednesday, December 1, 2021 2:20 PM
To: Shaleigh Howells <shaleigh.howells@pamunkey.org>
Cc: McDaid, Christopher L CIV USAF 733 MSG (USA) <christopher.l.mcdaid.civ@mail.mil>; Bateman, Joanna G CIV USAF 733 MSG (USA) <joanna.g.bateman.civ@mail.mil>
Subject: Environmental Assessment for Aerial Spraying at JBLE (UNCLASSIFIED)

CLASSIFICATION: UNCLASSIFIED

Dear Ms. Howells,

The Department of Air Force (DAF) is preparing an Environmental Assessment (EA) to analyze thepotential impacts associated with proposed aerial application of pesticides for adult mosquito and invasive plant species (primarily common reed [*Phragmites australis]*) controlat Joint Base Langley-Eustis (JBLE). Figure 1 (see attached) shows the regional location of JBLE.

The purpose of the Proposed Action is to: (1) reduce mosquito (and other pest arthropods) populations to tolerable levels, (2) break the disease transmission cycle caused by vectoring arthropods, and (3) restore habitats impacted by invasive plant species such as common reed.

The Proposed Action is needed to control mosquitoes across large areas of JBLE (over all of JBLE-Eustis' approximately 7,900 acres and over approximately 3,600 acres of JBLE-Langley), as well as to reach remote portions of JBLE that are not reasonably accessible for application by land or watercraft. Attached Figures 2 and 3 (see attached) present the proposed treatment areas for adult mosquito control at JBLE. Large scale application of pesticide would reduce the potential for mosquito-borne illness to degrade mission-essential operations and readiness; the threat of human disease caused by mosquito vectors; and mosquito-induced discomfort, hardship, annoyance, and distraction.

Control of invasive plant species such as common reed in coastal and estuarine wetlands wouldimprove the biological diversity and functions of wetlands and support training opportunities and force protection (on approximately 600 acres at JBLE-Eustis and on approximately 145 acres on JBLE-Langley). Attached Figures 4 and 5 (see attached) present the proposed common reed treatment areas at JBLE. Further, populations of common reed currently prevent marsh retreat, making the installation more susceptible to flooding especially in light of potential sea level rise.

The EA will be prepared in compliance with the National Environmental Policy Act (NEPA) of 1969 (42 United States Code [USC] 4321,*et seq.*), the Council of Environmental Quality NEPA Implementing Regulations (40 Code of Federal Regulations [CFR] Parts 1500-1508), and the Air Force Environmental Impact Analysis Process (32 CFR 989). As part of this EA, we request your assistance in identifying any potential areas of environmental impact to be assessed in this analysis.

Please forward any comments or questions about this proposal to Dr. Christopher L. McDaid atchristopher.l.mcdaid.civ@mail.mil < Caution-mailto:christopher.l.mcdaid.civ@mail.mil > . Providing any comments to Dr. McDaid within 30 days of receipt of this letter will provide us the opportunity to more fully consider your input. Respectfully,

//Don C.//
Donald W. Calder, Jr.
Chief, Environmental Element (CEIE)
Installation Management Flight
733d Civil Engineer Division
1407 Washington Boulevard
JBLE-Eustis, VA 23604
Donald.W.Calder.Civ@mail.mil < Caution-mailto:Donald.W.Calder.Civ@mail.mil >

Attachment:
Map Figure from EA

FORMAT PAGE

Agency and Tribal Notice of 30-Day Public Review for the Draft Environmental Assessment

FORMAT PAGE

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 633D AIR BASE WING
JOINT BASE LANGLEY-EUSTIS VA

7 July 2022

MEMORANDUM FOR ALL INTERESTED GOVERNMENT AGENCIES, PUBLIC OFFICIALS, ORGANIZATIONS, AND INDIVIDUAL PARTIES

FROM: 633 CES / CEIE
37 Sweeney Blvd
Langley AFB, VA 23665

SUBJECT: Draft Environmental Assessment (EA) and proposed Finding of No Significant Impact (FONSI) for Aerial Application of Pesticide for Mosquito and Invasive Plant Species Control at Joint Base Langley-Eustis (JBLE), Virginia

1. As public and agency notification, to comply with the National Environmental Policy Act of 1969, and the President's Council on Environmental Quality's implementing regulations, this memorandum announces the availability of the Draft EA and Draft FONSI for Aerial Application of Pesticide for Mosquito and Invasive Plant Species Control at JBLE, Virginia.

2. This Draft EA and proposed FONSI are available at the JBLE – Eustis and JBLE – Langley public websites: https://www.jble.af.mil/Units/Army/Eustis-Enviromental and https://www.jble.af.mil/About-Us/Units/Langley-AFB/Langley-Environmental.

3. The Proposed Action is a supporting control technique used as part of an Integrated Pest Management (IPM) program and supports management of mosquito populations under conditions of disease risk and intolerable levels, as well as management of invasive plant species, particularly common reed, at JBLE. The Proposed Action includes control of adult and larval mosquitoes over all of JBLE – Eustis' approximately 7,900 acres and over approximately 3,000 acres of JBLE – Langley. The Proposed Action also includes the control of common reed within specific areas where aerial applications would be feasible within the approximately 600 acres of common reed at JBLE – Eustis and on approximately 145 acres on JBLE – Langley. The purpose of the Proposed Action is to implement an IPM approach to community health and natural resources management at JBLE to support military missions by: (1) reducing mosquito (and other pest arthropods) populations to tolerable levels, (2) breaking the disease transmission cycle caused by vectoring arthropods, and (3) restoring habitats impacted by invasive plant species such as common reed.

The Proposed Action is needed to control mosquitoes and invasive plant species across large areas of JBLE and to reach remote portions of JBLE that are not reasonably accessible from application by land or watercraft. Large-scale application of pesticide would reduce the potential threat of human disease caused by mosquito vectors, mosquito-induced discomfort, hardship,

annoyance, and distraction experienced by personnel at JBLE. An outbreak of mosquito-borne illness among base personnel could seriously degrade mission-essential operations and readiness. Additionally, the efficiency of military training, maintenance operations, range management, natural resources management, military police, fire and emergency services, and others who work outdoors may be adversely affected when mosquito populations reach intolerable levels. The use of outdoor bivouac areas and recreational facilities such as the golf course, athletic fields, playgrounds, and picnic areas may decline at times due to intense mosquito activity. Such restrictions reduce productivity and have a negative effect on the morale of assigned personnel, their dependents, transient personnel, and guests and residents of civilian communities. Control of invasive plant species such as common reed in coastal and estuarine wetlands would improve the biological diversity and functions of wetlands, increase recreational opportunities, reduce visual restrictions by tall herbaceous vegetation, and support training opportunities and force protection.

Resource areas considered in the impact analysis for this EA are airspace management and use, air quality and climate change, aesthetic and visual resources, geological resources, floodplains, coastal zone management, water resources, biological resources, and health and safety. This Draft EA and proposed FONSI concludes that there will be no significant environmental impacts resulting from the Proposed Action.

4. The public comment period for this Draft EA and proposed FONSI will be for 30 days beginning with receipt of this letter. Please send your written responses via e-mail to Ms. Sherry Johnson at sherry.johnson.4@us.af.mil.

JENNINGS.DAVID.M.1189439110

Digitally signed by JENNINGS.DAVID.M.1189439110
Date: 2022.07.07 08:30:06 -04'00'

DAVID M. JENNINGS
CHIEF, ENVIRONMENTAL ELEMENT

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 633D AIR BASE WING
JOINT BASE LANGLEY-EUSTIS VA

1 July 2022

NOAA Fisheries
Greater Atlantic Regional Fisheries Office
Protected Resources Division
55 Great Republic Drive
Gloucester, MA 01930

FROM: 633 CES/CEIE
37 Sweeney Blvd
Langley AFB, VA 23665

SUBJECT: Draft Environmental Assessment (EA) and proposed Finding of No Significant Impact/Finding of No Practicable Alternative (FONSI/FONPA) for Aerial Application of Pesticide for Mosquito and Invasive Plant Species Control at Joint Base Langley-Eustis (JBLE), Virginia

Dear Ms. Anderson,

1. As public and agency notification, to comply with the National Environmental Policy Act of 1969 (NEPA) and the President's Council on Environmental Quality's implementing regulations, this memorandum announces the availability of the Draft EA and Draft FONSI for Aerial Application of Pesticide for Mosquito and Invasive Plant Species Control at JBLE, Virginia. In addition, we have provided the Department of the Air Force's effects determinations for the federally listed species and designated critical habitat for review and concurrence by the National Marine Fisheries Service (NMFS), Greater Atlantic Regional Fisheries Office Protected Resources Division.

2. This Draft EA and proposed FONSI are available at the JBLE – Eustis and JBLE – Langley public websites: https://www.jble.af.mil/Units/Army/Eustis-Enviromental and https://www.jble.af.mil/About-Us/Units/Langley-AFB/Langley-Environmental.

3. The Proposed Action is a supporting control technique used as part of an Integrated Pest Management (IPM) program and supports management of mosquito populations under conditions of disease risk and intolerable levels, as well as management of invasive plant species, particularly common reed (*Phragmites australis*), at JBLE. The Proposed Action includes control of adult and larval mosquitoes over all of JBLE – Eustis' approximately 7,900 acres and over approximately 3,000 acres of JBLE – Langley. The Proposed Action also includes the control of common reed within specific areas where aerial applications would be feasible within the approximately 600 acres of common reed at JBLE – Eustis and on approximately 145 acres on JBLE – Langley. The purpose of the Proposed Action is to implement an IPM approach to community health and natural resources management at JBLE to support military missions by (1) reducing mosquito (and other pest arthropods) populations to tolerable levels, (2) breaking the disease transmission cycle caused by vectoring arthropods, and (3) restoring habitats impacted by invasive plant species such as common reed.

The Proposed Action is needed to control mosquitoes and invasive plant species across large areas of JBLE and to reach remote portions of JBLE that are not reasonably accessible from application by land or

watercraft. Large-scale application of pesticide would reduce the potential threat of human disease caused by mosquito vectors, mosquito-induced discomfort, hardship, annoyance, and distraction experienced by personnel at JBLE. An outbreak of mosquito-borne illness among base personnel could seriously degrade mission-essential operations and readiness. Additionally, the efficiency of military training, maintenance operations, range management, natural resources management, military police, fire and emergency services, and others who work outdoors may be adversely affected when mosquito populations reach intolerable levels. The use of outdoor bivouac areas and recreational facilities such as the golf course, athletic fields, playgrounds, and picnic areas may decline at times due to intense mosquito activity. Such restrictions reduce productivity and have a negative effect on the morale of assigned personnel, their dependents, transient personnel, and guests and residents of civilian communities. Control of invasive plant species such as common reed in coastal and estuarine wetlands would improve the biological diversity and functions of wetlands, increase recreational opportunities, reduce visual restrictions by tall herbaceous vegetation, and support training opportunities and force protection.

Resource areas considered in the impact analysis for this EA are airspace management and use, air quality and climate change, aesthetic and visual resources, geological resources, floodplains, coastal zone management, water resources, biological resources, and health and safety. This Draft EA and proposed FONSI concludes that there will be no significant environmental impacts resulting from the Proposed Action.

4. As described in the attachment for the Proposed Action, we have made a *may affect, not likely to affect* determination for the Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*). Moreover, we have determined there would be no impact to designated critical habitat for Atlantic sturgeon. If after review of the Draft EA and Proposed FONSI/FONPA, you have additional information regarding impacts of the Proposed Action on the environment of which we are unaware, we would appreciate receiving such information for inclusion and consideration during the NEPA process.

5. The public comment period for this Draft EA and proposed FONSI will be for 30 days beginning with receipt of this letter. Please send your written responses via email to Ms. Sherry Johnson at sherry.johnson.4@us.af.mil.

JENNINGS.DAVID.M.1189439110
Digitally signed by JENNINGS.DAVID.M.1189439110
Date: 2022.07.01 15:50:54 -04'00'

DAVID M. JENNINGS
CHIEF, ENVIRONMENTAL ELEMENT

Attachment:

1. Effects Determination for Aerial Application of Pesticide for Mosquito and Invasive Plant Species Control at Joint Base Langley-Eustis (JBLE), Virginia

Attachment: Effects Determination for Aerial Application of Pesticide for Mosquito and Invasive Plant Species Control at Joint Base Langley-Eustis (JBLE), Virginia

Purpose and Need

The purpose of the Proposed Action is to (1) reduce mosquito (and other pest arthropods) populations to tolerable levels, (2) break the disease transmission cycle caused by vectoring arthropods, and (3) restore habitats impacted by invasive plant species such as common reed.

The Proposed Action is needed to control mosquitoes and invasive plant species across large areas of JBLE and to reach remote portions of JBLE that are not reasonably accessible for application by land or watercraft. Large-scale application of pesticide would reduce the potential threat of human disease caused by mosquito vectors, mosquito-induced discomfort, hardship, annoyance, and distraction experienced by personnel at JBLE. An outbreak of mosquito-borne illness among base personnel could seriously degrade mission-essential operations and readiness. Additionally, the efficiency of military training, maintenance operations, range management, natural resources management, military police, fire and emergency services, and others who work outdoors may be adversely affected when mosquito populations reach intolerable levels. The use of outdoor bivouac areas and recreation facilities such as the golf course, athletic fields, playgrounds, and picnic areas may decline at times due to intense mosquito activity. Such restrictions reduce productivity and have a negative effect on the morale of assigned personnel, their dependents, transient personnel, and guests and residents of civilian communities. Control of invasive plant species such as common reed in coastal and estuarine wetlands would improve the biological diversity and functions of wetlands, increase recreational opportunities, reduce visual restrictions by tall herbaceous vegetation, and support training opportunities and force protection.

Description of Proposed Action

JBLE – Eustis is located in the Hampton Roads area of southeast Virginia on the southwest side of the Virginia Peninsula, which is bordered by the James River and Warwick River (**Figure 1**). JBLE – Langley is on the lower Virginia Peninsula, between the Northwest Branch and Southwest Branch of the Back River, a tributary of the Chesapeake Bay. (**Figure 2**). The Proposed Action supports management of mosquito populations under conditions of disease risk and intolerable levels as well as management of invasive plant species, particularly common reed at JBLE. The Proposed Action includes control of mosquitoes over all of JBLE – Eustis' approximately 7,900 acres and over approximately 3,000 acres of JBLE – Langley (**Figures 3** and **4** respectively). The Proposed Action also includes the control of common reed within specific areas where aerial applications would be feasible within the approximately 600 acres of common reed at JBLE – Eustis and on approximately 145 acres on JBLE – Langley (**Figures 5** and **6** respectively).

The goal of the Proposed Action is to aerially apply pesticides to achieve the maximum kill of the targeted pests (particularly mosquitoes and common reed) with minimal adverse impacts on the environment and as part of the overall integrated pest management philosophy. This would include control of mosquitoes over all JBLE – Eustis' approximately 7,900 acres and over approximately 3,000 acres of JBLE – Langley. Common reed control would occur within specific treatment areas where aerial applications would be feasible within the approximately 600 acres of common reed at JBLE – Eustis and approximately 145 acres at JBLE – Langley.

Figure 1. Location of Joint Base Langley – Eustis – Fort Eustis and Surrounding Area

Figure 2. Location of Joint Base Langley – Eustis – Langley Air Force Base and Surrounding Area

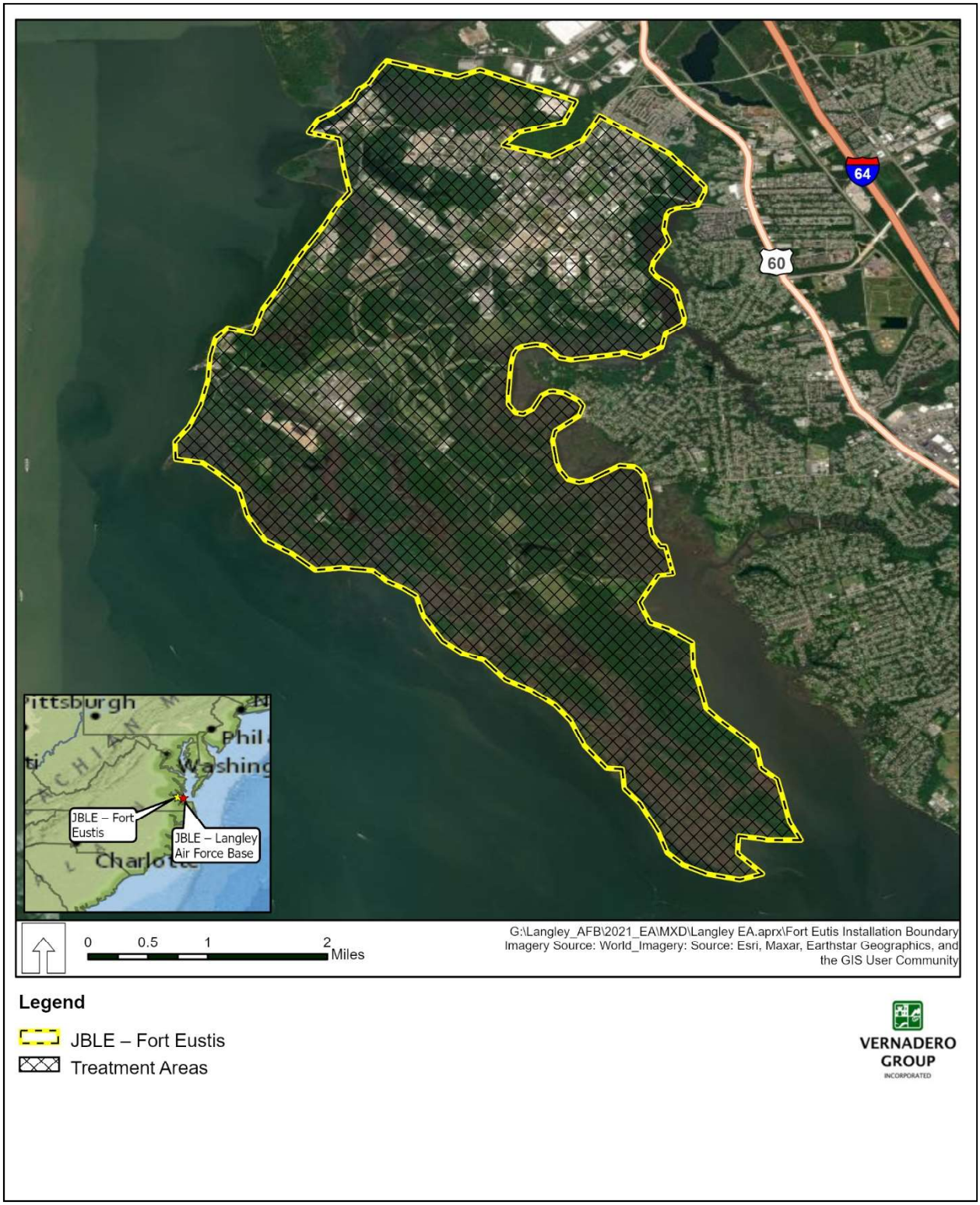


Figure 3. Proposed Mosquito Treatment Areas at Joint Base Langley – Eustis — Eustis

Figure 4. Proposed Mosquito Treatment Areas at Joint Base Langley – Eustis — Langley

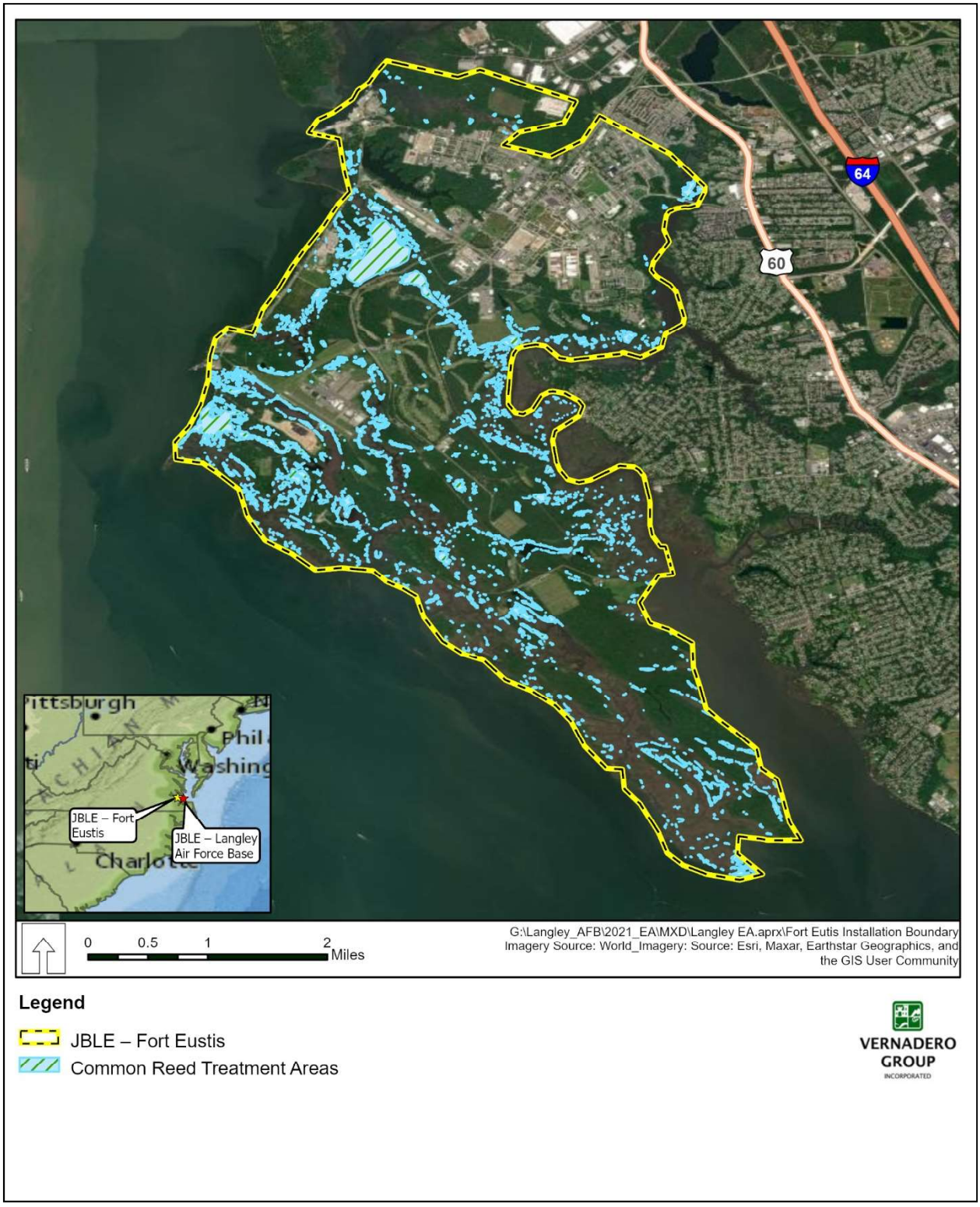


Figure 5. Current Common Reed Distribution at Joint Base Langley – Eustis — Eustis

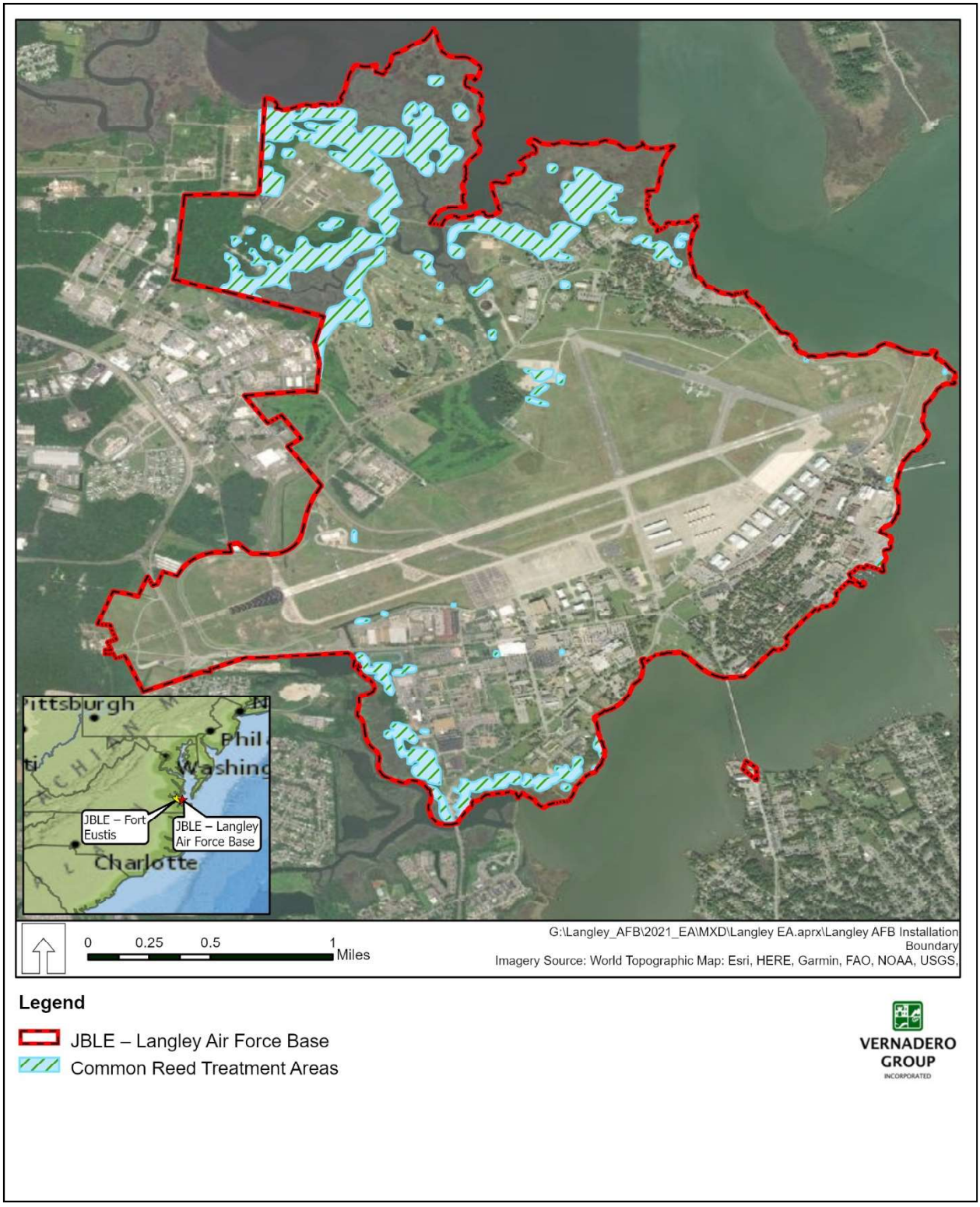


Figure 6. Proposed Common Reed Treatment Areas at Joint Base Langley – Eustis — Langley

Aerial pesticide treatment is considered when the approved ground-based techniques outlined in each installation's Integrated Pest Management Plan (IPMP) fail to significantly reduce mosquito populations. Aerial application of insecticides targeting adult mosquito populations and of larvicides to target mosquito larvae within breeding sites is the last resort to be used. The decision to aerially apply pesticides for mosquito control would be based upon a combination of the threat of human and animal disease, environmental and climatic conditions, larval and adult mosquito surveillance, and customer complaints. The heaviest mosquito infestations typically occur from May through October on and around JBLE. JBLE – Eustis and JBLE – Langley utilize the standards of 45 adult females per trap night and 75 adult females per trap night, respectively, to determine the need for aerial application of pesticides against adult mosquitoes. Therefore, when adult mosquito surveillance data indicate threshold limits have exceeded the capabilities of ground control methods, an aerial application would be warranted. JBLE conducts weekly mosquito larvae surveys from 15 May through 31 October in known breeding sites on the installations. Aerial application of larvicides would be used in breeding sites that cannot be eliminated using ground-based techniques. These general locations could include permanent wetlands, drainage ditches, vehicular-generated ruts, and more specifically the Fort Eustis Dredge Material Management Area, which is an approximately 80-acre dredge material disposal site that may at times contain standing water that could be conducive to mosquito breeding. If there are reports of disease-positive specimen pools in the local area, if mosquito populations create a significant decline in the quality of life, or if there is the threat of a disease outbreak, the threshold requirements could be waived.

Requests for aerial application of pesticides for mosquito control would be coordinated with Air Force Civil Engineer Center Operations Directorate (AFCEC/COSC) Pest Management Professionals, the Public Health section at the 633 Medical Group, McDonald Army Health Center Department of Public Health, and Installation Pest Management Coordinators. The Department of the Air Force (DAF) would obtain all necessary permits prior to implementing the Preferred Alternative.

All pesticides used in the US must be registered (licensed) by the US Environmental Protection Agency (USEPA). Therefore, a pesticide registered with the USEPA and labeled for use in aerial applications for adult mosquito control would be used at JBLE. Currently, such pesticides considered for use include naled, pyrethrin, neopyrethrin, or malathion as the active ingredient and would be aerially applied to control adult mosquitoes on JBLE. The current formulation that is anticipated to be applied is Trumpet® EC (NSN 6840-01-532-5414 and USEPA Registration No. 5481-481), which is an organophosphate containing 78 percent naled (1,2-dibromo-2,2-dichloroethyl dimethyl phosphate). Applications would be made at an ultralow volume (ULV) application rate of 0.5 ounce to 1.2 fluid ounces of undiluted Trumpet® EC per acre. When used in accordance with its labeling, Trumpet® EC poses minimal risks to people and the environment. Best management practices and drift prevention requirements identified in the IPMP for JBLE – Eustis and JBLE – Langley would be adhered to by the DAF and its applicators to further minimize environmental risks. Further, all pesticides would be used in accordance with label requirements. Naled-based pesticides have been utilized for adult mosquito control in the past; however, other pesticides such as pyrethins, neo-pyrethrins, and formulations of malathion may be used. Additionally, control of mosquito larvae via aerial platforms would include *Bacillus thuringiensis israelensis* (Bti), *Bacillus sphaericus* (B.s.), and other mosquito larva control products in conjunction with adult mosquito control techniques under the Proposed Action.

Aerial application of pesticides for mosquito control would not exceed three applications per year and would typically occur from May through October. The DAF's 910th Airlift Wing/757th Airlift Squadron Aerial Spray Unit from Youngstown Air Reserve Station, Ohio, would conduct the aerial application. JBLE – Eustis and JBLE – Langley would purchase the pesticide that would be used on each installation. The aircraft and application system used would consist of a C-130H with a modular aerial spray system and a differential global positioning system (GPS). All environmentally sensitive areas (e.g., active bald eagle nests) would be identified on spray maps prior to any spray mission for avoidance or proper approval for

treatment. The aircraft and certified personnel are based at the Youngstown Air Reserve Station in Vienna, Ohio. JBLE – Langley would serve as the base of air operations. Aircraft spray overflights would occur at an elevation of 300 feet above ground level, and adult mosquito spray missions would occur from two hours before sunset to sunset, depending on weather conditions. Aerial application would be completed in one night, with the potential for one additional night of spraying if weather or mechanical issues cause delays.

The 757th Airlift Squadron would provide all aircraft, aircrews, and Department of Defense-certified entomologists to coordinate and oversee all aspects of the aerial application of pesticides. If the 757th Airlift Squadron Aerial Spray Unit is unavailable, an alternative certified aerial applicator would be selected after consultation with the AFCEC/COSC Pest Management Professionals. Further, if services are contracted, then proper coordination with local air traffic control personnel and base operations would also be arranged to ensure safety. In addition to holding a valid Virginia Pesticide Business License and valid Virginia Department of Agriculture and Consumer Services Pesticide Applicator Certificate for Category 11, contracted applicators would need to obtain a Civil Aircraft Landing Permit to take off and depart from a military installation and treat areas on JBLE, particularly in consideration of ongoing military flight operations.

Under the Preferred Alternative, common reed control would be accomplished through aerial application of USEPA-registered herbicides containing imazapyr or glyphosate as the active ingredient, or other herbicides approved for vegetation control via aerial platforms, in conjunction with other control techniques. Based on several years of surveillance and invasive plant species mapping and management, JBLE – Eustis would treat specific areas where aerial applications would be feasible within the 600 acres of common reed on the Installation; JBLE – Langley would treated approximately 145 acres of common reed with aerial herbicide applications. Herbicides are most effective on common reed in late summer to early fall (August through October) because the plant continues to grow while other plants in adjacent areas begin to go dormant, which reduces the risk of damage to nontarget plant species. Aerial application of herbicides for common reed control would not exceed one application per year, with the need expected to be reduced in succeeding years depending on the efficacy determined through annual monitoring. Application would typically be completed within one day, with the potential for one additional day of spraying if weather or mechanical issues cause delays. Requests for aerial application of herbicides for control of common reed would be coordinated by the Installation Pest Management Coordinators with 733rd Security Forces Squadron, Force Support Squadron, 1st Fighter Wing, Fire and Emergency Services, and Office of Public Affairs. JBLE complies with Virginia Department of Quality General Permit No.: VAG87 (General Permit for Discharges Resulting from the Application of Pesticides to Surface Waters of Virginia, Authorization to Discharge Under the Virginia Pollutant Discharge Elimination System and the Virginia State Water Control Law). Aerial application of herbicides for the control of invasive plant species would be through contracted helicopter pesticide application services. Past contractors have used Bell OII58A (or alternative), Bell 206 BII, Bell 206 L3, or Bell OH58A (+) helicopters to aerially apply herbicides within common reed treatment areas. All aircraft staging and refueling would occur within the installation boundaries. Further, proper coordination with local air traffic control personnel and base operations would also be arranged to ensure safety. In addition to holding a valid Virginia Pesticide Business License and valid Virginia Department of Agriculture and Consumer Services Pesticide Applicator Certificate for Category 11, contractor applicators would need to obtain a Civil Aircraft Landing Permit to take off and depart from a military installation and treat areas on JBLE, particularly in consideration of ongoing military flight operations.

If the proposed aerial spray project is scheduled, the Office of Public Affairs would disseminate information to base personnel and other concerned parties concerning the proposed times of application, areas to be sprayed, the presence of low-flying aircraft, the minimal impacts of the herbicides to nontarget plants and vertebrate animals, and to property.

Location of the Proposed Action

JBLE – Eustis is contiguous to the City of Newport News and is located on the eastern shoreline of the James River approximately 30 miles upstream of its confluence with the Chesapeake Bay (see **Figure 1**). JBLE – Eustis has an estimated 21.6 miles of open tidal shoreline along the James River, Warwick River, and Skiffes Creek. Jail Creek drains the southern tip of Mulberry Island and discharges to the James River at its confluence with the Warwick River. Morrisons Creek, Blows Creek, and Fort Creek drain the western portion of Mulberry Island and discharge to the James River. JBLE – Eustis has 353 acres of tidal surface waters, 118 acres in the cantonment area, and 235 acres on Mulberry Island.

The James River is tidal from the mouth at Hampton roads, north 95 miles to Richmond, Virginia. In 2020, the mean tidal range at JBLE – Eustis was 2.19 feet, with the mean high water (MHW) of 2.35 feet and mean low water (MLW) of 0.16 feet (National Oceanic and Atmospheric Administration [NOAA] 2010). Extensive shoals are located between the central channel and the shoreline in water depths of less than 4 meters (Nichols 1972). For the most part, the shoals are composed of mud while some consist of natural oyster bars. The James River is located in the mesohaline salinity zone, with a salinity ranging from 5.0 to 18.0 parts per thousand (ppt) (Virginia Institute of Marine Science [VIMS] 2019). Within the lower James River, submerged aquatic vegetation (SAV) consist of eel grass (*Zostera marina*) growing in depths of 0.5 meter to 1.0 meters at mean lower water (Moore et al. 1999)

JBLE – Langley is a 2,883-acre installation located within the City of Hampton (see **Figure 2**). Tributaries of the Back River form the northern, eastern, and southern boundaries of the Main Base. The western boundary of the installation is generally defined by Armistead Avenue. On the northwest side, the base borders the National Aeronautics and Space Administration Langley Research Center. JBLE – Langley is on the lower Virginia Peninsula, between the Northwest Branch and Southwest Branch of the Back River, a tributary of the Chesapeake Bay. The land occupied by the installation lies entirely within the Lynnhaven-Poquoson watershed. The surface water surrounding JBLE – Langley is brackish to saline and occurs in an estuarine setting. The Back River, Brick Kiln Creek, New Market Creek, and Tabbs Creek provide drainage for the area.

The mean tidal range of the Back River, as measured at the Yorktown US Coast Guard Training Center just north of JBLE – Langley, is 2.27 feet, with a MHW of 2.38 feet and a MLW of 0.12 feet (NOAA 2019). The river is mostly flat, with a water depth varying from just over 1 meter to 7.6 meters mean lower low water. The Back River is also located in the mesohaline salinity zone (VIMS 2019). While SAV in the Back River has not been specifically mapped, eel grass has been mapped just north of the Back River along the south shore of the York River adjacent to the US Naval Supply Center and Yorktown (Orth et al. 1996). The Back River has low populations of oysters due to constant risk of disease (Berman et al. 2002).

National Marine Fisheries Service (NMFS) Listed Species (and Critical Habitat) in the Action Area

The Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*) is federally listed as endangered (77 Federal Register 5880 and 77 Federal Register 5914, 6 February 2012) was identified as being in waters adjacent to the Proposed Action area. No Recovery Plan has been published for the Atlantic sturgeon.

Atlantic sturgeon require freshwater for spawning and embryo and larval rearing, which in the James River is likely at the Turkey Island oxbow and Jones Neck oxbow, north of river kilometer (rkm) 120 (NMFS 2021). JBLE – Eustis is located at approximately rkm 30. Subadults, nonspawning adults, and post-spawned adults use the brackish waters of the Chesapeake Bay and James River in the spring through the fall (**Table 1**). This may include subadults and adults that are not natal to these locations or the Chesapeake

Table 1. Section 7 Species Presence Table: Atlantic Sturgeon in the Chesapeake Bay and James River

Body of Water (State)	Distribution/Range in Watershed	Life Stage	Use of Watershed	References
Chesapeake Bay (MD/VA)	Throughout the bay typically in spring through fall	Juveniles, subadults, and adults	**Migration** – April-November for adults [5] and subadults [1]; year round for juveniles [2] [3]; these life stages wander among coastal and estuarine habitats [5] **Foraging** – typically in areas where suitable forage and appropriate habitat conditions are present; typically tidally influenced flats and mud, sand and mixed cobble substrates [4]	1] Dovel and Berggren 1983; [2] Secor et al. 2000; [3] Welsh et al. 2002; [4] Stein et al. 2004; [5] Horne and Stence 2016
James River, including the Appomattox and Chickahominy River tributaries (VA)	Up to Boshers Dam (rkm 182.3); Appomattox River – Range not confirmed, but they have been documented in this river (likely up to Battersea Dam, rkm 21)	Eggs, larvae, YOY, juveniles, subadults, and adults	**Staging** – likely done by fall spawners, during summer and fall in brackish water before and after the fall spawn (rkm 22-107) [4] **Spawning** – both a spring (likely at rkm 90-95) [4] and fall spawning event (likely between rkm 105 and the fall line near Richmond, VA, at rkm 155)[3]; likely occurring in the Appomattox River due to the presence of sturgeon during the spawning season and the presence of features necessary to support reproduction [6] **Rearing** – freshwater reaches downstream of spawning locations [1][2]; juveniles likely present throughout the river year round **Foraging** – where suitable forage and appropriate habitat conditions are present [2][5]	[1] Florida Museum of Natural History 2004; [2] ASSRT 2007; [3] Balazik et al. 2012; [4] Balazik and Musick 2015; [5] The Hopewell News 2013; [6] Balazik pers. comm. 2021

Source: NMFS 2022 (accessed 10 May 2022)
rkm – river kilometer(s); **YOY** – young of the year

Bay Distinct Population Segment (DPS). In addition, spawning adults may migrate upriver April to May and again in the fall, and apparently stage for fall spawning over the summer in the James River between rkm 22 and rkm 107 (Balakik and Musick 2015). Aerial spraying activities, proposed to occur from May through October, may overlap with juvenile, subadult, and nonspawning adult foraging or when spawning adults are moving between marine waters and spawning locations. While not been documented in the Back River, juveniles, subadults, and adult Atlantic sturgeon may be present during aerial spraying activities on JBLE – Langley (**Table 1**). However, as reported by the VIMS (2005), studies have reported that while juveniles are within their nursery habitat, they remain upstream during the warmer months and overwinter in the deeper waters of the lower estuary, which would limit potential exposure in the late spring, summer, and early fall.

Atlantic sturgeon are bottom feeders, consuming organisms such as crustaceans, worms, and mollusks as well as bottom-dwelling fish. However, some prey species may use the tidal wetlands of submerged and emergent vegetation.

Specific occupied areas designated as critical habitat for the Chesapeake Bay DPS of Atlantic sturgeon contain approximately 773 kilometers (480 miles) of aquatic habitat in the following rivers of Maryland, Virginia, and the District of Columbia: Potomac, Rappahannock, York, Pamunkey, Mattaponi, James, Nanticoke, and the following other water body: Marshyhope Creek (82 Federal Register 39160, 18 September 2017). Designated critical habitat in the James River (Chesapeake Bay Unit 5) includes waters adjacent to JBLE – Eustis. The Back River is outside the mouth of the York River and the Chesapeake Bay Unit 4 designated critical habitat. The critical habitat for Atlantic sturgeon consists of four physical or biological features (PBFs):

1. Hard bottom substrate (e.g., rock, cobble, gravel, limestone, boulder, etc.) in low-salinity waters (i.e., 0.0 to 0.5 ppt range) for settlement of fertilized eggs, refuge, growth, and development of early life stages;

2. Aquatic habitat with a gradual downstream salinity gradient of 0.5 up to as high as 30 ppt and soft substrate (e.g., sand, mud) between the river mouth and sites for juvenile foraging and physiological development;

3. Water of appropriate depth and absent physical barriers to passage (e.g., locks, dams, thermal plumes, turbidity, sound, reservoirs, gear, etc.) between the river mouth and spawning sites necessary to support: (1) unimpeded movements of adults to and from spawning sites, (2) seasonal and physiologically dependent movement of juvenile Atlantic sturgeon to appropriate salinity zones within the river estuary, and (3) staging, resting, or holding of subadults or spawning condition adults. Water depths in main river channels must also be deep enough (e.g., at least 1.2 meters) to ensure continuous flow in the main channel at all times when sturgeon of any life stage would be in the river; and,

Water, between the river mouth and spawning sites, especially in the bottom meter of the water column, with the temperature, salinity, and oxygen values that, combined, support (1) spawning; (2) annual and interannual adult, subadult, larval, and juvenile survival; and (3) larval, juvenile, and subadult growth, development, and recruitment.**Effects Determination**

The threat to the Atlantic sturgeon applicable to the Proposed Action is habitat degradation, specifically impacts to water quality through the introduction of contaminants that may impact staging and foraging activities.

Aerial spraying events are not expected to significantly contribute to contaminants found within the James and Back rivers. Naled and its degradate dichlorvos (DDVP) degrade rapidly in the environment, and both have a dissipation half-life of less than two days (USEPA 2020). In addition, the very small droplets from the ULV spraying allow naled to rapidly diffuse into the atmosphere (Hanson et al. 2018). Within water, the rate of degradation is further enhanced by sunlight and temperature (Jones et al. 2020). This rapid degradation means that naled and DDVP that may end up in surface water runoff would diminish quickly after rain events (USEPA 2020). Because of the low mobility of pyrethrins and pyrethroids in soil surfaces, these compounds are rarely detected at elevated levels in drinking water or groundwater, with the exception of spills and shallow wells near agricultural areas (Agency for Toxic Substances and Disease Registry [ATSDR] 2003). Pyrethrins and pyrethroids are also generally rapidly degraded by microorganisms in soil and water, as well as by sunlight on the surfaces of water, soil, or plants (ATSDR 2003). Although malathion has some mobility characteristics, its short soil persistence in conjunction with its relatively quick degradation reduces exposure (USEPA 2009). In water, malathion has a relatively short half-life of between 2 and 18 days, depending on conditions like temperature and pH (National Pesticide Information Center 2010).

Potential adverse effects on the federally endangered Atlantic sturgeon from the aerial application of mosquito control insecticides would be short term and minor. Naled, pyrethrins and pyrethroids, and malathion products are ranked as being highly to very highly toxic to anadromous fish such as the Atlantic sturgeon (Gianou 2012). To decrease the potential for adverse impacts of these adulticides in marine habitats, application would strictly comply with label requirements to avoid application over waterbodies and accomplish spraying when weather conditions are optimal to avoid potential drift and runoff. In addition, the limited time frame and number of annual applications would further reduce risks. Neither Bti nor B.s. have been shown to have adverse effects on fish (USEPA 2014). While the use of insecticides has been shown to be highly to very highly toxic to estuarine invertebrates (US Department of Agriculture 2019; USEPA 2004, 2008, 2016, 2020), as described above the adherence to label requirements to minimize the potential for runoff and drift and the limited number of applications would minimize the potential for adverse impacts to aquatic organisms and Atlantic sturgeon prey.

Potential adverse effects on the Atlantic sturgeon from the aerial application of herbicides for the control of common reed are expected to be short term and negligible. No potential direct risks from glyphosate to estuarine/marine fish have been identified and, while the effects of imazapyr on estuarine/marine fish have not been characterized, they are assumed to have similar sensitivity (practically nontoxic) as freshwater fish. The Proposed Action for common reed control may provide long-term beneficial effects on designated critical habitat PBFs for the Atlantic sturgeon in the James River. As discussed above for fish, while common reed may be used for cover and shade for fish, it is often detrimental to the mobility of juvenile fish.

The Proposed Action does not have the potential to adversely impact the PBFs for the Atlantic sturgeon's designated critical habitat in the James River. The reduction of common reed and potential reestablishment of native tidal marsh vegetation may improve habitat for prey species, thus potentially improving foraging habitat.

Conclusion

JBLE has made a *may affect, not likely to adversely affect* determination for the Atlantic sturgeon due to the potential minor and short-term adverse effects from the low potential for drift or runoff of insecticides into adjacent waterways. JBLE has made a no effects determination for the Atlantic sturgeon's designated critical habitat.

References:

Agency for Toxic Substances and Disease Registry (ATSDR). 2003. Toxicological Profile for Pyrethrins and Pyrethroids. Atlanta, GA: US Department of Health and Human Services; September 2003.

Balazik M. T. and J. A. Musick. 2015. Dual Annual Spawning Races in Atlantic Sturgeon. PLoS ONE 10(5): e0128234. doi:10.1371/journal.pone.0128234.

Bender, M. E. 1986. The York River: A Brief Review of Its Physical, Chemical and Biological Characteristics. Virginia Institute of Marine Science, William & Mary. Accessed 9 May 2022. <https://doi.org/10.21220/V5JD9W>.

Berman, M., S. Killeen, R. Mann, and J. Wesson. 2002. Virginia Oyster Reef Restoration Map Atlas. Virginia Institute of Marine Science and Virginia Marine resources Commission. Accessed 9 May 2022. <https://www.vims.edu/research/units/labgroups/molluscan_ecology/archive/restoration/va_restoration_atlas/index.php>.

Gianou, K. L. 2012. Aquatic Pesticide Best Management Practices and Relational Database for the Protection of NOAA Trust Species. Marine Resource Management Program, College of Earth, Oceanic, & Atmospheric Sciences. Oregon State University. 11 May 2012.

Hanson, W, A. Cross, and J. Jenkins. 2018. Naled General Fact Sheet. National Pesticide Information Center, Oregon State University Extension Services. Accessed 17 January 2022. <npic.orst.edu/factsheets/naledgen.html>.

Jones, A. S., D. Cohen, F. Alberdi, A. Sanabria, N. Clausell, M. Roca, A. K. Fionah, N. Kumar, H. M. Solo-Gabriele, and E. Zahran. 2020. Persistence of Aerially Applied Mosquito-Pesticide, Naled, in Fresh and Marine Waters. Department of Civil, Architectural and Environmental Engineering, University of Miami, Coral Gables, FL

Moore, K, D. Wilcox, R. Orth, and E. Bailey. 1999. Analysis of Historical Distribution of Submerged Aquatic Vegetation (SAV) in the James River. Prepared for Virginia Coastal Resources Management Program; The Department of Conservation and Recreation. Special Report No. 355. April 1999.

National Marine Fisheries Service (NMFS). 2021. Chesapeake Bay Distinct Population Segment of Atlantic Sturgeon (*Acipenser oxyrinchus oxyrinchus*). 5-Year Review: Summary and Evaluation. National Marine Fisheries Service, Greater Atlantic Regional Fisheries Office, Gloucester, Massachusetts.

National Marine Fisheries Service (NMFS). 2022. Section 7 Species Presence Table: Atlantic Sturgeon in the Greater Atlantic Region. Accessed 10 May 2022. < https://www.fisheries.noaa.gov/new-england-mid-atlantic/consultations/section-7-species-presence-table-atlantic-sturgeon-greater>.

National Oceanic and Atmospheric Administration (NOAA). 2010. Tides & Currents Datums for 8638017, Fort Eustis (MARAD), James River, VA. Accessed 9 May 2022. <https://tidesandcurrents.noaa.gov/datums.html?id=8638017>.

National Oceanic and Atmospheric Administration (NOAA). 2019. Tides & Currents Datums for 8637689, Yorktown USCG Training Center, VA. Accessed 9 May 2022. <https://tidesandcurrents.noaa.gov/datums.html?id=8637689>.

National Pesticide Information Center. 2010. Malathion General Fact Sheet. Oregon State University and the US Environmental Protection Agency (USEPA, cooperative agreement # X8-83458501).

Nichols, M. M. 1972. Effect of Increasing Depth on Salinity in the James River Estuary. VIMS Books and Book Chapters. 17. Accessed 9 May 2022. <https://scholarworks.wm.edu/vimsbooks/17>.

Orth, R. J., J. F. Nowak, G. F. Anderson, D. J. Wilcox, J. R. Whiting, and L. S. Nagey. 1996. Distribution of Submerged Aquatic Vegetation in the Chesapeake Bay and Tributaries and Chincoteague Bay

– 1995. College of William and Mary School of Marine Science, Virginia Institute of Marine Science, Gloucester Point, Virginia.

US Department of Agriculture. 2019. Final Human Health and Ecological Risk Assessment for Malathion Rangeland Grasshopper and Mormon Cricket Suppression Applications. November 2019.

US Environmental Protection Agency (USEPA). 2004. Naled Analysis of Risks to Endangered and Threatened Pacific Salmon and Steelhead. Environmental Field Branch, Office of Pesticide Programs.

US Environmental Protection Agency (USEPA). 2008. Risks of Permethrin Use to the Federally Threatened California Red-legged Frog (*Rana aurora draytonii*) and Bay Checkerspot Butterfly (*Euphydryas editha bayensis*), and the Federally Endangered California Clapper Rail (*Rallus longirostris obsoletus*), Salt Marsh Harvest Mouse (*Reithrodontomys raviventris*), and San Francisco Garter Snake (*Thamnophis sirtalis tetrataenia*). Pesticide Effects Determinations. Environmental Fate and Effects Division Office of Pesticide Programs, Washington, DC. 20 October 2008.

US Environmental Protection Agency (USEPA). 2009. Reregistration Eligibility Decision (RED) for Malathion. Case No. 0248. EPA 738-R-06-030. May 2009.

US Environmental Protection Agency (USEPA). 2014. Fact Sheet *Bacillus sphaericus* 2362, Serotype H5a5b, Strain ABTS 1743, (PC Code 119803). Accessed 30 March 2022. <https://www3.epa.gov/pesticides/chem_search/reg_actions/registration/fs_PC-119803_06-May-14.pdf>.

US Environmental Protection Agency (USEPA). 2016. Ecological Risk Management Rationale for Pyrethroids in Registration Review. Office of Chemical Safety and Pollution Prevention.

US Environmental Protection Agency (USEPA). 2020. Draft Ecological Risk Assessment for the Registration Review of Dichlorvos (DDVP), Naled, and Trichlorfon. Office of Chemical Safety and Pollution Prevention. 17 June 2020.

Virginia Institute of Marine Science (VIMS). 2005. Essential Fish Habitat of Atlantic Sturgeon *Acipenser oxyrinchus* in the Southern Chesapeake Bay. VIMS Special Scientific Report #145. 5 November 2005.

Virginia Institute of Marine Science (VIMS). 2019. Salinity Regime, Chesapeake Bay Program and Delmarva Peninsula Coastal Bay Segments by Salinity Zone. Accessed 9 May 2022. <https://www.vims.edu/research/units/programs/sav/reports/2012/salinity_regime.php>.

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 633D AIR BASE WING
JOINT BASE LANGLEY-EUSTIS VA

6 July 2022

Cindy Schulz
US Fish and Wildlife Service – Virginia Field Office
6669 Short Lane
Gloucester, VA 23061

FROM: 633 CES/CEIE
37 Sweeney Blvd
Langley AFB, VA 23665

SUBJECT: Draft Environmental Assessment (EA) and proposed Finding of No Significant Impact/Finding of No Practicable Alternative (FONSI/FONPA) for Aerial Application of Pesticide for Mosquito and Invasive Plant Species Control at Joint Base Langley-Eustis (JBLE), Virginia

Dear Ms. Schulz,

1. As public and agency notification, to comply with the National Environmental Policy Act of 1969 and the President's Council on Environmental Quality's implementing regulations, this memorandum announces the availability of the Draft EA and Draft FONSI for Aerial Application of Pesticide for Mosquito and Invasive Plant Species Control at JBLE, Virginia. In addition, we have provided the Department of the Air Force's effects determinations for the federally listed species for review and concurrence by the US Fish and Wildlife Service – Virginia Field Office.

2. This Draft EA and proposed FONSI are available at the JBLE – Eustis and JBLE – Langley public websites: https://www.jble.af.mil/Units/Army/Eustis-Enviromental and https://www.jble.af.mil/About-Us/Units/Langley-AFB/Langley-Environmental.

3. The Proposed Action is a supporting control technique used as part of an Integrated Pest Management (IPM) program and supports management of mosquito populations under conditions of disease risk and intolerable levels, as well as management of invasive plant species, particularly common reed (*Phragmites australis*), at JBLE. The Proposed Action includes control of adult and larval mosquitoes over all of JBLE – Eustis' approximately 7,900 acres and over approximately 3,000 acres of JBLE – Langley. The Proposed Action also includes the control of common reed within specific areas where aerial applications would be feasible within the approximately 600 acres of common reed at JBLE – Eustis and on approximately 145 acres on JBLE – Langley. The purpose of the Proposed Action is to implement an IPM approach to community health and natural resources management at JBLE to support military missions by (1) reducing mosquito (and other pest arthropods) populations to tolerable levels, (2) breaking the disease transmission cycle caused by vectoring arthropods, and (3) restoring habitats impacted by invasive plant species such as common reed.

The Proposed Action is needed to control mosquitoes and invasive plant species across large areas of JBLE and to reach remote portions of JBLE that are not reasonably accessible for application by land or watercraft. Large-scale application of pesticide would reduce the potential threat of human disease caused by mosquito vectors, mosquito-induced discomfort, hardship, annoyance, and distraction experienced by

personnel at JBLE. An outbreak of mosquito-borne illness among base personnel could seriously degrade mission-essential operations and readiness. Additionally, the efficiency of military training, maintenance operations, range management, natural resources management, military police, fire and emergency services, and others who work outdoors may be adversely affected when mosquito populations reach intolerable levels. The use of outdoor bivouac areas and recreational facilities such as the golf course, athletic fields, playgrounds, and picnic areas may decline at times due to intense mosquito activity. Such restrictions reduce productivity and have a negative effect on the morale of assigned personnel, their dependents, transient personnel, and guests and residents of civilian communities. Control of invasive plant species such as common reed in coastal and estuarine wetlands would improve the biological diversity and functions of wetlands, increase recreational opportunities, reduce visual restrictions by tall herbaceous vegetation, and support training opportunities and force protection.

Resource areas considered in the impact analysis for this EA are airspace management and use, air quality and climate change, aesthetic and visual resources, geological resources, floodplains, coastal zone management, water resources, biological resources, and health and safety. This Draft EA and proposed FONSI conclude that there will be no significant environmental impacts resulting from the Proposed Action.

4. As described in the attachments for the Proposed Action, for the eastern black rail (*Laterallus jamaicensis* ssp. *jamaicensis)* we have made a *no effect* determination for activities at JBLE – Eustis and a *may affect, not likely to adversely affect* determination for activities at JBLE – Langley. The potential presence of the northern long-eared bat (*Myotis septentrionalis*) falls under the Service's 14 January 2016 Final 4(d) Rule. There is no Designated Critical Habitat within or adjacent to the Proposed Action area.

5. The public comment period for this Draft EA and proposed FONSI will be for 30 days beginning with receipt of this letter. Please send your written responses via e-mail to Ms. Sherry Johnson at sherry.johnson.4@us.af.mil.

JENNINGS.DAVID.M.1189439110
Digitally signed by JENNINGS.DAVID.M.1189439110
Date: 2022.07.06 08:07:45 -04'00'

DAVID M. JENNINGS
CHIEF, ENVIRONMENTAL ELEMENT

Attachments:

1. Description of the Proposed Action for Aerial Application of Pesticide for Mosquito and Invasive Plant Species Control at Joint Base Langley – Eustis (JBLE), Virginia
2. Endangered Species Act (ESA) Section 7 Determination Table
3. ECOS-IPaC Listing for JBLE – Eustis (Project Code 2022-0039502)
4. ECOS-IPaC Listing for JBLE – Langley (Project Code 2022-0039552)
5. ECOS-IPaC Programmatic Biological Opinion on Final 4(d) Rule for the Northern Long-eared Bat and Activities Excepted from Take Prohibitions for JBLE – Eustis (Project Code 2022-0039502)

Attachment 1
Proposed Action for the Effects Determination for Aerial Application of Pesticide for Mosquito and Invasive Plant Species Control at Joint Base Langley – Eustis (JBLE), Virginia

Purpose and Need

The purpose of the Proposed Action is to (1) reduce mosquito (and other pest arthropods) populations to tolerable levels, (2) break the disease transmission cycle caused by vectoring arthropods, and (3) restore habitats impacted by invasive plant species such as common reed.

The Proposed Action is needed to control mosquitoes and invasive plant species across large areas of JBLE and to reach remote portions of JBLE that are not reasonably accessible for application by land or watercraft. Large-scale application of pesticide would reduce the potential threat of human disease caused by mosquito vectors, mosquito-induced discomfort, hardship, annoyance, and distraction experienced by personnel at JBLE. An outbreak of mosquito-borne illness among base personnel could seriously degrade mission-essential operations and readiness. Additionally, the efficiency of military training, maintenance operations, range management, natural resources management, military police, fire and emergency services, and others who work outdoors may be adversely affected when mosquito populations reach intolerable levels. The use of outdoor bivouac areas and recreation facilities such as the golf course, athletic fields, playgrounds, and picnic areas may decline at times due to intense mosquito activity. Such restrictions reduce productivity and have a negative effect on the morale of assigned personnel, their dependents, transient personnel, and guests and residents of civilian communities. Control of invasive plant species such as common reed in coastal and estuarine wetlands would improve the biological diversity and functions of wetlands, increase recreational opportunities, reduce visual restrictions by tall herbaceous vegetation, and support training opportunities and force protection.

Description of Proposed Action

JBLE – Eustis is located in the Hampton Roads area of southeast Virginia on the southwest side of the Virginia Peninsula, which is bordered by the James River and Warwick River (**Figure 1**). JBLE – Langley is located in southeastern Virginia on the Virginia Peninsula, which is bordered by the James River, the York River, and the Chesapeake Bay (**Figure 2**). The Proposed Action supports management of mosquito populations under conditions of disease risk and intolerable levels as well as management of invasive plant species, particularly common reed at JBLE. The Proposed Action includes control of mosquitoes over all of JBLE – Eustis' approximately 7,900 acres and over approximately 3,000 acres of JBLE – Langley (**Figures 3** and **4** respectively). The Proposed Action also includes the control of common reed within specific areas where aerial applications would be feasible within the approximately 600 acres of common reed at JBLE – Eustis and on approximately 145 acres on JBLE – Langley (**Figures 5** and **6** respectively).

The goal of the Proposed Action is to aerially apply pesticides to achieve the maximum kill of the targeted pests (particularly mosquitoes and common reed) with minimal adverse impacts on the environment and as part of the overall integrated Pest Management philosophy. This would include control of mosquitoes over all JBLE – Eustis' approximately 7,900 acres and over approximately 3,000 acres of JBLE – Langley. Common reed control would occur within specific treatment areas where aerial applications would be feasible within the approximately 600 acres of common reed at JBLE – Eustis and approximately 145 acres at JBLE – Langley.

Figure 1. Location of Joint Base Langley – Eustis – Fort Eustis and Surrounding Area

Figure 2. Location of Joint Base Langley – Eustis – Langley Air Force Base and Surrounding Area

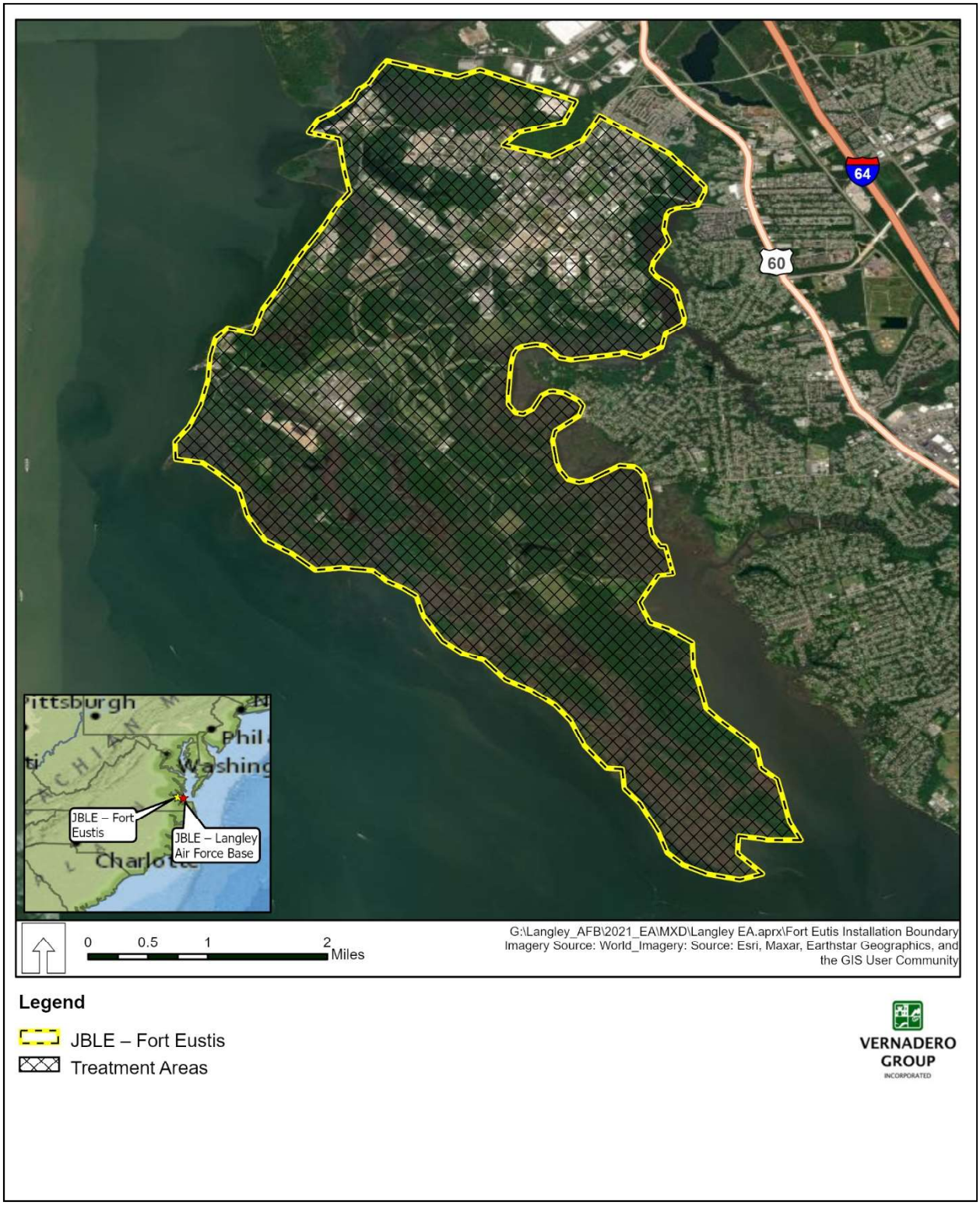


Figure 3. Proposed Mosquito Treatment Areas at Joint Base Langley – Eustis — Eustis

Figure 4. Proposed Mosquito Treatment Areas at Joint Base Langley – Eustis — Langley

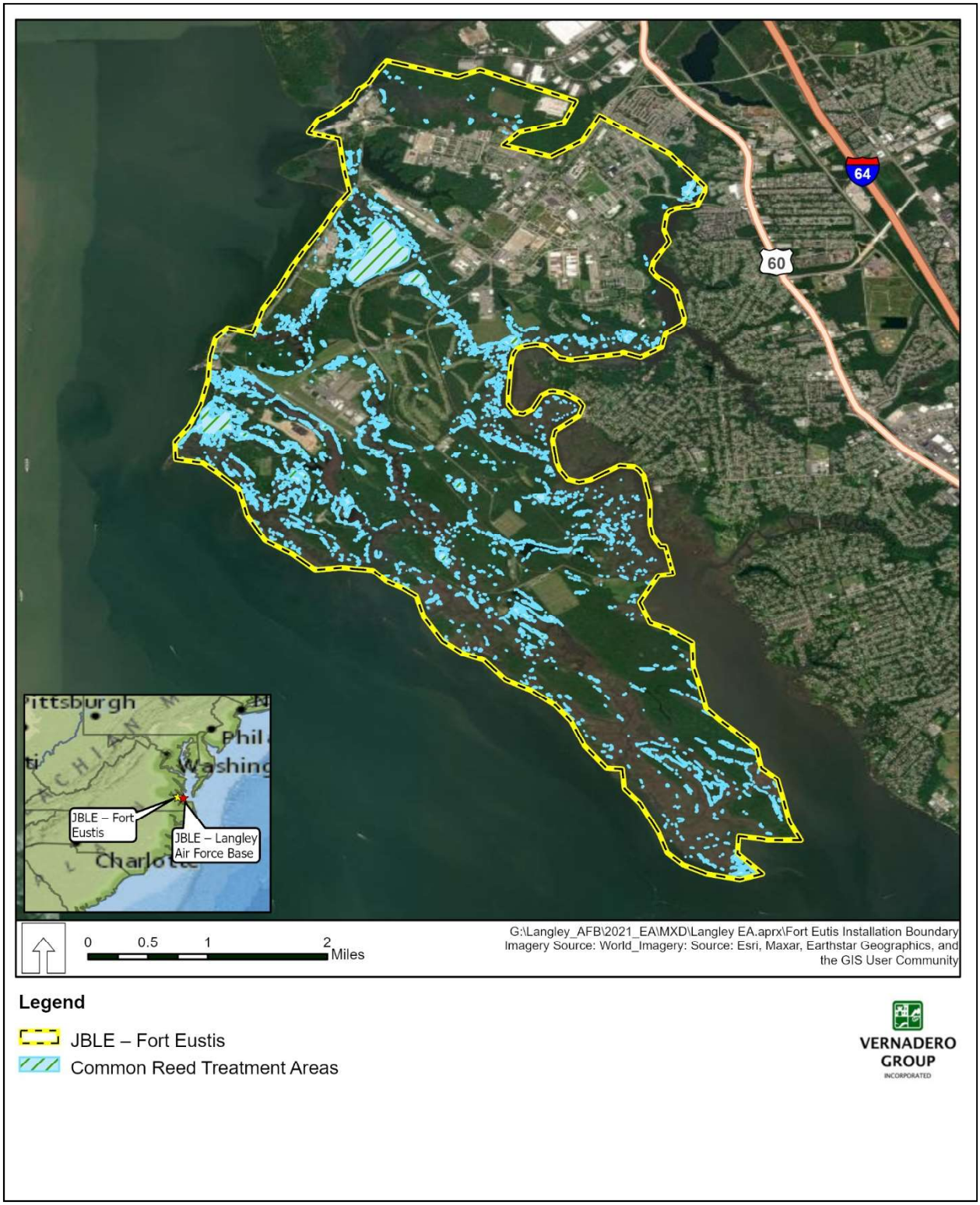


Figure 5. Current Common Reed Distribution at Joint Base Langley – Eustis — Eustis

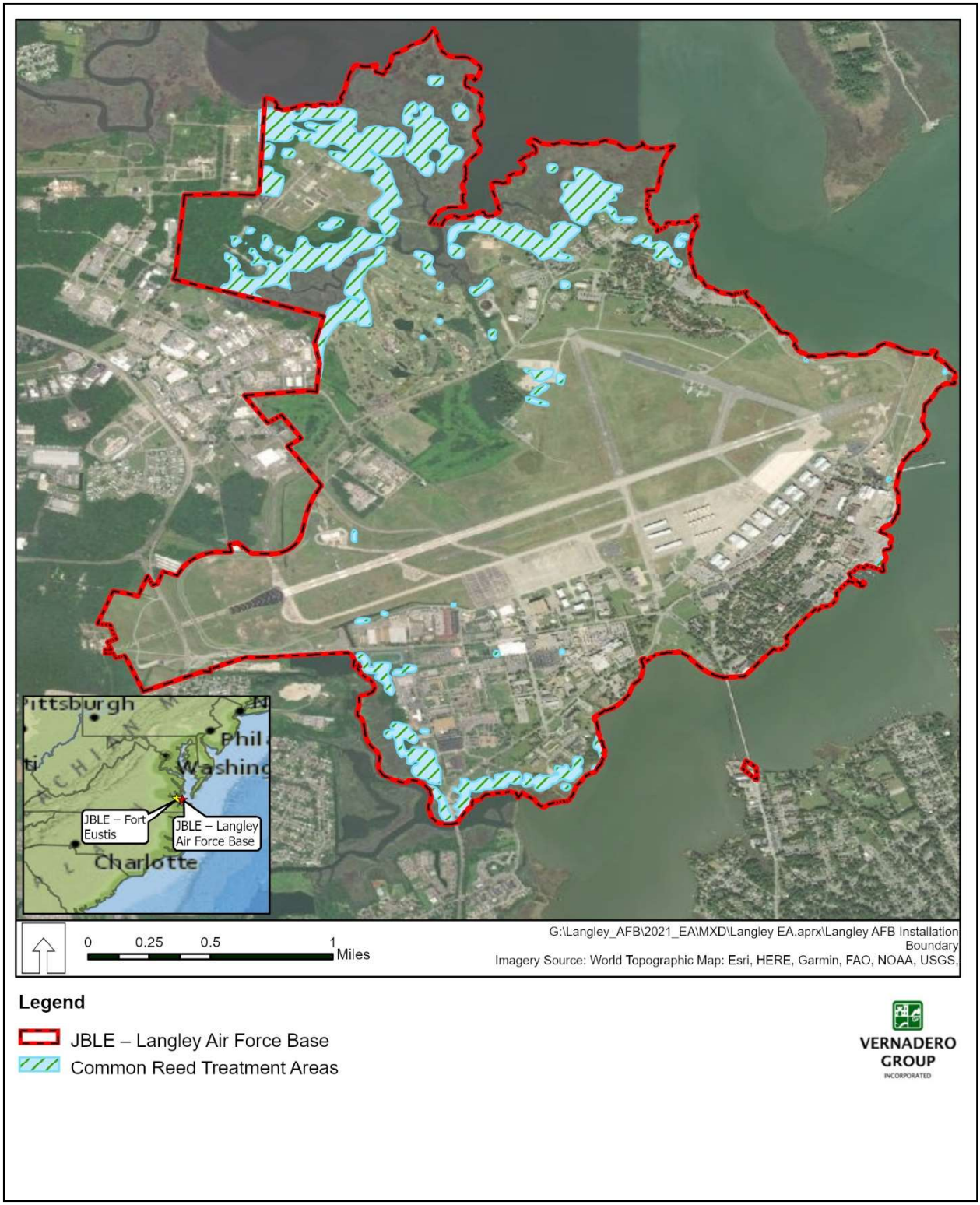


Figure 6. Proposed Common Reed Treatment Areas at Joint Base Langley – Eustis — Langley

Aerial pesticide treatment is considered when the approved ground-based techniques outlined in each installation's Integrated Pest Management Plan (IPMP) fail to significantly reduce mosquito populations. Aerial application of insecticides targeting adult mosquito populations and of larvicides to target mosquito larvae within breeding sites is the last resort to be used. The decision to aerially apply pesticides for mosquito control would be based upon a combination of the threat of human and animal disease, environmental and climatic conditions, larval and adult mosquito surveillance, and customer complaints. The heaviest mosquito infestations typically occur from May through October on and around JBLE. JBLE – Eustis and JBLE – Langley utilize the standards of 45 adult females per trap night and 75 adult females per trap night, respectively, to determine the need for aerial application of pesticides against adult mosquitoes. Therefore, when adult mosquito surveillance data indicate threshold limits have exceeded the capabilities of ground control methods, an aerial application would be warranted. JBLE conducts weekly mosquito larvae surveys from 15 May through 31 October in known breeding sites on the installations. Aerial application of larvicides would be used in breeding sites that cannot be eliminated using ground-based techniques. These general locations could include permanent wetlands, drainage ditches, vehicular-generated ruts, and more specifically the Fort Eustis Dredge Material Management Area, which is an approximately 80-acre dredge material disposal site that may at times contain standing water that could be conducive to mosquito breeding. If there are reports of disease-positive specimen pools in the local area, if mosquito populations create a significant decline in the quality of life, or if there is the threat of a disease outbreak, the threshold requirements could be waived.

Requests for aerial application of pesticides for mosquito control would be coordinated with Air Force Civil Engineer Center Operations Directorate (AFCEC/COSC) Pest Management Professionals, the Public Health section at the 633 Medical Group, McDonald Army Health Center Department of Public Health, and Installation Pest Management Coordinators. The Department of the Airforce (DAF) would obtain all necessary permits prior to implementing the Preferred Alternative.

All pesticides used in the US must be registered (licensed) by the US Environmental Protection Agency (USEPA). Therefore, a pesticide registered with the USEPA and labeled for use in aerial applications for adult mosquito control would be used at JBLE. Currently, such pesticides considered for use include naled, pyrethrin, neo-pyrethrin, or malathion as the active ingredient and would be aerially applied to control adult mosquitoes on JBLE. The current formulation that is anticipated to be applied is Trumpet® EC (NSN 6840-01-532-5414 and USEPA Registration No. 5481-481), which is an organophosphate containing 78 percent naled (1,2-dibromo-2,2-dichloroethyl dimethyl phosphate). Applications would be made at an ultralow-volume application rate of 0.5 ounce to 1.2 fluid ounces of undiluted Trumpet® EC per acre. When used in accordance with its labeling, Trumpet® EC poses minimal risks to people and the environment. Best management practices and drift prevention requirements identified in the IPMP for JBLE – Eustis and JBLE – Langley would be adhered to by the DAF and its applicators to further minimize environmental risks. Further, all pesticides would be used in accordance with label requirements. Naled-based pesticides have been utilized for adult mosquito control in the past; however, other pesticides such as pyrethins, neo-pyrethrins, and formulations of malathion may be used. Additionally, control of mosquito larvae via aerial platforms would include *Bacillus thuringiensis israelensis* (Bti), *Bacillus sphaericus* (B.s.), and other mosquito larva control products in conjunction with adult mosquito control techniques under the Proposed Action.

Aerial application of pesticides for mosquito control would not exceed three applications per year and would typically occur from May through October. The DAF's 910th Airlift Wing/757th Airlift Squadron Aerial Spray Unit from Youngstown Air Reserve Station, Ohio, would conduct the aerial application. JBLE – Eustis and JBLE – Langley would purchase the pesticide that would be used on each installation. The aircraft and application system used would consist of a C-130H with a modular aerial spray system and a differential global positioning system (GPS). All environmentally sensitive areas (e.g., active bald eagle nests) would be identified on spray maps prior to any spray mission for avoidance or proper approval for

treatment. The aircraft and certified personnel are based at the Youngstown Air Reserve Station in Vienna, Ohio. JBLE – Langley would serve as the base of air operations. Aircraft spray overflights would occur at an elevation of 300 feet above ground level, and adult mosquito spray missions would occur from two hours before sunset to sunset, depending on weather conditions. Aerial application would be completed in one night, with the potential for one additional night of spraying if weather or mechanical issues cause delays.

The 757th Airlift Squadron would provide all aircraft, aircrews, and Department of Defense-certified entomologists to coordinate and oversee all aspects of the aerial application of pesticides. If the 757th Airlift Squadron Aerial Spray Unit is unavailable, an alternative certified aerial applicator would be selected after consultation with the AFCEC/COSC Pest Management Professionals. Further, if services are contracted, then proper coordination with local air traffic control personnel and base operations would also be arranged to ensure safety. In addition to holding a valid Virginia Pesticide Business License and valid Virginia Department of Agriculture and Consumer Services Pesticide Applicator Certificate for Category 11, contracted applicators would need to obtain a Civil Aircraft Landing Permit to take off and depart from a military installation and treat areas on JBLE, particularly in consideration of ongoing military flight operations.

Under the Preferred Alternative, common reed control would be accomplished through aerial application of USEPA-registered herbicides containing imazapyr or glyphosate as the active ingredient, or other herbicides approved for vegetation control via aerial platforms, in conjunction with other control techniques. Based on several years of surveillance and invasive plant species mapping and management, JBLE – Eustis would treat specific areas where aerial applications would be feasible within the 600 acres of common reed on the installation; JBLE – Langley would treat approximately 145 acres of common reed with aerial herbicide applications. Herbicides are most effective on common reed in late summer to early fall (August through October) because the plant continues to grow while other plants in adjacent areas begin to go dormant, which reduces the risk of damage to nontarget plant species. Aerial application of herbicides for common reed control would not exceed one application per year, with the need expected to be reduced in succeeding years depending on the efficacy determined through annual monitoring. Application would typically be completed within one day, with the potential for one additional day of spraying if weather or mechanical issues cause delays. Requests for aerial application of herbicides for control of common reed would be coordinated by the Installation Pest Management Coordinators with 733rd Security Forces Squadron, Force Support Squadron, 1st Fighter Wing, Fire and Emergency Services, and Office of Public Affairs. JBLE complies with Virginia Department of Quality General Permit No.: VAG87 (General Permit for Discharges Resulting from the Application of Pesticides to Surface Waters of Virginia, Authorization to Discharge Under the Virginia Pollutant Discharge Elimination System and the Virginia State Water Control Law). Aerial application of herbicides for the control of invasive plant species would be through contracted helicopter pesticide application services. Past contractors have used Bell OII58A (or alternative), Bell 206 BII, Bell 206 L3, or Bell OH58A (+) helicopters to aerially apply herbicides within common reed treatment areas. All aircraft staging and refueling would occur within the installation boundaries. Further, proper coordination with local air traffic control personnel and base operations would also be arranged to ensure safety. In addition to holding a valid Virginia Pesticide Business License and valid Virginia Department of Agriculture and Consumer Services Pesticide Applicator Certificate for Category 11, contractor applicators would need to obtain a Civil Aircraft Landing Permit to take off and depart from a military installation and treat areas on JBLE, particularly in consideration of ongoing military flight operations.

If the proposed aerial spray project is scheduled, the Office of Public Affairs would disseminate information to base personnel and other concerned parties concerning the proposed times of application, areas to be sprayed, the presence of low-flying aircraft, the minimal impacts of the herbicides to nontarget plants and vertebrate animals, and to property.

Location of the Proposed Action

JBLE – Eustis is contiguous to the City of Newport News and is located on the eastern shoreline of the James River, approximately 30 miles upstream of its confluence with the Chesapeake Bay (see **Figure 1**). JBLE – Eustis has an estimated 21.6 miles of open tidal shoreline along the James River, Warwick River, and Skiffes Creek. Jail Creek drains the southern tip of Mulberry Island and discharges to the James River at its confluence with the Warwick River. Morrisons Creek, Blows Creek, and Fort Creek drain the western portion of Mulberry Island and discharge to the James River. JBLE – Eustis has 353 acres of tidal surface waters, 118 acres in the cantonment area, and 235 acres on Mulberry Island.

The James River is tidal from the mouth at Hampton roads, north 95 miles to Richmond, Virginia. In 2020, the mean tidal range at JBLE – Eustis was 2.19 feet, with the mean high water (MHW) of 2.35 feet and mean low water (MLW) of 0.16 feet (National Oceanic and Atmospheric Administration [NOAA] 2010). Extensive shoals are located between the central channel and the shoreline in water depths of less than 4 meters (Nichols 1972). For the most part, the shoals are composed of mud while some consist of natural oyster bars. The James River is located in the mesohaline salinity zone, with a salinity ranging from 5.0 to 18.0 parts per thousand (Virginia Institute of Marine Science [VIMS] 2019). Within the lower James River, the submerged aquatic vegetation (SAV) consists of eel grass (*Zostera marina*) growing in depths of 0.5 to 1.0 meter at MLW (Moore et al. 1999)

JBLE – Langley is a 2,883-acre installation located within the City of Hampton (see **Figure 2**). Tributaries of the Back River form the northern, eastern, and southern boundaries of the Main Base. The western boundary of the installation is generally defined by Armistead Avenue. On the northwest side, the base borders the National Aeronautics and Space Administration Langley Research Center. JBLE – Langley is on the lower Virginia Peninsula, between the Northwest Branch and Southwest Branch of the Back River, a tributary of the Chesapeake Bay. The land occupied by the installation lies entirely within the Lynnhaven-Poquoson watershed. The surface water surrounding JBLE – Langley is brackish to saline and occurs in an estuarine setting. The Back River, Brick Kiln Creek, New Market Creek, and Tabbs Creek provide drainage for the area.

The mean tidal range of the Back River, as measured at the Yorktown US Coast Guard Training Center just north of JBLE – Langley, is 2.27 feet, with a MHW of 2.38 feet and a MLW of 0.12 feet (NOAA 2019). The river is mostly flat, with a water depth varying from just over 1 meter to 7.6 meters mean lower low water. Habitat types surveyed in the York River and tributaries include sand, muddy sand, transitional, mud, and mud with hydroids (Bender 1986). The Back River is also located in the mesohaline salinity zone (VIMS 2019). While SAV in the Back River has not been specifically mapped, eel grass has been mapped just north of the Back River along the south shore of the York River adjacent to the US Naval Supply Center and Yorktown (Orth et al. 1996). The Back River has low populations of oysters due to consistent risk of disease (Berman et al. 2002).

Attachment 2

Endangered Species Act Section 7 Determination Table

Project Name: Aerial Dispersal of Pesticide for Mosquito and Invasive Species Control at Joint Base Langley – Eustis, VA

Date: 10 May 2022

Consultation Codes: 2022-0039502 (JBLE – Eustis) and 2022-0039552 (JBLE – Langley)

Species/Resource Name	Habitat/Species Presence in Action Area	Sources of Information	ESA Section 7 Determination	Project Elements that Support Determination
Northern Long-Eared Bat (*Myotis septentrionalis)*		**JBLE – Eustis**.	**JBLE – Eustis**. Covered by 4(d) rule	
Eastern Black Rail (*Laterallus jamaicensis* ssp. *jamaicensis)*	**JBLE – Eustis**. Suitable habitat present; species not present.	**JBLE – Eustis**. Tidal and nontidal marshes are present on base. Fauna surveys completed on JBLE – Eustis in 1997, 1999, 2004-2005, 2014-2015, and 2020-2021 under the INRMP have not documented presence. Survey results are contained in the JBLE – Eustis INRMP.	**JBLE – Eustis**. No effect	**JBLE – Eustis**. Multiple surveys have not documented the presence of this species on JBLE – Eustis.
	JBLE – Langley. Suitable habitat present, species may be present.	**JBLE – Langley**. Tidal and nontidal marshes are present on base and adjacent to the base. The INRMP indicates this species has not been documented but may occur on JBLE – Langley as transients.	**JBLE – Langley**. Not likely to adversely affect	**JBLE – Langley**. The risk to birds from the aerial application of pesticides would be short term and minor due to the low application rate and short persistence. There is a small potential for aircraft strikes with birds during aerial applications; however, the potential for aircraft strikes is low given the limited number of flights associated with aerial application, and aircraft would operate in a manner to reduce risks of Bird/Wildlife Aircraft Strike Hazard.
Critical Habitat not present		VAFO CH Map Tool		

ESA – Endangered Species Act; **JBLE** – Joint Base Langley – Eustis; **INRMP** – Integrated Natural Resources Management Plan; **VAFO** – Virginia Field Office, US Fish and Wildlife Service; **CH** – Critical Habitat

Attachment 3

ECOS-IPaC Listing for JBLE – Eustis (Project Code 2022-0039502)

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Virginia Ecological Services Field Office
6669 Short Lane
Gloucester, VA 23061-4410
Phone: (804) 693-6694 Fax: (804) 693-9032
http://www.fws.gov/northeast/virginiafield/

In Reply Refer To: May 05, 2022
Project Code: 2022-0039502
Project Name: Aerial Dispersal of Pesticide for Mosquito and Invasive Species Control at JBLE-Eustis, VA

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*). Any activity proposed on National Wildlife Refuge lands must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered

species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Migratory Birds: In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts see https://www.fws.gov/birds/policies-and-regulations.php.

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures see https://www.fws.gov/birds/bird-enthusiasts/threats-to-birds.php.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit https://www.fws.gov/birds/policies-and-regulations/executive-orders/e0-13186.php.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Project Code in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List
- USFWS National Wildlife Refuges and Fish Hatcheries
- Migratory Birds

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Virginia Ecological Services Field Office
6669 Short Lane
Gloucester, VA 23061-4410
(804) 693-6694

Project Summary

Project Code: 2022-0039502
Event Code: None
Project Name: Aerial Dispersal of Pesticide for Mosquito and Invasive Species Control at JBLE-Eustis, VA
Project Type: Integrated Pest Management Plan
Project Description: The Proposed Action supports management of mosquito populations under conditions of disease risk and intolerable levels as well as management of invasive plant species, particularly common reed, at JBLE-Eustis. The Proposed Action includes control of adult mosquitoes over all of JBLE – Eustis' approximately 7,900 acres. The Proposed Action also includes the control of common reed on approximately 600 acres at JBLE – Eustis. Aerial dispersal of pesticides for adult mosquito control would not exceed three applications per year and would typically occur from May through October. Herbicides are most effective on common reed in late summer to early fall (August through October) because the plant continues to grow while other plants in adjacent areas begin to go dormant, which reduces the risk of damage to nontarget plant species.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@37.12439495,-76.60482893560875,14z

Counties: James City and Newport News counties, Virginia

Endangered Species Act Species

There is a total of 3 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

---

1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Northern Long-eared Bat *Myotis septentrionalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Threatened

Birds

NAME	STATUS
Eastern Black Rail *Laterallus jamaicensis ssp. jamaicensis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/10477	Threatened

Insects

NAME	STATUS
Monarch Butterfly *Danaus plexippus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

USFWS National Wildlife Refuge Lands And Fish Hatcheries

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

Migratory Birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

---

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.
3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle *Haliaeetus leucocephalus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds Oct 15 to Aug 31
Black Scoter *Melanitta nigra* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds elsewhere

NAME	BREEDING SEASON
Black-billed Cuckoo *Coccyzus erythropthalmus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9399	Breeds May 15 to Oct 10
Blue-winged Warbler *Vermivora pinus* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds May 1 to Jun 30
Bobolink *Dolichonyx oryzivorus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 20 to Jul 31
Brown Pelican *Pelecanus occidentalis* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/6034	Breeds Jan 15 to Sep 30
Common Loon *gavia immer* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/4464	Breeds Apr 15 to Oct 31
Double-crested Cormorant *phalacrocorax auritus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/3478	Breeds Apr 20 to Aug 31
Eastern Whip-poor-will *Antrostomus vociferus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 1 to Aug 20
Kentucky Warbler *Oporornis formosus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 20 to Aug 20
King Rail *Rallus elegans* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/8936	Breeds May 1 to Sep 5
Lesser Yellowlegs *Tringa flavipes* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9679	Breeds elsewhere

NAME	BREEDING SEASON
Long-tailed Duck *Clangula hyemalis* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/7238	Breeds elsewhere
Prairie Warbler *Dendroica discolor* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 1 to Jul 31
Prothonotary Warbler *Protonotaria citrea* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 1 to Jul 31
Red-breasted Merganser *Mergus serrator* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds elsewhere
Red-headed Woodpecker *Melanerpes erythrocephalus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Sep 10
Red-necked Phalarope *Phalaropus lobatus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds elsewhere
Red-throated Loon *Gavia stellata* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds elsewhere
Ring-billed Gull *Larus delawarensis* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds elsewhere
Royal Tern *Thalasseus maximus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds Apr 15 to Aug 31
Ruddy Turnstone *Arenaria interpres morinella* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds elsewhere
Rusty Blackbird *Euphagus carolinus* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds elsewhere

NAME	BREEDING SEASON
Short-billed Dowitcher *Limnodromus griseus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9480	Breeds elsewhere
Surf Scoter *Melanitta perspicillata* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds elsewhere
White-winged Scoter *Melanitta fusca* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds elsewhere
Willet *Tringa semipalmata* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 20 to Aug 5
Wood Thrush *Hylocichla mustelina* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Aug 31

Probability Of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum

probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.

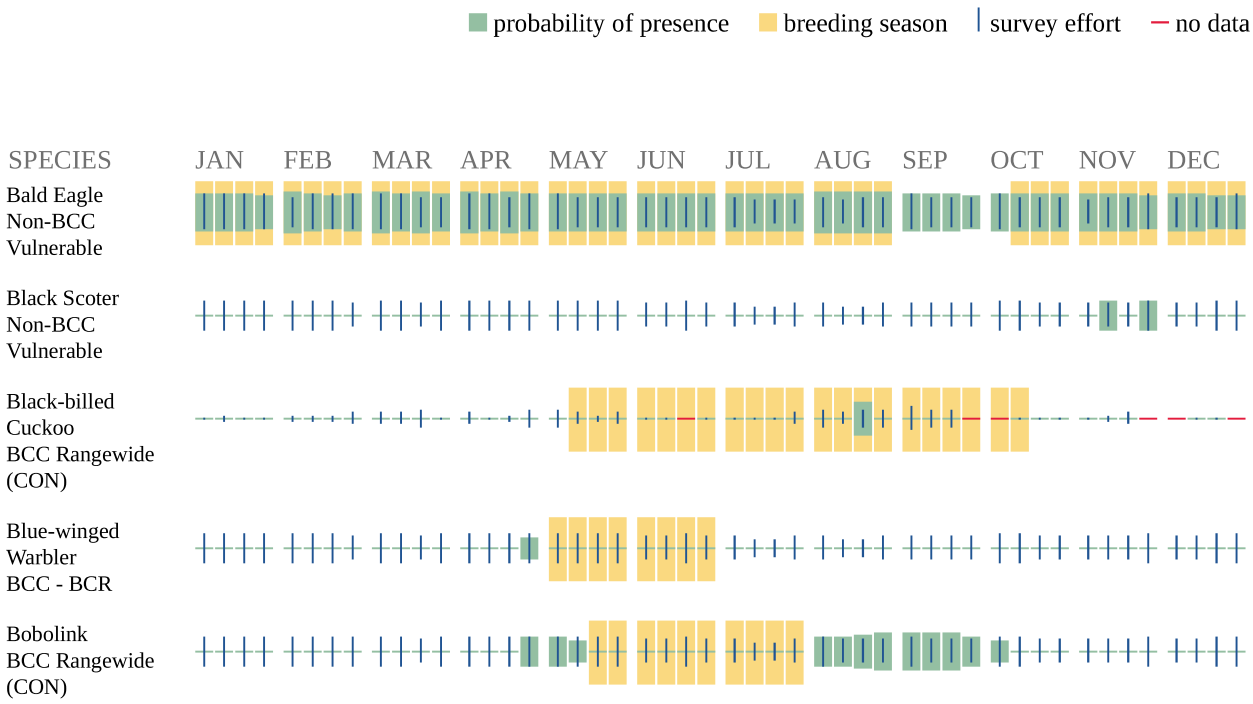
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

Breeding Season (■)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.




Brown Pelican
Non-BCC
Vulnerable
Common Loon
Non-BCC
Vulnerable
Double-crested
Cormorant
Non-BCC
Vulnerable
Eastern Whip-poor-
will
BCC Rangewide
(CON)
Kentucky Warbler
BCC Rangewide
(CON)
King Rail
BCC Rangewide
(CON)
Lesser Yellowlegs
BCC Rangewide
(CON)
SPECIES
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
OCT
NOV
DEC
Long-tailed Duck
Non-BCC
Vulnerable
Prairie Warbler
BCC Rangewide
(CON)
Prothonotary
Warbler
BCC Rangewide
(CON)
Red-breasted
Merganser
Non-BCC
Vulnerable
Red-headed
Woodpecker
BCC Rangewide
(CON)
Red-necked
Phalarope
Non-BCC
Vulnerable
Red-throated Loon
Non-BCC
Vulnerable

Additional information can be found using the following links:

- Birds of Conservation Concern https://www.fws.gov/program/migratory-birds/species
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf

Migratory Birds FAQ

Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures or permits

may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?
The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the AKN Phenology Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?
The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets .

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?
To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: The Cornell Lab of Ornithology All About Birds Bird Guide, or (if you are unsuccessful in locating the bird of interest there), the Cornell Lab of Ornithology Neotropical Birds guide. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?
Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);

2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects
For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?
If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report
The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities,

should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

IPaC User Contact Information

Agency:	Air Force
Name:	Brian Bishop
Address:	720 Thimble Shoals Blvd
Address Line 2:	Ste 108
City:	Newport News
State:	VA
Zip:	23606
Email	bbishop@versar.com
Phone:	7572652903

Lead Agency Contact Information

Lead Agency: Air Force

Attachment 4

ECOS-IPaC Listing for JBLE – Langley (Project Code 2022-0039552)

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Virginia Ecological Services Field Office
6669 Short Lane
Gloucester, VA 23061-4410
Phone: (804) 693-6694 Fax: (804) 693-9032
http://www.fws.gov/northeast/virginiafield/

In Reply Refer To: May 05, 2022
Project Code: 2022-0039552
Project Name: Aerial Dispersal of Pesticide for Mosquito and Invasive Species Control at JBLE-Langley, VA

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*). Any activity proposed on National Wildlife Refuge lands must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered

species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Migratory Birds: In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts see https://www.fws.gov/birds/policies-and-regulations.php.

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures see https://www.fws.gov/birds/bird-enthusiasts/threats-to-birds.php.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit https://www.fws.gov/birds/policies-and-regulations/executive-orders/e0-13186.php.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Project Code in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List
- USFWS National Wildlife Refuges and Fish Hatcheries
- Migratory Birds

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Virginia Ecological Services Field Office
6669 Short Lane
Gloucester, VA 23061-4410
(804) 693-6694

Project Summary

Project Code: 2022-0039552
Event Code: None
Project Name: Aerial Dispersal of Pesticide for Mosquito and Invasive Species Control at JBLE-Langley, VA
Project Type: Integrated Pest Management Plan
Project Description: The Proposed Action supports management of mosquito populations under conditions of disease risk and intolerable levels as well as management of invasive plant species, particularly common reed, at JBLE - Langley. The Proposed Action includes control of adult mosquitoes over all of approximately 3,600 acres of JBLE – Langley. The Proposed Action also includes the control of common reed on approximately 145 acres on JBLE – Langley. Aerial dispersal of pesticides for adult mosquito control would not exceed three applications per year and would typically occur from May through October. Herbicides are most effective on common reed in late summer to early fall (August through October) because the plant continues to grow while other plants in adjacent areas begin to go dormant, which reduces the risk of damage to nontarget plant species.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@37.08773645,-76.35662555310401,14z

Counties: Hampton and Poquoson counties, Virginia

Endangered Species Act Species

There is a total of 2 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

---

1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Birds

NAME	STATUS
Eastern Black Rail *Laterallus jamaicensis ssp. jamaicensis*	Threatened

No critical habitat has been designated for this species.
Species profile: https://ecos.fws.gov/ecp/species/10477

Insects

NAME	STATUS
Monarch Butterfly *Danaus plexippus*	Candidate

No critical habitat has been designated for this species.
Species profile: https://ecos.fws.gov/ecp/species/9743

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

USFWS National Wildlife Refuge Lands And Fish Hatcheries

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

Migratory Birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

---

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.
3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
American Oystercatcher *Haematopus palliatus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/8935	Breeds Apr 15 to Aug 31
Bald Eagle *Haliaeetus leucocephalus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds Oct 15 to Aug 31

NAME	BREEDING SEASON
Black Skimmer *Rynchops niger* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/5234	Breeds May 20 to Sep 15
Blue-winged Warbler *Vermivora pinus* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds May 1 to Jun 30
Bobolink *Dolichonyx oryzivorus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 20 to Jul 31
Gull-billed Tern *Gelochelidon nilotica* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9501	Breeds May 1 to Jul 31
King Rail *Rallus elegans* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/8936	Breeds May 1 to Sep 5
Lesser Yellowlegs *Tringa flavipes* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9679	Breeds elsewhere
Prairie Warbler *Dendroica discolor* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 1 to Jul 31
Prothonotary Warbler *Protonotaria citrea* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 1 to Jul 31
Purple Sandpiper *Calidris maritima* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds elsewhere
Red-headed Woodpecker *Melanerpes erythrocephalus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Sep 10
Ruddy Turnstone *Arenaria interpres morinella* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds elsewhere
Rusty Blackbird *Euphagus carolinus* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds elsewhere

NAME	BREEDING SEASON
Short-billed Dowitcher *Limnodromus griseus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9480	Breeds elsewhere
Willet *Tringa semipalmata* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 20 to Aug 5
Wood Thrush *Hylocichla mustelina* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Aug 31

Probability Of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

Breeding Season (■)

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

Additional information can be found using the following links:

- Birds of Conservation Concern https://www.fws.gov/program/migratory-birds/species
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf

Migratory Birds FAQ

Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding

in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?
The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the AKN Phenology Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?
The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets .

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?
To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: The Cornell Lab of Ornithology All About Birds Bird Guide, or (if you are unsuccessful in locating the bird of interest there), the Cornell Lab of Ornithology Neotropical Birds guide. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?
Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);

2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects
For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?
If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report
The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities,

should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

IPaC User Contact Information

Agency:	Air Force
Name:	Brian Bishop
Address:	720 Thimble Shoals Blvd
Address Line 2:	Ste 108
City:	Newport News
State:	VA
Zip:	23606
Email	bbishop@versar.com
Phone:	7572652903

Lead Agency Contact Information

Lead Agency: Air Force

Attachment 5

ECOS-IPaC Programmatic Biological Opinion on Final 4(d) Rule for the Northern Long-eared Bat and Activities Excepted from Take Prohibitions for JBLE – Eustis (Project Code 2022-0039502)

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Virginia Ecological Services Field Office
6669 Short Lane
Gloucester, VA 23061-4410
Phone: (804) 693-6694 Fax: (804) 693-9032
http://www.fws.gov/northeast/virginiafield/

In Reply Refer To: May 05, 2022
Project code: 2022-0039502
Project Name: Aerial Dispersal of Pesticide for Mosquito and Invasive Species Control at JBLE-Eustis, VA

Subject: Verification letter for the 'Aerial Dispersal of Pesticide for Mosquito and Invasive Species Control at JBLE-Eustis, VA' project under the January 5, 2016, Programmatic Biological Opinion on Final 4(d) Rule for the Northern Long-eared Bat and Activities Excepted from Take Prohibitions.

Dear Brian Bishop:

The U.S. Fish and Wildlife Service (Service) received on May 05, 2022 your effects determination for the 'Aerial Dispersal of Pesticide for Mosquito and Invasive Species Control at JBLE-Eustis, VA' (the Action) using the northern long-eared bat (*Myotis septentrionalis*) key within the Information for Planning and Consultation (IPaC) system. This IPaC key assists users in determining whether a Federal action is consistent with the activities analyzed in the Service's January 5, 2016, Programmatic Biological Opinion (PBO). The PBO addresses activities excepted from "take"[1] prohibitions applicable to the northern long-eared bat under the Endangered Species Act of 1973 (ESA) (87 Stat.884, as amended; 16 U.S.C. 1531 et seq.).

Based upon your IPaC submission, the Action is consistent with activities analyzed in the PBO. The Action may affect the northern long-eared bat; however, any take that may occur as a result of the Action is not prohibited under the ESA Section 4(d) rule adopted for this species at 50 CFR §17.40(o). Unless the Service advises you within 30 days of the date of this letter that your IPaC-assisted determination was incorrect, this letter verifies that the PBO satisfies and concludes your responsibilities for this Action under ESA Section 7(a)(2) with respect to the northern long-eared bat.

Please report to our office any changes to the information about the Action that you submitted in IPaC, the results of any bat surveys conducted in the Action area, and any dead, injured, or sick northern long-eared bats that are found during Action implementation. If the Action is not completed within one year of the date of this letter, you must update and resubmit the information required in the IPaC key.

This IPaC-assisted determination allows you to rely on the PBO for compliance with ESA Section 7(a)(2) only for the northern long-eared bat. It **does not** apply to the following ESA-protected species that also may occur in the Action area:

- Eastern Black Rail *Laterallus jamaicensis ssp. jamaicensis* Threatened
- Monarch Butterfly *Danaus plexippus* Candidate

If the Action may affect other federally listed species besides the northern long-eared bat, a proposed species, and/or designated critical habitat, additional consultation between you and this Service office is required. If the Action may disturb bald or golden eagles, additional coordination with the Service under the Bald and Golden Eagle Protection Act is recommended.

_____

[1]Take means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct [ESA Section 3(19)].

Action Description
You provided to IPaC the following name and description for the subject Action.

1. Name

Aerial Dispersal of Pesticide for Mosquito and Invasive Species Control at JBLE-Eustis, VA

2. Description

The following description was provided for the project 'Aerial Dispersal of Pesticide for Mosquito and Invasive Species Control at JBLE-Eustis, VA':

> The Proposed Action supports management of mosquito populations under conditions of disease risk and intolerable levels as well as management of invasive plant species, particularly common reed, at JBLE-Eustis. The Proposed Action includes control of adult mosquitoes over all of JBLE – Eustis' approximately 7,900 acres. The Proposed Action also includes the control of common reed on approximately 600 acres at JBLE – Eustis. Aerial dispersal of pesticides for adult mosquito control would not exceed three applications per year and would typically occur from May through October. Herbicides are most effective on common reed in late summer to early fall (August through October) because the plant continues to grow while other plants in adjacent areas begin to go dormant, which reduces the risk of damage to nontarget plant species.

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@37.12439495,-76.60482893560875,14z

Determination Key Result

This Federal Action may affect the northern long-eared bat in a manner consistent with the description of activities addressed by the Service's PBO dated January 5, 2016. Any taking that may occur incidental to this Action is not prohibited under the final 4(d) rule at 50 CFR §17.40(o). Therefore, the PBO satisfies your responsibilities for this Action under ESA Section 7(a)(2) relative to the northern long-eared bat.

Determination Key Description: Northern Long-eared Bat 4(d) Rule

This key was last updated in IPaC on May 15, 2017. Keys are subject to periodic revision.

This key is intended for actions that may affect the threatened northern long-eared bat.

The purpose of the key for Federal actions is to assist determinations as to whether proposed actions are consistent with those analyzed in the Service’s PBO dated January 5, 2016.

Federal actions that may cause prohibited take of northern long-eared bats, affect ESA-listed species other than the northern long-eared bat, or affect any designated critical habitat, require ESA Section 7(a)(2) consultation in addition to the use of this key. Federal actions that may affect species proposed for listing or critical habitat proposed for designation may require a conference under ESA Section 7(a)(4).

Determination Key Result

This project may affect the threatened Northern long-eared bat; therefore, consultation with the Service pursuant to Section 7(a)(2) of the Endangered Species Act of 1973 (87 Stat.884, as amended; 16 U.S.C. 1531 et seq.) is required. However, based on the information you provided, this project may rely on the Service's January 5, 2016, *Programmatic Biological Opinion on Final 4(d) Rule for the Northern Long-Eared Bat and Activities Excepted from Take Prohibitions* to fulfill its Section 7(a)(2) consultation obligation.

Qualification Interview

1. Is the action authorized, funded, or being carried out by a Federal agency?

   Yes

2. Have you determined that the proposed action will have "no effect" on the northern long-eared bat? (If you are unsure select "No")

   No

3. Will your activity purposefully **Take** northern long-eared bats?

   No

4. [Semantic] Is the project action area located wholly outside the White-nose Syndrome Zone?

   Automatically answered
   No

5. Have you contacted the appropriate agency to determine if your project is near a known hibernaculum or maternity roost tree?

   Location information for northern long-eared bat hibernacula is generally kept in state Natural Heritage Inventory databases – the availability of this data varies state-by-state. Many states provide online access to their data, either directly by providing maps or by providing the opportunity to make a data request. In some cases, to protect those resources, access to the information may be limited. A web page with links to state Natural Heritage Inventory databases and other sources of information on the locations of northern long-eared bat roost trees and hibernacula is available at www.fws.gov/midwest/endangered/mammals/nleb/nhisites.html.

   Yes

6. Will the action affect a cave or mine where northern long-eared bats are known to hibernate (i.e., hibernaculum) or could it alter the entrance or the environment (physical or other alteration) of a hibernaculum?

   No

7. Will the action involve Tree Removal?

   No

Project Questionnaire

If the project includes forest conversion, report the appropriate acreages below. Otherwise, type ‘0’ in questions 1-3.

1. Estimated total acres of forest conversion:

0

2. If known, estimated acres of forest conversion from April 1 to October 31

0

3. If known, estimated acres of forest conversion from June 1 to July 31

0

If the project includes timber harvest, report the appropriate acreages below. Otherwise, type ‘0’ in questions 4-6.

4. Estimated total acres of timber harvest

0

5. If known, estimated acres of timber harvest from April 1 to October 31

0

6. If known, estimated acres of timber harvest from June 1 to July 31

0

If the project includes prescribed fire, report the appropriate acreages below. Otherwise, type ‘0’ in questions 7-9.

7. Estimated total acres of prescribed fire

0

8. If known, estimated acres of prescribed fire from April 1 to October 31

0

9. If known, estimated acres of prescribed fire from June 1 to July 31

0

If the project includes new wind turbines, report the megawatts of wind capacity below. Otherwise, type ‘0’ in question 10.

10. What is the estimated wind capacity (in megawatts) of the new turbine(s)?

0

IPaC User Contact Information

Agency:	Air Force
Name:	Brian Bishop
Address:	720 Thimble Shoals Blvd
Address Line 2:	Ste 108
City:	Newport News
State:	VA
Zip:	23606
Email	bbishop@versar.com
Phone:	7572652903

Lead Agency Contact Information

Lead Agency: Air Force

Dear Tribal Representative,

In December 2021, Joint Base Langley-Eustis (JBLE) provided you with an email initiating government-to-government consultation and briefly describing the Department of the Air Force's (DAF) proposal to aerially apply pesticides for mosquito and invasive plant species (primarily common reed [*Phragmites australis]*) control at JBLE. Attached as notification, to comply with the National Environmental Policy Act of 1969 (NEPA), the President's Council on Environmental Quality's implementing regulations, and the National Historic Preservation Act and its implementing regulations, is the Draft Environmental Assessment (EA) and proposed Finding of No Significant Impact (FONSI) for Aerial Application of Pesticide for Mosquito and Invasive Plant Species Control at JBLE, Virginia. This Draft EA and proposed FONSI is available for review at the JBLE – Eustis and JBLE – Langley public websites: https://www.jble.af.mil/Units/Army/Eustis-Enviromental and https://www.jble.af.mil/About-Us/Units/Langley-AFB/Langley-Environmental.

The Proposed Action is a supporting control technique used as part of an Integrated Pest Management (IPM) program and supports management of mosquito populations under conditions of disease risk and intolerable levels, as well as management of invasive plant species, particularly common reed, at JBLE. The Proposed Action includes control of adult and larval mosquitoes over all of JBLE – Eustis' approximately 7,900 acres and over approximately 3,000 acres of JBLE – Langley. The Proposed Action also includes the control of common reed within specific areas where aerial applications would be feasible within the approximately 600 acres of common reed at JBLE – Eustis and on approximately 145 acres on JBLE – Langley. The purpose of the Proposed Action is to implement an IPM approach to community health and natural resources management at JBLE to support military missions by: (1) reducing mosquito (and other pest arthropods) populations to tolerable levels, (2) breaking the disease transmission cycle caused by vectoring arthropods, and (3) restoring habitats impacted by invasive plant species such as common reed.

The Proposed Action is needed to control mosquitoes and invasive plant species across large areas of JBLE and to reach remote portions of JBLE that are not reasonably accessible from application by land or watercraft. Large-scale application of pesticide would reduce the potential threat of human disease caused by mosquito vectors, mosquito-induced discomfort, hardship, annoyance, and distraction experienced by personnel at JBLE. An outbreak of mosquito-borne illness among base personnel could seriously degrade mission-essential operations and readiness. Additionally, the efficiency of military training, maintenance operations, range management, natural resources management, military police, fire and emergency services, and others who work outdoors may be adversely affected when mosquito populations reach intolerable levels. The use of outdoor bivouac areas and recreational facilities such as the golf course, athletic fields, playgrounds, and picnic areas may decline at times due to intense mosquito activity. Such restrictions reduce productivity and have a negative effect on the morale of assigned personnel, their dependents, transient personnel, and guests and residents of civilian communities. Control of invasive plant species such as common reed in coastal and estuarine wetlands would improve the biological diversity and functions of wetlands, increase recreational opportunities, reduce visual restrictions by tall herbaceous vegetation, and support training opportunities and force protection.

Resource areas considered in the impact analysis for this EA are airspace management and use, air quality and climate change, aesthetic and visual resources, geological resources, floodplains, coastal zone management, water resources, biological resources, and health and safety. This Draft EA and proposed FONSI concludes that there will be no significant environmental impacts resulting from the Proposed Action.

The public comment period for this Draft EA and proposed FONSI will be for 30 days beginning with receipt of this email. Please send your written responses via e-mail to Dr. Christopher L. McDaid at christopher.l.mcdaid.civ@mail.mil.

Sincerely

Donald W. Calder, Jr.
Chief, Environmental Element (CEIE)
Installation Management Flight
733d Civil Engineer Squadron
1407 Washington Boulevard
JBLE-Eustis, VA 23604
Donald.W.Calder.Civ@mail.mil

Agency and Tribal Comments Received on the Draft Environmental Assessment

FORMAT PAGE

From:	Virginia Field Office, FW5
To:	Brian Bishop (External)
Subject:	Automatic reply: [EXTERNAL] Self Certification Letter - Aerial Dispersal of Pesticide for Mosquito and Invasive Species Control at Joint Base Langley – Eustis (JBLE), VA (Project Codes: 2022-0039502 and 2022-0039552)
Date:	Thursday, July 21, 2022 7:57:48 AM

Thank you for submitting your online project package. If you have submitted a Review Request Letter, we will respond within 60 days of receipt. If you have submitted a Self-Certification Letter, you will typically not receive a response from us since the Self-Certification Letter is our official response. However, if we have additional questions or do not concur with your determinations, we will contact you during the 60 day review period.

If your project may disturb bald eagles, please visit: https://www.fws.gov/northeast/ecologicalservices/eagle.html

Note: Consultation Package Builder (CPB) went live in IPaC on December 29, 2020. CPB is a tool that guides you through evaluating and documenting your project's potential effects on species protected by the Endangered Species Act. At this time, our office is not requiring the use of CPB by any individual seeking review or approval of their project in Virginia by the U.S. Fish and Wildlife Service. You can exit the IPaC review process after completing steps 1&2 to avoid the use of CPB in step 3. After exiting the IPaC review process, please continue using our online review process to complete building your project package.

Our office is working to develop guidance on when it is appropriate to use CPB to evaluate and document your project's potential effects on listed species. We will post this guidance to our website when it becomes available. In the interim, CPB can be used as a learning tool for individuals new to Endangered Species Act consultations or those looking to enhance their understanding of the consultation process. If you have any questions, please feel free to contact our office via email at VirginiaFieldOffice@fws.gov.

Note: Surveyor lists are updated on a semi-annual basis on January 15 and June 15. If you would like to be added to a list or lists, you must submit your information at least 60 days in advance of either January 15 or June 15. Additional information is available in the How to be a surveyor document. If you are an existing approved surveyor and need to update your information, please email the requested changes to Katie Whitfield. Updates will be completed within 10 days of receipt.

From: **Bott, Louis J.** <bottlj@nnva.gov>
Date: Mon, Aug 22, 2022 at 3:29 PM
Subject: DEQ #22-110F : Aerial Application of Pesticide for Mosquito and Invasive Plant Species Control at Joint Base Langley-Eustis
To: Julia.Wellman@deq.virginia.gov <Julia.Wellman@deq.virginia.gov>

The City of Newport News offers the following in response to the CZMA consistency determination for management of mosquitos and invasive species using aerial pesticide applications (DEQ 22-110F).

With regard to the proposed activity, the city has concern over the potential risks of impacts to the community neighborhoods and the waterworks reservoir resources that are in proximity to the treatment areas. The proposed activity areas identified in Figures 1 and 3 of the CZMA document are, in numerous instances, less than 100 feet away from residential properties situated to the north and the east and approximately 2,900 feet from the Lee Hall reservoir and water supply intake facility. The off-target movement of pesticides (drift) from aerial application operations to human receptors in these neighborhoods represents an exposure risk and the reservoir facilities are key elements to regional drinking water treatment operations that could be adversely affected.

The city recognizes that uncontrollable meteorological variables can change rapidly, and it is unclear precisely what conditions represent limits for aerial treatment operations at the Ft. Eustis location. Therefore, we request that the following information be made available:

1) A statement or procedure describing how drift will be limited (other than low altitude application).

2) A clear benchmark of values for direct and indirect conditions that influence drift for these operations, as well as clarification on whether each condition independently generates the cancellation of the operation or if a cumulative set of lesser benchmark values creates a condition for cancelling the operation.

3) The means and methods of obtaining and characterizing on-site meteorological conditions data at the time of operation.

4) Any atmospheric dispersion data to show area of impact for anticipated drift distances corresponding to the range values for direct and indirect conditions that influence drift.

5) Confirmation that any treatment to the railroad spur property identified on Figures 1 and 3 will be done by land applicators.

6) The means and methods of community notification prior to the operations be provided.

It is our hope that relevant sections and appendices for aerial applications from the Integrated Pest Management Plan Joint Base Langley Ft Eustis- Plan years 2020-2024 have already addressed these issues and we look forward to the opportunity to review the requested information.

Regards,

Louis J. Bott Jr. REM, CHMM

Environmental Division Manager

City of Newport News, Virginia

bottlj@nnva.gov (757)933-2350

--

Julia Wellman
Environmental Impact Review Coordinator

Department of Environmental Quality
Environmental Impact Review and Long Range Priorities Program
1111 E Main Street, Suite 1400
Richmond, VA 23219

NEW PHONE NUMBER: 804-774-8237
Julia.Wellman@DEQ.virginia.gov
www.deq.virginia.gov

**** For program updates and public notices, please subscribe to Constant Contact: https://lp.constantcontact.com/su/MVcCump/EIR ****

****New EIR Website: https://www.deq.virginia.gov/permits-regulations/environmental-impact-review****

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 633D AIR BASE WING
JOINT BASE LANGLEY-EUSTIS VA

1 July 2022

NOAA Fisheries
Greater Atlantic Regional Fisheries Office
Protected Resources Division
55 Great Republic Drive
Gloucester, MA 01930

FROM: 633 CES/CEIE
37 Sweeney Blvd
Langley AFB, VA 23665

SUBJECT: Draft Environmental Assessment (EA) and proposed Finding of No Significant Impact/Finding of No Practicable Alternative (FONSI/FONPA) for Aerial Application of Pesticide for Mosquito and Invasive Plant Species Control at Joint Base Langley-Eustis (JBLE), Virginia

Dear Ms. Anderson,

1. As public and agency notification, to comply with the National Environmental Policy Act of 1969 (NEPA) and the President's Council on Environmental Quality's implementing regulations, this memorandum announces the availability of the Draft EA and Draft FONSI for Aerial Application of Pesticide for Mosquito and Invasive Plant Species Control at JBLE, Virginia. In addition, we have provided the Department of the Air Force's effects determinations for the federally listed species and designated critical habitat for review and concurrence by the National Marine Fisheries Service (NMFS), Greater Atlantic Regional Fisheries Office Protected Resources Division.

2. This Draft EA and proposed FONSI are available at the JBLE – Eustis and JBLE – Langley public websites: https://www.jble.af.mil/Units/Army/Eustis-Enviromental and https://www.jble.af.mil/About-Us/Units/Langley-AFB/Langley-Environmental.

3. The Proposed Action is a supporting control technique used as part of an Integrated Pest Management (IPM) program and supports management of mosquito populations under conditions of disease risk and intolerable levels, as well as management of invasive plant species, particularly common reed (*Phragmites australis*), at JBLE. The Proposed Action includes control of adult and larval mosquitoes over all of JBLE – Eustis' approximately 7,900 acres and over approximately 3,000 acres of JBLE – Langley. The Proposed Action also includes the control of common reed within specific areas where aerial applications would be feasible within the approximately 600 acres of common reed at JBLE – Eustis and on approximately 145 acres on JBLE – Langley. The purpose of the Proposed Action is to implement an IPM approach to community health and natural resources management at JBLE to support military missions by (1) reducing mosquito (and other pest arthropods) populations to tolerable levels, (2) breaking the disease transmission cycle caused by vectoring arthropods, and (3) restoring habitats impacted by invasive plant species such as common reed.

The Proposed Action is needed to control mosquitoes and invasive plant species across large areas of JBLE and to reach remote portions of JBLE that are not reasonably accessible from application by land or

watercraft. Large-scale application of pesticide would reduce the potential threat of human disease caused by mosquito vectors, mosquito-induced discomfort, hardship, annoyance, and distraction experienced by personnel at JBLE. An outbreak of mosquito-borne illness among base personnel could seriously degrade mission-essential operations and readiness. Additionally, the efficiency of military training, maintenance operations, range management, natural resources management, military police, fire and emergency services, and others who work outdoors may be adversely affected when mosquito populations reach intolerable levels. The use of outdoor bivouac areas and recreational facilities such as the golf course, athletic fields, playgrounds, and picnic areas may decline at times due to intense mosquito activity. Such restrictions reduce productivity and have a negative effect on the morale of assigned personnel, their dependents, transient personnel, and guests and residents of civilian communities. Control of invasive plant species such as common reed in coastal and estuarine wetlands would improve the biological diversity and functions of wetlands, increase recreational opportunities, reduce visual restrictions by tall herbaceous vegetation, and support training opportunities and force protection.

Resource areas considered in the impact analysis for this EA are airspace management and use, air quality and climate change, aesthetic and visual resources, geological resources, floodplains, coastal zone management, water resources, biological resources, and health and safety. This Draft EA and proposed FONSI concludes that there will be no significant environmental impacts resulting from the Proposed Action.

4. As described in the attachment for the Proposed Action, we have made a *may affect, not likely to affect* determination for the Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*). Moreover, we have determined there would be no impact to designated critical habitat for Atlantic sturgeon. If after review of the Draft EA and Proposed FONSI/FONPA, you have additional information regarding impacts of the Proposed Action on the environment of which we are unaware, we would appreciate receiving such information for inclusion and consideration during the NEPA process.

Commented [MR1]: Add sea turtles and shortnose sturgeon here too. See below.

5. The public comment period for this Draft EA and proposed FONSI will be from 24 June 2022 through 24 July 2022. Please send your written responses via email to Ms. Sherry Johnson at sherry.johnson.4@us.af.mil.

DAVID M. JENNINGS
CHIEF, ENVIRONMENTAL ELEMENT

Attachment:

1. Effects Determination for Aerial Application of Pesticide for Mosquito and Invasive Plant Species Control at Joint Base Langley-Eustis (JBLE), Virginia

Attachment: Effects Determination for Aerial Application of Pesticide for Mosquito and Invasive Plant Species Control at Joint Base Langley-Eustis (JBLE), Virginia

Purpose and Need

The purpose of the Proposed Action is to (1) reduce mosquito (and other pest arthropods) populations to tolerable levels, (2) break the disease transmission cycle caused by vectoring arthropods, and (3) restore habitats impacted by invasive plant species such as common reed.

The Proposed Action is needed to control mosquitoes and invasive plant species across large areas of JBLE and to reach remote portions of JBLE that are not reasonably accessible for application by land or watercraft. Large-scale application of pesticide would reduce the potential threat of human disease caused by mosquito vectors, mosquito-induced discomfort, hardship, annoyance, and distraction experienced by personnel at JBLE. An outbreak of mosquito-borne illness among base personnel could seriously degrade mission-essential operations and readiness. Additionally, the efficiency of military training, maintenance operations, range management, natural resources management, military police, fire and emergency services, and others who work outdoors may be adversely affected when mosquito populations reach intolerable levels. The use of outdoor bivouac areas and recreation facilities such as the golf course, athletic fields, playgrounds, and picnic areas may decline at times due to intense mosquito activity. Such restrictions reduce productivity and have a negative effect on the morale of assigned personnel, their dependents, transient personnel, and guests and residents of civilian communities. Control of invasive plant species such as common reed in coastal and estuarine wetlands would improve the biological diversity and functions of wetlands, increase recreational opportunities, reduce visual restrictions by tall herbaceous vegetation, and support training opportunities and force protection.

Description of Proposed Action

Commented [B2]: Be sure to include any mitigation measures in your description of the proposed action

JBLE – Eustis is located in the Hampton Roads area of southeast Virginia on the southwest side of the Virginia Peninsula, which is bordered by the James River and Warwick River (**Figure 1**). JBLE – Langley is on the lower Virginia Peninsula, between the Northwest Branch and Southwest Branch of the Back River, a tributary of the Chesapeake Bay. (**Figure 2**). The Proposed Action supports management of mosquito populations under conditions of disease risk and intolerable levels as well as management of invasive plant species, particularly common reed at JBLE. The Proposed Action includes control of mosquitoes over all of JBLE – Eustis' approximately 7,900 acres and over approximately 3,000 acres of JBLE – Langley (**Figures 3** and **4** respectively). The Proposed Action also includes the control of common reed within specific areas where aerial applications would be feasible within the approximately 600 acres of common reed at JBLE – Eustis and on approximately 145 acres on JBLE – Langley (**Figures 5** and **6** respectively).

The goal of the Proposed Action is to aerially apply pesticides to achieve the maximum kill of the targeted pests (particularly mosquitoes and common reed) with minimal adverse impacts on the environment and as part of the overall integrated pest management philosophy. This would include control of mosquitoes over all JBLE – Eustis' approximately 7,900 acres and over approximately 3,000 acres of JBLE – Langley. Common reed control would occur within specific treatment areas where aerial applications would be feasible within the approximately 600 acres of common reed at JBLE – Eustis and approximately 145 acres at JBLE – Langley.

Figure 1. Location of Joint Base Langley – Eustis – Fort Eustis and Surrounding Area

Figure 2. Location of Joint Base Langley – Eustis – Langley Air Force Base and Surrounding Area

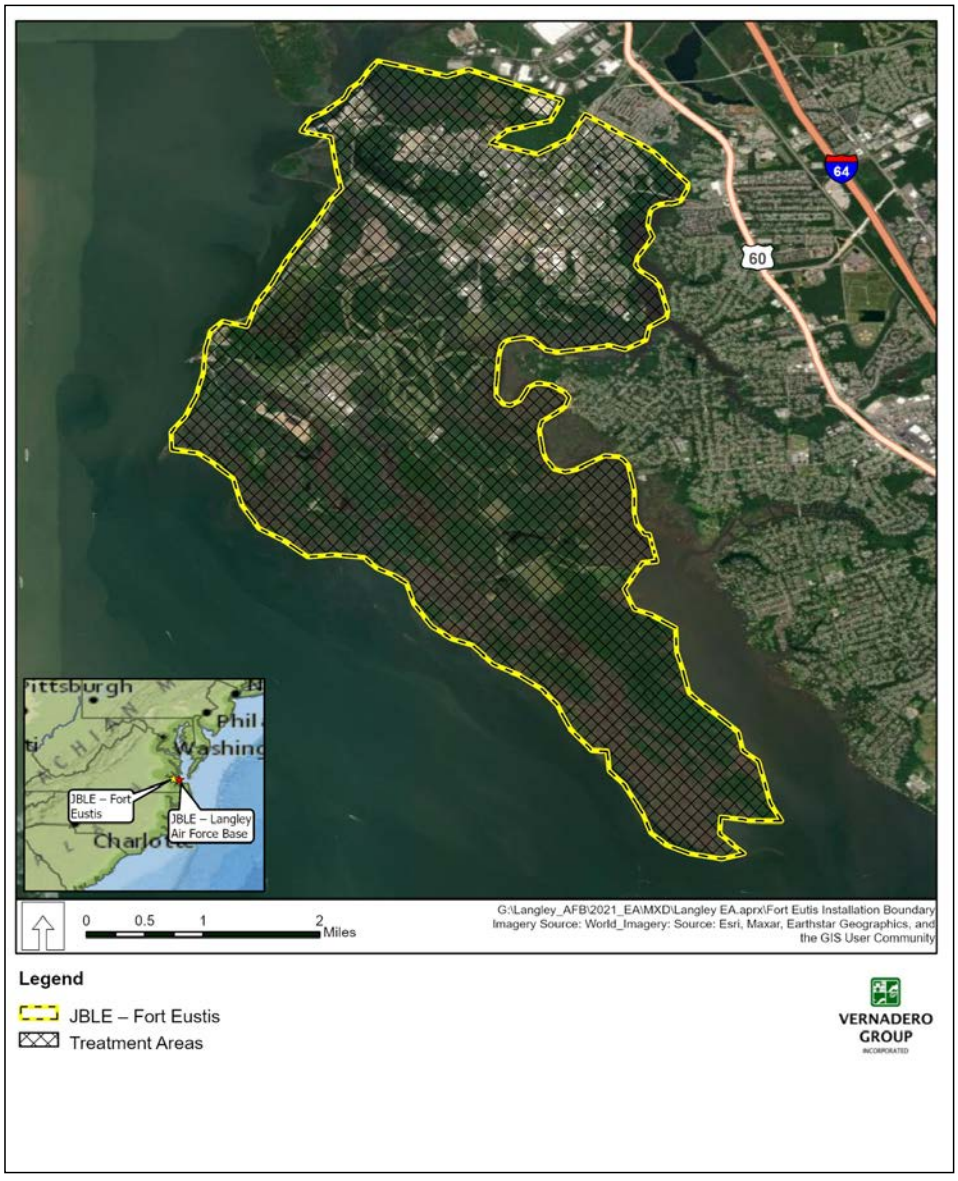


Figure 3. Proposed Mosquito Treatment Areas at Joint Base Langley – Eustis — Eustis

Figure 4. Proposed Mosquito Treatment Areas at Joint Base Langley – Eustis — Langley

Figure 5. Current Common Reed Distribution at Joint Base Langley – Eustis — Eustis

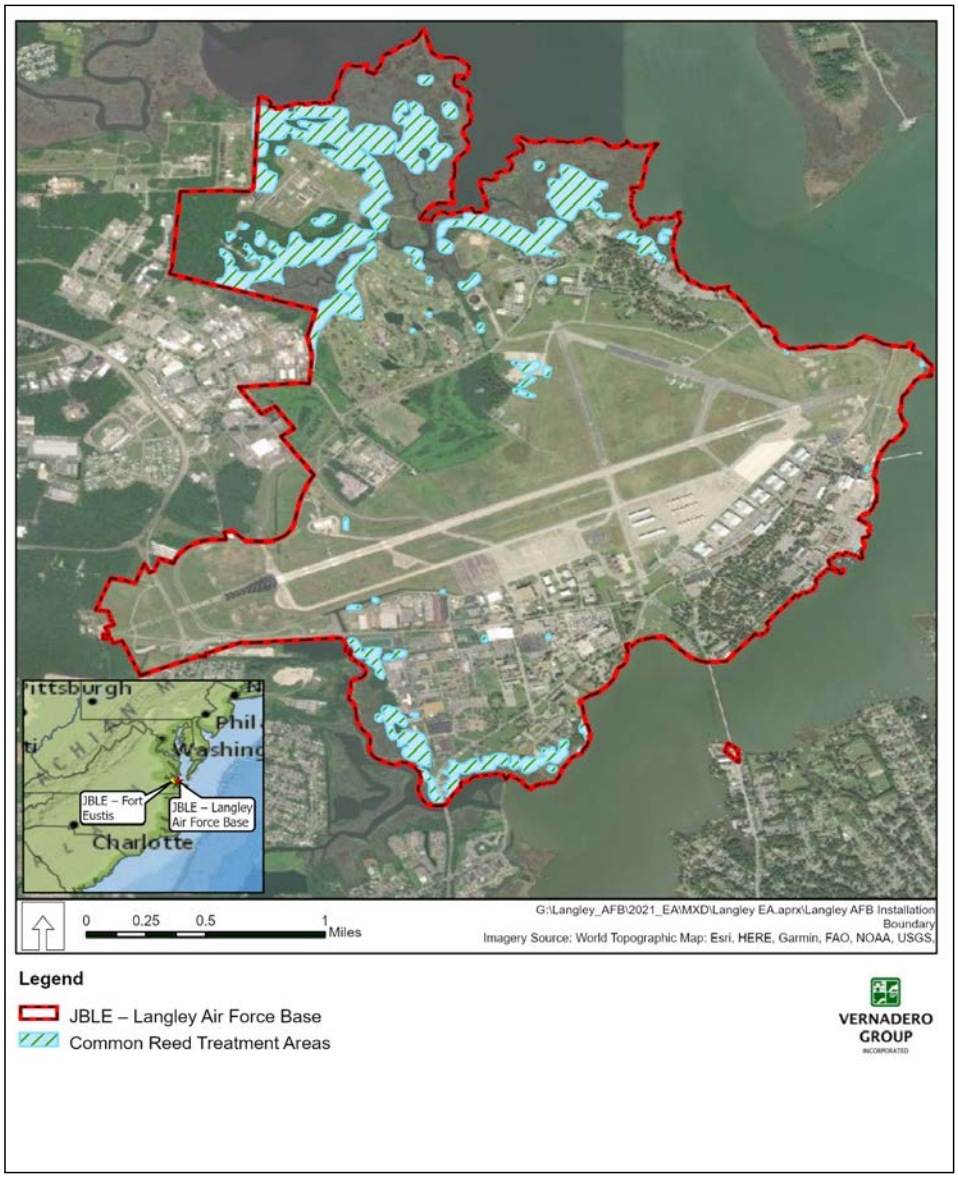


Figure 6. Proposed Common Reed Treatment Areas at Joint Base Langley – Eustis — Langley

Aerial pesticide treatment is considered when the approved ground-based techniques outlined in each installation's Integrated Pest Management Plan (IPMP) fail to significantly reduce mosquito populations. Aerial application of insecticides targeting adult mosquito populations and of larvicides to target mosquito larvae within breeding sites is the last resort to be used. The decision to aerially apply pesticides for mosquito control would be based upon a combination of the threat of human and animal disease, environmental and climatic conditions, larval and adult mosquito surveillance, and customer complaints. The heaviest mosquito infestations typically occur from May through October on and around JBLE. JBLE – Eustis and JBLE – Langley utilize the standards of 45 adult females per trap night and 75 adult females per trap night, respectively, to determine the need for aerial application of pesticides against adult mosquitoes. Therefore, when adult mosquito surveillance data indicate threshold limits have exceeded the capabilities of ground control methods, an aerial application would be warranted. JBLE conducts weekly mosquito larvae surveys from 15 May through 31 October in known breeding sites on the installations. Aerial application of larvicides would be used in breeding sites that cannot be eliminated using ground-based techniques. These general locations could include permanent wetlands, drainage ditches, vehicular-generated ruts, and more specifically the Fort Eustis Dredge Material Management Area, which is an approximately 80-acre dredge material disposal site that may at times contain standing water that could be conducive to mosquito breeding. If there are reports of disease-positive specimen pools in the local area, if mosquito populations create a significant decline in the quality of life, or if there is the threat of a disease outbreak, the threshold requirements could be waived.

Requests for aerial application of pesticides for mosquito control would be coordinated with Air Force Civil Engineer Center Operations Directorate (AFCEC/COSC) Pest Management Professionals, the Public Health section at the 633 Medical Group, McDonald Army Health Center Department of Public Health, and Installation Pest Management Coordinators. The Department of the Air Force (DAF) would obtain all necessary permits prior to implementing the Preferred Alternative.

All pesticides used in the US must be registered (licensed) by the US Environmental Protection Agency (USEPA). Therefore, a pesticide registered with the USEPA and labeled for use in aerial applications for adult mosquito control would be used at JBLE. Currently, such pesticides considered for use include naled, pyrethrin, neopyrethrin, or malathion as the active ingredient and would be aerially applied to control adult mosquitoes on JBLE. The current formulation that is anticipated to be applied is Trumpet® EC (NSN 6840-01-532-5414 and USEPA Registration No. 5481-481), which is an organophosphate containing 78 percent naled (1,2-dibromo-2,2-dichloroethyl dimethyl phosphate). Applications would be made at an ultralow volume (ULV) application rate of 0.5 ounce to 1.2 fluid ounces of undiluted Trumpet® EC per acre. When used in accordance with its labeling, Trumpet® EC poses minimal risks to people and the environment. Best management practices and drift prevention requirements identified in the IPMP for JBLE – Eustis and JBLE – Langley would be adhered to by the DAF and its applicators to further minimize environmental risks. Further, all pesticides would be used in accordance with label requirements. Naled-based pesticides have been utilized for adult mosquito control in the past; however, other pesticides such as pyrethins, neo-pyrethrins, and formulations of malathion may be used. Additionally, control of mosquito larvae via aerial platforms would include *Bacillus thuringiensis israelensis* (Bti), *Bacillus sphaericus* (B.s.), and other mosquito larva control products in conjunction with adult mosquito control techniques under the Proposed Action.

Aerial application of pesticides for mosquito control would not exceed three applications per year and would typically occur from May through October. The DAF's 910th Airlift Wing/757th Airlift Squadron Aerial Spray Unit from Youngstown Air Reserve Station, Ohio, would conduct the aerial application. JBLE – Eustis and JBLE – Langley would purchase the pesticide that would be used on each installation. The aircraft and application system used would consist of a C-130H with a modular aerial spray system and a differential global positioning system (GPS). All environmentally sensitive areas (e.g., active bald eagle nests) would be identified on spray maps prior to any spray mission for avoidance or proper approval for

Commented [MR3]: But the whole site is going to be treated by aerial application, correct? This information is misleading if no ground-based application is expected to occur. Suggest re-wording.

Commented [MR4]: With this information, could you calculate the concentration (mg/L) of the chemical that you expect to apply and then compare it to effects thresholds for fish. Attached is a PDF with some information that you could use. This is the type of analysis to include in the Effects Determination section.

Commented [MR5]: You state above that Trumpet EC (naled-based) will be used. Are these all the pesticides that may be used for the project? If so, all of these possible pesticides and their associated effects should be analyzed below, so it's best to specify which one will be used, if known.

Commented [MR6]: How many years will application continue to occur?

treatment. The aircraft and certified personnel are based at the Youngstown Air Reserve Station in Vienna, Ohio. JBLE – Langley would serve as the base of air operations. Aircraft spray overflights would occur at an elevation of 300 feet above ground level, and adult mosquito spray missions would occur from two hours before sunset to sunset, depending on weather conditions. Aerial application would be completed in one night, with the potential for one additional night of spraying if weather or mechanical issues cause delays.

The 757th Airlift Squadron would provide all aircraft, aircrews, and Department of Defense-certified entomologists to coordinate and oversee all aspects of the aerial application of pesticides. If the 757th Airlift Squadron Aerial Spray Unit is unavailable, an alternative certified aerial applicator would be selected after consultation with the AFCEC/COSC Pest Management Professionals. Further, if services are contracted, then proper coordination with local air traffic control personnel and base operations would also be arranged to ensure safety. In addition to holding a valid Virginia Pesticide Business License and valid Virginia Department of Agriculture and Consumer Services Pesticide Applicator Certificate for Category 11, contracted applicators would need to obtain a Civil Aircraft Landing Permit to take off and depart from a military installation and treat areas on JBLE, particularly in consideration of ongoing military flight operations.

Under the Preferred Alternative, common reed control would be accomplished through aerial application of USEPA-registered herbicides containing imazapyr or glyphosate as the active ingredient, or other herbicides approved for vegetation control via aerial platforms, in conjunction with other control techniques. Based on several years of surveillance and invasive plant species mapping and management, JBLE – Eustis would treat specific areas where aerial applications would be feasible within the 600 acres of common reed on the Installation; JBLE – Langley would treated approximately 145 acres of common reed with aerial herbicide applications. Herbicides are most effective on common reed in late summer to early fall (August through October) because the plant continues to grow while other plants in adjacent areas begin to go dormant, which reduces the risk of damage to nontarget plant species. Aerial application of herbicides for common reed control would not exceed one application per year, with the need expected to be reduced in succeeding years depending on the efficacy determined through annual monitoring. Application would typically be completed within one day, with the potential for one additional day of spraying if weather or mechanical issues cause delays. Requests for aerial application of herbicides for control of common reed would be coordinated by the Installation Pest Management Coordinators with 733rd Security Forces Squadron, Force Support Squadron, 1st Fighter Wing, Fire and Emergency Services, and Office of Public Affairs. JBLE complies with Virginia Department of Quality General Permit No.: VAG87 (General Permit for Discharges Resulting from the Application of Pesticides to Surface Waters of Virginia, Authorization to Discharge Under the Virginia Pollutant Discharge Elimination System and the Virginia State Water Control Law). Aerial application of herbicides for the control of invasive plant species would be through contracted helicopter pesticide application services. Past contractors have used Bell OII58A (or alternative), Bell 206 BII, Bell 206 L3, or Bell OH58A (+) helicopters to aerially apply herbicides within common reed treatment areas. All aircraft staging and refueling would occur within the installation boundaries. Further, proper coordination with local air traffic control personnel and base operations would also be arranged to ensure safety. In addition to holding a valid Virginia Pesticide Business License and valid Virginia Department of Agriculture and Consumer Services Pesticide Applicator Certificate for Category 11, contractor applicators would need to obtain a Civil Aircraft Landing Permit to take off and depart from a military installation and treat areas on JBLE, particularly in consideration of ongoing military flight operations.

If the proposed aerial spray project is scheduled, the Office of Public Affairs would disseminate information to base personnel and other concerned parties concerning the proposed times of application, areas to be sprayed, the presence of low-flying aircraft, the minimal impacts of the herbicides to nontarget plants and vertebrate animals, and to property.

Commented [MR7]: State which herbicide you will use and specify the active ingredient. What is going to be the application rate of the herbicide? State that here.

Then, similar to the comment re: pesticide concentrations above, calculate the concentration of the herbicide that will be applied and compare that to the concentrations thresholds for ESA-listed species in the Effects Determination section below.

Commented [MR8]: Will application occur annually? If so, for how many years?

Commented [MR9]: This permit is applicable to the pesticides portion of the work, correct? Clarify here. What permit will cover the herbicide portion of the work?

Location of the Proposed Action and Action Area

JBLE – Eustis is contiguous to the City of Newport News and is located on the eastern shoreline of the James River approximately 30 miles upstream of its confluence with the Chesapeake Bay (see **Figure 1**). JBLE – Eustis has an estimated 21.6 miles of open tidal shoreline along the James River, Warwick River, and Skiffes Creek. Jail Creek drains the southern tip of Mulberry Island and discharges to the James River at its confluence with the Warwick River. Morrisons Creek, Blows Creek, and Fort Creek drain the western portion of Mulberry Island and discharge to the James River. JBLE – Eustis has 353 acres of tidal surface waters, 118 acres in the cantonment area, and 235 acres on Mulberry Island.

The James River is tidal from the mouth at Hampton roads, north 95 miles to Richmond, Virginia. In 2020, the mean tidal range at JBLE – Eustis was 2.19 feet, with the mean high water (MHW) of 2.35 feet and mean low water (MLW) of 0.16 feet (National Oceanic and Atmospheric Administration [NOAA] 2010). Extensive shoals are located between the central channel and the shoreline in water depths of less than 4 meters (Nichols 1972). For the most part, the shoals are composed of mud while some consist of natural oyster bars. The James River is located in the mesohaline salinity zone, with a salinity ranging from 5.0 to 18.0 parts per thousand (ppt) (Virginia Institute of Marine Science [VIMS] 2019). Within the lower James River, submerged aquatic vegetation (SAV) consist of eel grass (*Zostera marina*) growing in depths of 0.5 meter to 1.0 meters at mean lower water (Moore et al. 1999)

JBLE – Langley is a 2,883-acre installation located within the City of Hampton (see **Figure 2**). Tributaries of the Back River form the northern, eastern, and southern boundaries of the Main Base. The western boundary of the installation is generally defined by Armistead Avenue. On the northwest side, the base borders the National Aeronautics and Space Administration Langley Research Center. JBLE – Langley is on the lower Virginia Peninsula, between the Northwest Branch and Southwest Branch of the Back River, a tributary of the Chesapeake Bay. The land occupied by the installation lies entirely within the Lynnhaven-Poquoson watershed. The surface water surrounding JBLE – Langley is brackish to saline and occurs in an estuarine setting. The Back River, Brick Kiln Creek, New Market Creek, and Tabbs Creek provide drainage for the area.

The mean tidal range of the Back River, as measured at the Yorktown US Coast Guard Training Center just north of JBLE – Langley, is 2.27 feet, with a MHW of 2.38 feet and a MLW of 0.12 feet (NOAA 2019). The river is mostly flat, with a water depth varying from just over 1 meter to 7.6 meters mean lower low water. The Back River is also located in the mesohaline salinity zone (VIMS 2019). While SAV in the Back River has not been specifically mapped, eel grass has been mapped just north of the Back River along the south shore of the York River adjacent to the US Naval Supply Center and Yorktown (Orth et al. 1996). The Back River has low populations of oysters due to constant risk of disease (Berman et al. 2002).

A project's action area is defined in the Endangered Species Act (ESA) as "all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action" (50 CFR § 402.02). This same action area is applied to managed species and habitat in this request for ESA consultation. For this project, the action area includes not just the immediate area where mosquito and invasive plant control will occur, but also the extent of the area where the proposed action could have an effect on managed species. Given that run-off of both mosquito and invasive plant control chemicals may occur, the shoreline for both JBLE – Langley and JBLE – Eustis is expected to be impacted by the action out to XXm from land. Furthermore, application will occur on land, but aerial drift may occur that is expected to extend up to XXm for the point of application. This area is expected to encompass all of the effects of the proposed project.

Commented [MR10]: State how far from land you expect run-off to impact water quality.

Commented [MR11]: How far from the application site do you expect drift to occur? State that here.

National Marine Fisheries Service (NMFS) Listed Species (and Critical Habitat) in the Action Area

Green Sea Turtle

The range of the threatened green turtle in the U.S. Atlantic includes inshore and nearshore waters from Texas to Massachusetts, occupying beaches for nesting, open ocean for convergence zones, and coastal areas for benthic feeding. Nesting in the Northern Atlantic is primarily along the coasts of Puerto Rico, the Virgin Islands, and Florida, with lower levels of nesting found in Georgia, South Carolina, and North Carolina. Green turtle nests have also been documented on Bald Head Island, North Carolina just east of the mouth of the Cape Fear River, on Onslow Island, and on Cape Hatteras National Seashore (Schwartz 1989). The first documented green turtle nest in Virginia occurred in 2005 at Back Bay National Wildlife Refuge (USFWS 2005). Increased nesting has been observed along the Atlantic Coast of Florida, on beaches where only loggerhead nesting was previously documented (Pritchard 1997). Juvenile greens occupy pelagic habitats after leaving the nesting beach and are assumed to be omnivorous, but with a strong tendency toward carnivory during early life stages (Bjorndal 1997). The summer developmental habitat for green turtles encompasses estuarine and coastal waters of the Chesapeake Bay and as far north as Long Island Sound (Musick and Limpus 1997). At approximately 20 to 25 cm carapace length, juveniles leave pelagic habitats and enter benthic areas to forage. This shifts green turtles to a mainly herbivorous diet, but they may still consume jellyfish, salps, and sponges (Bjorndal 1997). Some of the principal feeding areas in the western Atlantic Ocean include the upper west coast of Florida and the northwestern coast of the Yucatan Peninsula. Adult and juvenile green sea turtles may be found migrating and foraging within the action area from the beginning of May through the end of November.

Kemp's Ridley Sea Turtle

Behind loggerheads, Kemp's ridleys are the second most abundant sea turtle in Virginia waters, arriving in May and June (Keinath et al. 1987; Musick and Limpus 1997). Kemp's Ridleys nest from April through July each year. Virginia serves as seasonal developmental habitat for Kemp's Ridleys (Department of the Navy 2009). In the Chesapeake Bay, Kemp's Ridleys are known to forage in submerged aquatic grass beds for crabs (Musick and Limpus 1997). Examinations of stranded turtles' stomach contents have revealed blue crabs and spider crabs to be a key component of their diets (Seney 2003). Upon leaving the Chesapeake Bay in the fall, juveniles migrate down the coast, passing Cape Hatteras in December and January (Musick and Limpus 1997). Adult and juvenile Kemp's Ridleys sea turtles may be found migrating and foraging within the action area from the beginning of May through the end of November.

Leatherback Sea Turtle

Leatherback sea turtles are distributed throughout the world. Leatherback sea turtles are the largest of the sea turtles, weighing up to 2,200 pounds with a shell length of 4.5 to 5.5 feet (NMFS and USFWS, 1992). Leatherbacks are more dependent upon prey availability and reproductive requirements than upon temperature for determining their distribution because they are able to regulate their internal temperature (Eckert et al., 2012). In the North Atlantic, leatherback sea turtles show seasonal distribution, moving north along the southeast coast of the U.S. in late winter/early spring through October (Department of the Navy, 2009). In the U.S. and Caribbean, female leatherbacks nest from March through July on wide sandy beaches inclined and backed with vegetation (Department of the Navy 2009). They nest about every 2-3 years, laying between 1 and 11 clutches in a single nesting season (NMFS and USFWS 1992). Leatherbacks are predominantly pelagic feeding on gelatinous zooplankton such as jellyfish and tunicates (NMFS and USFWS 1992). In the Chesapeake Bay, leatherbacks appear to be occasionally observed, but do not appear to be regular inhabitants, although they have been recorded in numbers at the mouth of the Chesapeake Bay. Most strandings recorded in Virginia occurred along the coastal beaches outside of the Chesapeake Bay (Department of the Navy 2009). Adult and juvenile leatherback sea turtles may be found migrating and foraging within the action area from the beginning of May through the end of November.

Loggerhead Sea Turtle

Loggerhead sea turtles can be found inhabiting pelagic waters, continental shelves, bays, estuaries and lagoons in temperate and subtropical waters zones. Loggerheads are the most abundant species of sea turtle in U.S. waters, occurring throughout the inner continental shelf from Florida to Cape Cod, Massachusetts (NMFS n.d.). Loggerheads are primarily carnivorous, with hatchlings feeding on small animals in Sargassum while juveniles and adults are mostly benthic feeders, eating crustaceans and mollusks (NMFS n.d.). They have been known to also scavenge on fish (e.g., caught in nets; NMFS and USFWS, 1991). Loggerhead sea turtles are found in the Chesapeake Bay from May to late October/early November (Department of the Navy, 2009). It has been estimated that 5,000 to 10,000 loggerheads inhabit the Chesapeake Bay each summer, of which approximately 95% are juveniles (Byles 1988; Keinath et al. 1987; Musick and Limpus 1997).

There are nine DPSs identified under the ESA (Conant et al., 2009). In the Atlantic, loggerhead turtles occur from Newfoundland, Canada, to Argentina. Loggerheads potentially present in the Chesapeake Bay and its tributaries would be part of the Northwest Atlantic Ocean DPS, which is classified as threatened. Critical habitat for this DPS includes parts of the Gulf of Mexico and the Atlantic Ocean south of Delaware; therefore, there is no critical habitat in the action area.

On the Atlantic coast, female loggerheads nest from April to September primarily on narrow, steep, high-energy beaches along the coasts of Florida, Georgia, South Carolina, and North Carolina (Conant et al., 2009). Hatchlings emerge between June and November and swim or are swept away from land toward offshore ocean currents, where they can become transported to the Gulf of Mexico or North Atlantic. As they reach 7 to 12 years of age, oceanic juveniles migrate to nearshore coastal areas from Massachusetts to Texas. Adult and juvenile loggerhead sea turtles may be found migrating and foraging within the action area from the beginning of May through the end of November.

Shortnose Sturgeon

The Shortnose Sturgeon is a long-lived estuarine dependent, anadromous fish that can reach lengths of up to 4.5 feet and can weigh up to 50 pounds. The Shortnose Sturgeon primarily occurs in freshwater rivers and coastal estuaries of the Northeast and Southeast U.S. It is found from New Brunswick, Canada down to Florida, occasionally moving short distances to the mouths of estuaries and into the nearshore coastal waters (NMFS, 1998). They undergo seasonal migrations between freshwater habitats and marine waters, although their offshore dispersal is not as extensive as Atlantic sturgeon. Shortnose sturgeons occur in most major river systems along the U.S. eastern seaboard. Shortnose sturgeon are known to occur in the upper Chesapeake Bay and Potomac rivers. Recently, two Shortnose Sturgeon were captured within the James River and one was tagged. This tagged individual transited through a telemetry array surrounding Norfolk Naval Shipyard in the lower Chesapeake Bay and traveled to the Chesapeake Bay Bridge Tunnel before returning to the mouth of the James River and then swimming north into the Chesapeake Bay out of range of the array (Carter Watterson, personal communication, April 15, 2019).

The Shortnose Sturgeon spawns at or above the head-of-tide (the farthest point upstream affected by tidal fluctuations) in most rivers, which mature adults migrate to in spring. After hatching, the young-of-year remain in freshwater for about one year before moving downstream to the zone where fresh and saltwater interface. Juveniles (3 to 10 years of age) occur at the fresh-saline water interface in most rivers, where they shift slightly upstream in spring and summer and downstream in fall and winter. Adults are generally found upstream while spawning in the spring and spend the remainder of the year at the fresh and saltwater interface. In estuarine systems, juveniles and adults occupy areas with little or no current over a bottom composed primarily of mud and sand (SSSRT, 2010). In northern populations, adults and juveniles form

dense aggregations in relatively deep water during winter months (SSSRT, 2010). Individual Shortnose Sturgeon do not disperse far along the coastline beyond their home river estuaries (NMFS, 1998).

In 1967, the U.S. Department of Interior listed the Shortnose Sturgeon as endangered throughout its range (Federal Register 32 (48): 4001). NMFS has recognized 19 Distinct Population Segments. These include New Brunswick, Canada (1); Maine (2); Massachusetts (1); Connecticut (1); New York (1); New Jersey/Delaware (1); Maryland/Virginia (1); North Carolina (1); South Carolina (4); Georgia (4); and Florida (2) (NMFS, 1998a). In September 2014, a petition was created to list the population within the St. John River in New Brunswick, Canada as a distinct population segment under the ESA. In October 2015, NOAA Fisheries reassessed the DPS vs. metapopulation status of the listed entity and concluded that the Saint John River population of Shortnose Sturgeon does not constitute a DPS (FR 80 65183-65194). The Shortnose Sturgeon Recovery Plan recognized 19 DPSs; however, the 2010 Biological Assessment reclassified the listed entity into three metapopulations, or reproductively isolated groups. These three metapopulations include the Carolinian Province, Virginian Province, and Acadian Province. Critical habitat for this species has not been designated. Adult Shortnose Sturgeon may be found migrating and foraging within the action area from the beginning of March to the end of November.

The Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*) is federally listed as endangered (77 Federal Register 5880 and 77 Federal Register 5914, 6 February 2012) was identified as being in waters adjacent to the Proposed Action area. No Recovery Plan has been published for the Atlantic sturgeon.

Atlantic sturgeon require freshwater for spawning and embryo and larval rearing, which in the James River is likely at the Turkey Island oxbow and Jones Neck oxbow, north of river kilometer (rkm) 120 (NMFS 2021). JBLE – Eustis is located at approximately rkm 30. Subadults, nonspawning adults, and post-spawned adults use the brackish waters of the Chesapeake Bay and James River in the spring through the fall (**Table 1**). This may include subadults and adults that are not natal to these locations or the Chesapeake

Table 1. Section 7 Species Presence Table: Atlantic Sturgeon in the Chesapeake Bay and James River

Body of Water (State)	Distribution/Range in Watershed	Life Stage	Use of Watershed	References
Chesapeake Bay (MD/VA)	Throughout the bay typically in spring through fall	Juveniles, subadults, and adults	**Migration** – April-November for adults [5] and subadults [1]; year round for juveniles [2] [3]; these life stages wander among coastal and estuarine habitats [5] **Foraging** – typically in areas where suitable forage and appropriate habitat conditions are present; typically tidally influenced flats and mud, sand and mixed cobble substrates [4]	1] Dovel and Berggren 1983; [2] Secor et al. 2000; [3] Welsh et al. 2002; [4] Stein et al. 2004; [5] Horne and Stence 2016
James River, including the Appomattox and Chickahominy River tributaries (VA)	Up to Boshers Dam (rkm 182.3); Appomattox River – Range not confirmed, but they have been documented in this river (likely up to Battersea Dam, rkm 21)	Eggs, larvae, YOY, juveniles, subadults, and adults	**Staging** – likely done by fall spawners, during summer and fall in brackish water before and after the fall spawn (rkm 22-107) [4] **Spawning** – both a spring (likely at rkm 90-95) [4] and fall spawning event (likely between rkm 105 and the fall line near Richmond, VA, at rkm 155)[3]; likely occurring in the Appomattox River due to the presence of sturgeon during the spawning season and the presence of features necessary to support reproduction [6] **Rearing** – freshwater reaches downstream of spawning locations [1][2]; juveniles likely present throughout the river year round **Foraging** – where suitable forage and appropriate habitat conditions are present [2][5]	[1] Florida Museum of Natural History 2004; [2] ASSRT 2007; [3] Balazik et al. 2012; [4] Balazik and Musick 2015; [5] The Hopewell News 2013; [6] Balazik pers. comm. 2021

Source: NMFS 2022 (accessed 10 May 2022)
rkm – river kilometer(s); **YOY** – young of the year

Bay Distinct Population Segment (DPS). In addition, spawning adults may migrate upriver April to May and again in the fall, and apparently stage for fall spawning over the summer in the James River between rkm 22 and rkm 107 (Balakik and Musick 2015). Aerial spraying activities, proposed to occur from May through October, may overlap with juvenile, subadult, and nonspawning adult foraging or when spawning adults are moving between marine waters and spawning locations. While not been documented in the Back River, juveniles, subadults, and adult Atlantic sturgeon may be present during aerial spraying activities on JBLE – Langley (**Table 1**). However, as reported by the VIMS (2005), studies have reported that while juveniles are within their nursery habitat, they remain upstream during the warmer months and overwinter in the deeper waters of the lower estuary, which would limit potential exposure in the late spring, summer, and early fall.

Atlantic sturgeon are bottom feeders, consuming organisms such as crustaceans, worms, and mollusks as well as bottom-dwelling fish. However, some prey species may use the tidal wetlands of submerged and emergent vegetation.

Specific occupied areas designated as critical habitat for the Chesapeake Bay DPS of Atlantic sturgeon contain approximately 773 kilometers (480 miles) of aquatic habitat in the following rivers of Maryland, Virginia, and the District of Columbia: Potomac, Rappahannock, York, Pamunkey, Mattaponi, James, Nanticoke, and the following other water body: Marshyhope Creek (82 Federal Register 39160, 18 September 2017). Designated critical habitat in the James River (Chesapeake Bay Unit 5) includes waters adjacent to JBLE – Eustis. The Back River is outside the mouth of the York River and the Chesapeake Bay Unit 4 designated critical habitat. Critical habitat according to section 3 of the ESA is "(1) the specific areas within the geographical area occupied by the species, at the time it is listed, on which are found those physical or biological features (a) essential to the conservation of the species and (b) which may require special management considerations or protection; and (2) specific areas outside the geographical area occupied by the species at the time it is listed, upon a determination by the Secretary that such areas are essential for the conservation of the species." The critical habitat for Atlantic sturgeon consists of four physical or biological features (PBFs):

Commented [B12]: You should also include which PBFs are present within the proposed action area.

1. Hard bottom substrate (e.g., rock, cobble, gravel, limestone, boulder, etc.) in low-salinity waters (i.e., 0.0 to 0.5 ppt range) for settlement of fertilized eggs, refuge, growth, and development of early life stages;

2. Aquatic habitat with a gradual downstream salinity gradient of 0.5 up to as high as 30 ppt and soft substrate (e.g., sand, mud) between the river mouth and sites for juvenile foraging and physiological development;

3. Water of appropriate depth and absent physical barriers to passage (e.g., locks, dams, thermal plumes, turbidity, sound, reservoirs, gear, etc.) between the river mouth and spawning sites necessary to support: (1) unimpeded movements of adults to and from spawning sites, (2) seasonal and physiologically dependent movement of juvenile Atlantic sturgeon to appropriate salinity zones within the river estuary, and (3) staging, resting, or holding of subadults or spawning condition adults. Water depths in main river channels must also be deep enough (e.g., at least 1.2 meters) to ensure continuous flow in the main channel at all times when sturgeon of any life stage would be in the river; and,

4. Water, between the river mouth and spawning sites, especially in the bottom meter of the water column, with the temperature, salinity, and oxygen values that, combined, support (1) spawning; (2) annual and interannual adult, subadult, larval, and juvenile survival; and (3) larval, juvenile, and subadult growth, development, and recruitment.

~~Water, between the river mouth and spawning sites, especially in the bottom meter of the water column, with the temperature, salinity, and oxygen values that, combined, support (1) spawning; (2) annual and interannual adult, subadult, larval, and juvenile survival; and (3) larval, juvenile, and subadult growth, development, and recruitment.~~**Effects Determination**

The threat to the Atlantic sturgeon applicable to the Proposed Action is habitat degradation, specifically impacts to water quality through the introduction of contaminants that may impact staging and foraging activities.

Aerial spraying events are not expected to significantly contribute to contaminants found within the James and Back rivers. Naled and its degradate dichlorvos (DDVP) degrade rapidly in the environment, and both have a dissipation half-life of less than two days (USEPA 2020). In addition, the very small droplets from the ULV spraying allow naled to rapidly diffuse into the atmosphere (Hanson et al. 2018). Within water, the rate of degradation is further enhanced by sunlight and temperature (Jones et al. 2020). This rapid degradation means that naled and DDVP that may end up in surface water runoff would diminish quickly after rain events (USEPA 2020). Because of the low mobility of pyrethrins and pyrethroids in soil surfaces, these compounds are rarely detected at elevated levels in drinking water or groundwater, with the exception of spills and shallow wells near agricultural areas (Agency for Toxic Substances and Disease Registry [ATSDR] 2003). Pyrethrins and pyrethroids are also generally rapidly degraded by microorganisms in soil and water, as well as by sunlight on the surfaces of water, soil, or plants (ATSDR 2003). Although malathion has some mobility characteristics, its short soil persistence in conjunction with its relatively quick degradation reduces exposure (USEPA 2009). In water, malathion has a relatively short half-life of between 2 and 18 days, depending on conditions like temperature and pH (National Pesticide Information Center 2010).

Potential adverse effects on the federally endangered Atlantic sturgeon from the aerial application of mosquito control insecticides would be short term and minor. Naled, pyrethrins and pyrethroids, and malathion products are ranked as being highly to very highly toxic to anadromous fish such as the Atlantic sturgeon (Gianou 2012). To decrease the potential for adverse impacts of these adulticides in marine habitats, application would strictly comply with label requirements to avoid application over waterbodies and accomplish spraying when weather conditions are optimal to avoid potential drift and runoff. In addition, the limited time frame and number of annual applications would further reduce risks. Neither Bti nor B.s. have been shown to have adverse effects on fish (USEPA 2014). While the use of insecticides has been shown to be highly to very highly toxic to estuarine invertebrates (US Department of Agriculture 2019; USEPA 2004, 2008, 2016, 2020), as described above the adherence to label requirements to minimize the potential for runoff and drift and the limited number of applications would minimize the potential for adverse impacts to aquatic organisms and Atlantic sturgeon prey.

Potential adverse effects on the Atlantic sturgeon from the aerial application of herbicides for the control of common reed are expected to be short term and negligible. No potential direct risks from glyphosate to estuarine/marine fish have been identified and, while the effects of imazapyr on estuarine/marine fish have not been characterized, they are assumed to have similar sensitivity (practically nontoxic) as freshwater fish. The Proposed Action for common reed control may provide long-term beneficial effects on designated critical habitat PBFs for the Atlantic sturgeon in the James River. As discussed above for fish, while common reed may be used for cover and shade for fish, it is often detrimental to the mobility of juvenile fish.

The Proposed Action does not have the potential to adversely impact the PBFs for the Atlantic sturgeon's designated critical habitat in the James River. The reduction of common reed and potential reestablishment

Commented [B13]: You will need to include effects on sea turtles

Commented [MR14]: State clearly in this section which chemicals you will use for each application. Your Effects Determination should analyze the specific chemicals, amount to be applied compared to concentration thresholds for ESA-listed species, and possible effects of each chemical on ESA-listed species. This website likely contains the information you need for this analysis of effects: https://cfpub.epa.gov/ecotox/

Commented [B15]: Can you provide some additional information about how these chemicals may impact staging and foraging?

Commented [B16]: What is the basis for this conclusion? Do you have information on baseline contaminant levels in the action area?

Commented [B17]: This may be a dumb question, but how can this be an effective mosquito control method if the droplets rapidly diffuse in the atmosphere?

Commented [B18]: How much sunlight and what temperatures?

Commented [B19]: What are the specific label requirements?

Commented [B20]: What are the optimal weather conditions to avoid drift and runoff?

Commented [B21]: I think you should first identify what PBFs may be present, then explain how the proposed action may affect the PBF, and then make a determination about those effects.

of native tidal marsh vegetation may improve habitat for prey species, thus potentially improving foraging habitat.

Conclusion

JBLE has made a *may affect, not likely to adversely affect* determination for the Atlantic sturgeon due to the potential minor and short-term adverse effects from the low potential for drift or runoff of insecticides into adjacent waterways. JBLE has made a no effects determination for the Atlantic sturgeon's designated critical habitat.

References:

Agency for Toxic Substances and Disease Registry (ATSDR). 2003. Toxicological Profile for Pyrethrins and Pyrethroids. Atlanta, GA: US Department of Health and Human Services; September 2003.

Balazik M. T. and J. A. Musick. 2015. Dual Annual Spawning Races in Atlantic Sturgeon. PLoS ONE 10(5): e0128234. doi:10.1371/journal.pone.0128234.

Bender, M. E. 1986. The York River: A Brief Review of Its Physical, Chemical and Biological Characteristics. Virginia Institute of Marine Science, William & Mary. Accessed 9 May 2022. <https://doi.org/10.21220/V5JD9W>.

Berman, M., S. Killeen, R. Mann, and J. Wesson. 2002. Virginia Oyster Reef Restoration Map Atlas. Virginia Institute of Marine Science and Virginia Marine resources Commission. Accessed 9 May 2022. <https://www.vims.edu/research/units/labgroups/molluscan_ecology/archive/restoration/va_restoration_atlas/index.php>.

Gianou, K. L. 2012. Aquatic Pesticide Best Management Practices and Relational Database for the Protection of NOAA Trust Species. Marine Resource Management Program, College of Earth, Oceanic, & Atmospheric Sciences. Oregon State University. 11 May 2012.

Hanson, W, A. Cross, and J. Jenkins. 2018. Naled General Fact Sheet. National Pesticide Information Center, Oregon State University Extension Services. Accessed 17 January 2022. <npic.orst.edu/factsheets/naledgen.html>.

Jones, A. S., D. Cohen, F. Alberdi, A. Sanabria, N. Clausell, M. Roca, A. K. Fionah, N. Kumar, H. M. Solo-Gabriele, and E. Zahran. 2020. Persistence of Aerially Applied Mosquito-Pesticide, Naled, in Fresh and Marine Waters. Department of Civil, Architectural and Environmental Engineering, University of Miami, Coral Gables, FL

Moore, K, D. Wilcox, R. Orth, and E. Bailey. 1999. Analysis of Historical Distribution of Submerged Aquatic Vegetation (SAV) in the James River. Prepared for Virginia Coastal Resources Management Program; The Department of Conservation and Recreation. Special Report No. 355. April 1999.

National Marine Fisheries Service (NMFS). 2021. Chesapeake Bay Distinct Population Segment of Atlantic Sturgeon (*Acipenser oxyrinchus oxyrinchus*). 5-Year Review: Summary and Evaluation. National Marine Fisheries Service, Greater Atlantic Regional Fisheries Office, Gloucester, Massachusetts.

National Marine Fisheries Service (NMFS). 2022. Section 7 Species Presence Table: Atlantic Sturgeon in the Greater Atlantic Region. Accessed 10 May 2022. < https://www.fisheries.noaa.gov/new-england-mid-atlantic/consultations/section-7-species-presence-table-atlantic-sturgeon-greater>.

National Oceanic and Atmospheric Administration (NOAA). 2010. Tides & Currents Datums for 8638017, Fort Eustis (MARAD), James River, VA. Accessed 9 May 2022. <https://tidesandcurrents.noaa.gov/datums.html?id=8638017>.

National Oceanic and Atmospheric Administration (NOAA). 2019. Tides & Currents Datums for 8637689, Yorktown USCG Training Center, VA. Accessed 9 May 2022. <https://tidesandcurrents.noaa.gov/datums.html?id=8637689>.

National Pesticide Information Center. 2010. Malathion General Fact Sheet. Oregon State University and the US Environmental Protection Agency (USEPA, cooperative agreement # X8-83458501).

Nichols, M. M. 1972. Effect of Increasing Depth on Salinity in the James River Estuary. VIMS Books and Book Chapters. 17. Accessed 9 May 2022. <https://scholarworks.wm.edu/vimsbooks/17>.

Orth, R. J., J. F. Nowak, G. F. Anderson, D. J. Wilcox, J. R. Whiting, and L. S. Nagey. 1996. Distribution of Submerged Aquatic Vegetation in the Chesapeake Bay and Tributaries and Chincoteague Bay

– 1995. College of William and Mary School of Marine Science, Virginia Institute of Marine Science, Gloucester Point, Virginia.

US Department of Agriculture. 2019. Final Human Health and Ecological Risk Assessment for Malathion Rangeland Grasshopper and Mormon Cricket Suppression Applications. November 2019.

US Environmental Protection Agency (USEPA). 2004. Naled Analysis of Risks to Endangered and Threatened Pacific Salmon and Steelhead. Environmental Field Branch, Office of Pesticide Programs.

US Environmental Protection Agency (USEPA). 2008. Risks of Permethrin Use to the Federally Threatened California Red-legged Frog (*Rana aurora draytonii*) and Bay Checkerspot Butterfly (*Euphydryas editha bayensis*), and the Federally Endangered California Clapper Rail (*Rallus longirostris obsoletus*), Salt Marsh Harvest Mouse (*Reithrodontomys raviventris*), and San Francisco Garter Snake (*Thamnophis sirtalis tetrataenia*). Pesticide Effects Determinations. Environmental Fate and Effects Division Office of Pesticide Programs, Washington, DC. 20 October 2008.

US Environmental Protection Agency (USEPA). 2009. Reregistration Eligibility Decision (RED) for Malathion. Case No. 0248. EPA 738-R-06-030. May 2009.

US Environmental Protection Agency (USEPA). 2014. Fact Sheet *Bacillus sphaericus* 2362, Serotype H5a5b, Strain ABTS 1743, (PC Code 119803). Accessed 30 March 2022. <https://www3.epa.gov/pesticides/chem_search/reg_actions/registration/fs_PC-119803_06-May-14.pdf>.

US Environmental Protection Agency (USEPA). 2016. Ecological Risk Management Rationale for Pyrethroids in Registration Review. Office of Chemical Safety and Pollution Prevention.

US Environmental Protection Agency (USEPA). 2020. Draft Ecological Risk Assessment for the Registration Review of Dichlorvos (DDVP), Naled, and Trichlorfon. Office of Chemical Safety and Pollution Prevention. 17 June 2020.

Virginia Institute of Marine Science (VIMS). 2005. Essential Fish Habitat of Atlantic Sturgeon *Acipenser oxyrinchus* in the Southern Chesapeake Bay. VIMS Special Scientific Report #145. 5 November 2005.

Virginia Institute of Marine Science (VIMS). 2019. Salinity Regime, Chesapeake Bay Program and Delmarva Peninsula Coastal Bay Segments by Salinity Zone. Accessed 9 May 2022. <https://www.vims.edu/research/units/programs/sav/reports/2012/salinity_regime.php>.

Commonwealth of Virginia

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

1111 E. Main Street, Suite 1400, Richmond, Virginia 23219
P.O. Box 1105, Richmond, Virginia 23218
(800) 592-5482 FAX (804) 698-4178
www.deq.virginia.gov

Travis A. Voyles
Acting Secretary of Natural and Historic Resources

Michael S. Rolband, PE, PWD, PWS Emeritus
Director
(804) 698-4020

September 15, 2022

Mr. David M. Jennings
Environmental Chief
Langley AFB
Sent via email: david.jennings.4@us.af.mil

RE: **Conditional Concurrence for the U.S. Air Force Federal Consistency Determination**: Aerial Application of Pesticide for Mosquito and Invasive Plant Species Control at Joint Base Langley-Eustis (DEQ 22-110F)

Dear Mr. Jennings:

The Commonwealth of Virginia has completed its review of the federal consistency determination (FCD) for the above-referenced project. The Department of Environmental Quality (DEQ) is responsible for coordinating Virginia's review of FCDs and responding on behalf of the Commonwealth. This letter is in response to the FCD that was submitted on July 21, 2022. DEQ conditionally concurs that the project is consistent to the maximum extent practicable with the enforceable policies of the Virginia Coastal Zone Management (CZM) Program (see page 3). The following agencies and locality participated in this review:

Department of Environmental Quality
Department of Conservation and Recreation
Department of Wildlife Resources
Department of Health
Department of Historic Resources
Marine Resources Commission
City of Newport News

The Department of Forestry, City of Hampton, York County and Hampton Roads Planning District Commission also were invited to comment.

PROJECT DESCRIPTION

The U.S. Department of the Air Force (USAF) submitted a FCD for the proposed aerial application of pesticide at Joint Base Langley-Eustis (JBLE). The FCD states that the proposed action is necessary to control mosquitoes and invasive plant species across large areas of JBLE and to reach remote portions of JBLE that are not reasonably accessible for application by land or watercraft. The goal is to apply pesticides aerially to achieve the maximum kill of the targeted pests (particularly mosquitoes and common reed) with minimal adverse impacts on the environment. Common reed control would occur within specific areas where aerial applications would be feasible within the approximately 600 acres of common reed at JBLE – Eustis and on approximately 145 acres on JBLE – Langley. Aerial application of pesticides for mosquito control would not exceed three applications per year and would typically occur from May through October. Aerial application of herbicides for common reed control would not exceed one application per year with the need expected to be reduced in succeeding years depending on the efficacy determined through annual monitoring.

FEDERAL CONSISTENCY UNDER THE COASTAL ZONE MANAGEMENT ACT

This FCD is submitted pursuant to the federal consistency regulation 15 Code of Federal Regulations Part 930 Subpart C Section 930.31. Pursuant to the Coastal Zone Management Act of 1972, as amended, federal activities located inside or outside of Virginia's designated coastal management area that can have reasonably foreseeable effects on coastal resources or coastal uses must, to the maximum extent practicable, be implemented in a manner consistent with the Virginia Coastal Zone Management (CZM) Program. The Virginia CZM Program consists of a network of programs administered by several agencies. In order to be consistent with the Virginia CZM Program, the project activities must be consistent with the enforceable policies of the Virginia CZM Program and all the applicable permits and approvals listed under the enforceable policies of the Virginia CZM Program must be obtained prior to commencing the project. DEQ coordinates the review of FCDs with agencies administering the enforceable and advisory policies of the Virginia CZM Program.

PUBLIC PARTICIPATION

In accordance with 15 CFR §930.2, a public notice of this proposed action was published in the DEQ Office of Environmental Impact Review Program Newsletter and on the DEQ website from August 2, 2022 to August 26, 2022. No public comments were received in response to the notice.

FEDERAL CONSISTENCY: CONDITIONAL CONCURRENCE

Based on our review (which commenced July 21, 2022) of the FCD and the comments submitted by agencies administering the enforceable policies, DEQ conditionally concurs that the proposal is consistent to the maximum extent practicable with the enforceable policies of the Virginia CZM Program provided it complies with all the applicable permits, approvals, and conditions of the enforceable policies of the Virginia CZM Program. DEQ's decision is due on September 19, 2022.

Conditions which must be satisfied for the project to be consistent with the Wildlife and Inland Fisheries Enforceable Policy, which is administered by the Department of Wildlife Resources (DWR):

1. To best protect listed species and other resources under DWR's jurisdiction from activities associated with this project, the pesticide and herbicide applications must be performed by certified pesticide and herbicide applicators, and the applications must be performed in accordance with the label recommendations.
2. No pesticide should be applied over open bodies of water that lack tree canopy cover or that are otherwise exposed from above.
3. No herbicide should be applied over open bodies of water beyond that which is necessary for the control of coastal and estuarine wetland invasive plants.
4. Project activities should proceed in accordance with the Langley Air Force Base and Fort Eustis Integrated Natural Resources Management Plans (INRMPs).
5. To best protect Colonial Waterbirds from activities associated with this project, adhere to a time-of-year restriction on any pesticide spraying from May 1 through July 31 of any year.

Reasons that the conditions are necessary to ensure consistency with the Wildlife and Inland Fisheries Enforceable Policy:

If the federal agency does not adhere to the above-referenced conditions, then the project would be inconsistent with the wildlife and inland fisheries enforceable policy for the following reasons:

1. Aerial applications must avoid, to the greatest practicable extent, adverse impacts upon non-target species/habitats, including species under DWR jurisdiction. Certified applicators are professionally trained in measures to avoid

spills, over-applications, or other forms of misuse that may adversely impact non-target species/habitats in the project area. Pesticide and herbicide labels provide critical information on how to avoid impacts to non-target species while using the product.

2. Aquatic and/or shore species under DWR jurisdiction that are exposed to pesticides may be adversely impacted by exposure. Pesticide that is applied over open bodies of water lacking tree canopy cover or other protection from above is not captured before reaching the water, where nearby aquatic and/or shore species may then be exposed.

3. DWR understands that some of the invasive coastal and estuarine wetland plants targeted for control in the project area occur in open bodies of water. However, herbicide applied at a greater quantity, which is not labeled for use in open water, or over a greater geographic area than is necessary for the control of the targeted invasive plants poses an unnecessary risk of exposure to aquatic and/or shore species in the project area, which may be adversely impacted by exposure.

4. INRMPs are designed to align Department of Defense (DoD) land management practices with Virginia environmental goals and to ensure compliance with federal and state environmental laws and policies. INRMPs are the mechanism by which wildlife, fish, and game conservation and management is coordinated across federal and state agencies to ensure wildlife and their habitats are appropriately protected and managed on military lands.

5. Several Colonial Waterbird colonies, known to support Yellow-Crowned Night Herons, Least Terns, Green Herons, Great Blue Herons, and other waterbird species, have been documented from the Langley and Eustis project areas. If rookeries are present in the project areas, flightless chicks may be impacted by the aerial spraying of pesticides because they are unable to leave the area and would be exposed either through drift or direct spraying. Therefore, the time-of-year restriction is necessary.

If the requirements of paragraphs (a)(1) through (3) of Section 930.4 of the federal consistency regulations are not met, then all parties shall treat the state agency's conditional concurrence letter as an objection pursuant to the applicable subpart.

In addition, in accordance with 15 CFR Part 930, subpart C, § 930.39(c), the USAF has considered the advisory policies of the Virginia CZM Program (https://www.deq.virginia.gov/permits-regulations/environmental-impact-review/federal-

consistency). However, other state approvals which may apply to this project are not included in this FCD. Therefore, the federal agency must also ensure that this project is constructed and operated in accordance with all applicable federal, state and local laws and regulations.

ANALYSIS OF ENFORCEABLE POLICIES

The analysis which follows responds to the discussion of the enforceable policies of the Virginia CZM Program that apply to this project and review comments submitted by agencies that administer these enforceable policies.

1. Air Pollution Control. The FCD (pages 14-15) states that air quality from the operation of aircraft would be minor as emissions from the aircraft are intermittent and short term. Drift of aerially applied pesticides, either in particulate or vapor form, can affect animals and humans that are in the immediate vicinity of the drift. However, drift impacts from aerial application would be controlled using all best management practices and drift prevention requirements. Also, pesticide labels have information on how to reduce the risk of drift. The implementation of the project would follow prescribed label instructions, be consistent with good practices, and perform application when weather conditions are appropriate to minimize risk of drift.

1(a) Agency Jurisdiction. The policy is administered by DEQ through the federal Clean Air Act and Virginia's legally enforceable State Implementation Plan for the attainment and maintenance of the National Ambient Air Quality Standards. It is the policy of the Commonwealth to abate, control, and prohibit air pollution throughout the Commonwealth (Virginia Code § 10.1-1308), to include: asphalt paving operations in volatile organic compound emission control areas (Virginia Code §§ 10.1-1308 and -1322; 9 VAC §§ 5-20-206 and -45-780), open burning (Virginia Code §§ 10.1-1308 and -1322; 9 VAC §§ 5-80-1105, -130-10, -130-30 to -50, 20-60-30, and 5-60-200), fugitive dust emissions (Virginia Code §§ 10.1-1308 and -1322; 9 VAC §§ 5-50-90 and -40-90), state operation permits (Virginia Code §§ 10.1-1308 and -1322; 9 VAC § 5-80-800), and new source review (Virginia Code §§ 10.1-1308 and -1322; 9 VAC §§ 5-80-1100, -1400, -1605, and -2000).

1(b) Ozone Attainment Area. According to the DEQ Air Division, the project site is located in an ozone attainment area and an emission control area for volatile organic compounds (VOCs) and oxides of nitrogen (NO_X), which are contributors to ozone pollution.

1(c) Requirements – Fugitive Dust. During land-disturbing activities, fugitive dust must be kept to a minimum by using control methods outlined in 9VAC5-50-60 *et seq*. of the

Regulations for the Control and Abatement of Air Pollution. These precautions include, but are not limited to, the following:

- Use, where possible, of water or suitable chemicals for dust control during the proposed demolition and construction operations and from material stockpiles;
- Installation and use of hoods, fans and fabric filters to enclose and vent the handling of dusty materials;
- Covering of open equipment for conveying materials; and
- Prompt removal of spilled or tracked dirt or other materials from paved streets and removal of dried sediments resulting from soil erosion.

1(d) Agency Recommendation. DEQ recommends that the applicant use all necessary precautions to restrict the emissions of VOCs and NO_X during construction.

1(e) Conclusion. Provided the project complies with applicable requirements, it would be consistent to the maximum extent practicable with the point source air pollution enforceable policy of the Virginia CZM Program.

2. Tidal and Non-Tidal Wetlands. The FCD (page 11) states that the locations proposed for aerial application are located on and near wetlands, as both common reed and mosquitoes thrive in those areas. Common reed would ultimately be replaced with native vegetation. There would be no need to fill or alter wetlands on JBLE beyond replacing an invasive wetland vegetation species with native species. Therefore, there would be no loss or destruction of wetlands on the installation under the proposed project.

2(a) Agency Jurisdiction. The purpose of the policy is to preserve and protect wetlands and non-tidal surface waters, to prevent their despoliation and destruction, and accommodate necessary economic development in a manner consistent with wetlands preservation. Impacts to wetlands and streams shall be avoided or minimized to the maximum extent practicable. Tidal Wetlands are administered by the Virginia Marine Resources Commission (VMRC) under the authority of the Tidal Wetlands Act of 1972 (*Virginia Code § 28.2-1301 and -1308; 4 VAC § 20-390-20*). Tidal and Nontidal Wetlands are administered by the Department of Environmental Quality (DEQ) through the Virginia Water Protection Permit program and includes Water Quality Certification pursuant to Section 401 of the Clean Water Act (*Virginia Code §§ 62.1-44.15:20 and -44.15:21; and 9 VAC §§ 25-210-10, -210-45, 210-80, 260-10, -380, -390*).

2(b) DEQ Findings. The DEQ Tidewater Regional Office (TRO) states that the use of herbicides and pesticides within state surface waters does not require a Virginia Water

Protection Permit (VWPP), as it is authorized under the Virginia Pollution Discharge Elimination System (VPDES) program (9VAC25-210-60 2).

In addition, pesticide and herbicide use is considered jurisdictional for the Virginia Marine Resources Commission (VMRC) when a tidal wetlands plant is located within 1.5 times the mean tide range above mean low water. The decision of whether a permit is required is generally up to the local wetlands board within the associated locality, and may depend upon the specific application/treatment plan.

2(c) VMRC Findings. VMRC states that the proposed project involves application of herbicide over tidal wetlands to target Phragmites australis. Phragmites is a jurisdictional tidal wetlands plant when it is located within 1 ½ times the mean tide range above mean low water.

2(d) VMRC Recommendations. VMRC would likely discourage killing or removal of Phragmites within a jurisdictional tidal wetland without a plan for re-vegetation with other wetland species.

2(e) Requirements. VMRC states that approval may be required from the local wetlands boards for the proposed project.

2(f) Conclusion. Provided that any and all necessary permits are obtained and complied with, the project would be consistent to the maximum extent practicable with the tidal and non-tidal wetlands enforceable policy of the Virginia CZM Program.

3. Wildlife and Inland Fisheries. According to the FCD (page 6), aerial application of pesticides for mosquito control would not exceed three applications per year and would typically occur from May through October. Impacts to wildlife and freshwater fish from aerial mosquito control are expected to be short term and negligible to minor due to the low amount of pesticides that would be used, adherence to label requirements, and the low persistence of most of these pesticides. Low- altitude overflights during mosquito treatment may startle bald eagles during nesting and fledging; however, active nests would be avoided during treatment.

3(a) Agency Jurisdiction. The Department of Wildlife Resources (DWR) administers the enforceable policy for activities affecting wildlife and inland fisheries to ensure they do not negatively impact the Commonwealth’s efforts in conserving, protecting, replenishing, propagating and increasing of the supply of game birds, game animals, fish and other wildlife of the Commonwealth(Virginia Code §§ 29.1-501, -512, -521, -530.2, -531, -533, -542, -543.1, -545, -548, -549, -550, -552, -554, -556, -569, and -574; 4 VAC §§ 15-30-10, -20, -50, and 15-290-60), fish or wildlife listed as threatened or

endangered by the Department of Wildlife Resources Board(Virginia Code §§ 29.1-501, -564, -566, -567, and -568; 4 VAC §§ 15-20-130 and -140), the use of drugs on vertebrate wildlife (Virginia Code § 29.1-501 and -508.1), and nonindigenous aquatic nuisance, predatory, or undesirable species (Virginia Code §§ 29.1-501, -542, -543.1, -545, -569, -571, -574, and -575; 4 VAC §§ 15-20-210, -30-20, -30-40, and 15-290-60).

3(b) Agency Findings. DWR documents state-listed endangered Canebrake Rattlesnakes from the Langley project area. The Langley project area also models out as potential habitat for state-listed threatened Henslow's Sparrows and Mabee's Salamanders. The Eustis project area models out as potential habitat for several federal and state listed species as well, including Canebrake Rattlesnakes, Henslow's Sparrows, and Mabee's Salamanders. The James River in the Eustis project area is designated an Anadromous Fish Use Area, known to support several species of anadromous fish.

Historic and/or active Bald Eagle nests are documented from the Langley project area. The Eustis project site is also located within, or within close proximity to, a shoreline which has been designated as a Bald Eagle Concentration Zone. Significant habitat alteration, location of water-dependent facilities within concentration zones, or other recreational and commercial activities may result in adverse impacts upon eagles.

3(c) Conditions for Consistency. DWR states that the USAF must adhere to the following conditions in order to be consistent with the wildlife and inland fisheries enforceable policy:

1. To best protect listed species and other resources under DWR's jurisdiction from activities associated with this project, the pesticide and herbicide applications must be performed by certified pesticide and herbicide applicators, and the applications must be performed in accordance with the label recommendations.
2. No pesticide should be applied over open bodies of water that lack tree canopy cover or that are otherwise exposed from above.
3. No herbicide should be applied over open bodies of water beyond that which is necessary for the control of coastal and estuarine wetland invasive plants.
4. Project activities should proceed in accordance with the Langley Air Force Base and Fort Eustis Integrated Natural Resources Management Plans (INRMPs).
5. To best protect Colonial Waterbirds from activities associated with this project, adhere to a time-of-year restriction on any pesticide spraying from May 1 through July 31 of any year.

3(d) General Recommendations – Bald Eagles. DWR recommends that the applicant ensure that this project is consistent with state and federal guidelines for protection of

bald eagles, including coordination, if indicated, with the U.S. Fish and Wildlife Service (FWS) regarding possible impacts upon bald eagles or the need for a federal bald eagle take permit.

3(e) UASF Response. The USAF states (email, September 14, 2022) that it can adhere to the conditions as listed in 3(c), and the federal agency will ensure that the Finding of No Significant Impact (FONSI) notes the time-of-year restrictions.

3(f) Conclusion. Assuming adherence to the conditions for pesticide and herbicide application and the protection of listed species and/or designated resources under its jurisdiction, as depicted in Item 3(c) Conditions for Consistency, DWR finds this project to be consistent to the maximum extent practicable with the wildlife and inland fisheries enforceable policy of the Virginia CZM Program.

4. Point Source Water Pollution. The FCD (page 15) states that pesticide applications at both installations shall be performed in accordance with VPDES General Permit VAG87 as specified in 9VAC25-800.

4(a) Agency Jurisdiction. The policy is administered by DEQ to protect existing high quality state waters and restore all other state waters to permit all reasonable public uses and support the propagation and growth of all aquatic life. Legal authority is granted by the National Pollutant Discharge Elimination System (NPDES) permit program established pursuant to Section 402 of the federal Clean Water Act and administered by DEQ as the Virginia Pollutant Discharge Elimination System (VPDES) permit program (*Virginia Code § 62.1-44.2; 9 VAC § 25-31-20*).

4(b) Requirements. DEQ states that the use of herbicides and pesticides is authorized under the VPDES program (9VAC25-210-60 2). DEQ states that the proposed activities may require a VPDES pesticide general permit (VAG87).

4(c) Conclusion. Provided that any and all necessary permits are obtained and complied with, the project would be consistent to the maximum extent practicable with the point source water pollution enforceable policy of the Virginia CZM Program.

ADDITIONAL ENVIRONMENTAL CONSIDERATIONS

In addition to the enforceable policies of the Virginia CZM Program, comments also were provided with respect to applicable requirements and recommendations of the following programs:

1. Historic Structures and Architectural Resources.

1(a) Agency Jurisdiction. The Virginia Department of Historic Resources (DHR) conducts reviews of both federal and state projects to determine their effect on historic properties. Under the federal process, DHR is the State Historic Preservation Office, and ensures that federal undertakings – including licenses, permits, or funding – comply with Section 106 of the National Historic Preservation Act of 1966, as amended, and its implementing regulation at 36 CFR Part 800. Section 106 requires federal agencies to consider the effects of federal projects on properties that are listed or eligible for listing on the National Register of Historic Places. For state projects or activities on state lands, DHR is afforded an opportunity to review and comment on (1) the demolition of state property; (2) major state projects requiring an EIR; (3) archaeological investigations on state-controlled land; (4) projects that involve a landmark listed in the Virginia Landmarks Register; (5) the sale or lease of surplus state property; (6) exploration and recovery of underwater historic properties; and (7) excavation or removal of archaeological or historic features from caves. See DHR's website for more information about applicable state and federal laws and how to submit an application for review: http://www.dhr.virginia.gov/StateStewardship/Index.htm.

1(b) Agency Findings. DHR believes that no historic properties listed in or eligible for listing in the National Register of Historic Places or Virginia Landmarks Register will be affected by this undertaking.

2. Public Drinking Water.

2(a) Agency Jurisdiction. The Virginia Department of Health (VDH) Office of Drinking Water (ODW) reviews projects for the potential to impact public drinking water sources (groundwater wells, springs and surface water intakes). VDH administers both federal and state laws governing waterworks operation.

2(b) Agency Findings. The VDH ODW states that the public groundwater wells are located within a 1-mile radius of the project site:

PWS ID Number	City/County	System Name	Facility Name
3700500	NEWPORT NEWS	NEWPORT NEWS, CITY OF	WELL 1A
3700500	NEWPORT NEWS	NEWPORT NEWS, CITY OF	WELL 1B
3700500	NEWPORT NEWS	NEWPORT NEWS, CITY OF	WELL 3B
3700500	NEWPORT	NEWPORT NEWS, CITY	WELL 3A

	NEWS	OF	

The following surface water intakes are located within a 5-mile radius of the project site:

PWS ID Number	System Name	Facility Name
3700500	NEWPORT NEWS, CITY OF	HARWOOD MILL
3700500	NEWPORT NEWS, CITY OF	LEE HALL
3700500	NEWPORT NEWS, CITY OF	SKIFFES CREEK

The project is not within the watershed of any public surface water intakes.

2(c) Agency Recommendations. VDH has the following recommendations as applicable:

- Implement best management practices, including erosion and sedimentation controls and spill prevention controls and countermeasures, on the project site.
- Manage materials while on site and during transport to prevent impacts to nearby surface water.

3. Pesticides and Herbicides. In general, when pesticides or herbicides must be used, their use should be strictly in accordance with manufacturers' recommendations. In addition, DEQ recommends that the responsible agent use the least toxic pesticides or herbicides effective in controlling the target species. For more information on pesticide or herbicide use, please contact the Virginia Department of Agriculture and Consumer Services (804- 371-6560).

4. Natural Heritage Resources.

4(a) Agency Jurisdiction.

4(a)(i) The Virginia Department of Conservation and Recreation's (DCR) Division of Natural Heritage (DNH): DNH's mission is conserving Virginia's biodiversity through inventory, protection and stewardship. The Virginia Natural Area Preserves Act (Virginia Code §10.1-209 through 217), authorized DCR to maintain a statewide database for conservation planning and project review, protect land for the conservation of biodiversity, and to protect and ecologically manage the natural heritage resources of

Virginia (the habitats of rare, threatened and endangered species, significant natural communities, geologic sites, and other natural features).

4(a)(ii) The Virginia Department of Agriculture and Consumer Services (VDACS): The Endangered Plant and Insect Species Act of 1979 (Virginia Code Chapter 39 §3.1-1020 through 1030) authorizes VDACS to conserve, protect and manage endangered and threatened species of plants and insects. Under a Memorandum of Agreement established between VDACS and the DCR, DCR represents VDACS in comments regarding potential impacts on state-listed threatened and endangered plant and insect species.

4(b) Agency Findings – Natural Heritage. According to the information currently in DCR DNH's files, the Blows Creek Conservation Site, the Bailey Creek Forest Conservation Site and the Northwest Branch Back River Marshes Conservation Site are located within the project site. Conservation sites are tools for representing key areas of the landscape that warrant further review for possible conservation action because of the natural heritage resources and habitat they support. Conservation sites are polygons built around one or more rare plant, animal, or natural community designed to include the element and, where possible, its associated habitat, and buffer or other adjacent land thought necessary for the element's conservation. These conservation sites have been given a biodiversity significance ranking of B5, which represents sites of general biodiversity significance. The natural heritage resource of concern at these sites is *Myotis austroriparius* (Southeastern myotis/G4/S2/NL/NL).

The Southeastern myotis is a bat which occurs throughout the southeast of the United States, including coastal and piedmont areas from North Carolina to Florida and west to Texas, and north through the Mississippi Valley (NatureServe, 2009). Along the Atlantic coast, its northern range limit is in southeastern Virginia. Throughout its range, these bats roost in caves, buildings, mines, and hollow trees during the spring and summer. In the winter they can be found roosting in small groups in outdoor sites at areas over water, such as bridges, culverts, storm sewers, and boat houses as well as in hollow trees (Barbour and Davis, 1969). This bat forages on small insects in riparian floodplain forests or woodland wetlands with permanent open water nearby (Gardner et al., 1992; Humphrey and Gore, 1992). Uncommon among *Myotis* bats, the Southeastern myotis often gives birth to twins (Harvey, 1992).

Threats to the Southeastern myotis include human disturbance and physical alteration of caves and other sites used as hibernacula and maternity sites (NatureServe, 2009). Also, the clearing and draining of bottomland hardwood forest wetlands likely reduces summer roosting and foraging habitat (NatureServe, 2009).

Furthermore, according to a DCR biologist, there is potential for other rare bats including little brown bat (*Myotis lucifugus*, G3/S?/NL/LE), tri-colored bat (*Perimyotis subflavus*), Eastern big-eared bat (*Corynorhinus rafinesquii macrotis*, G3G4T3/S2/NL/LE) and Northern long-eared bat (*Myotis septentrionalis,* G1G2/S1S3/LT/LT) to occur if suitable habitat exists on site.

4(c) Agency Findings – Threatened and Endangered Plant and Insect Species. The current activity will not affect any documented state-listed plants or insects.

4(d) Agency Findings – State Natural Area Preserves. There are no State Natural Area Preserves under DCR's jurisdiction in the project vicinity.

4(e) Agency Recommendations. DCR has the following recommendations:

- Due to the documented occurrences of Southeastern myotis and the potential for this site to support additional populations of rare bats, DCR recommends avoiding aerial pesticide spraying during their breeding season.
- Due to the legal status of some of the species listed above, DCR recommends coordination with the US Fish and Wildlife Service (FWS) to ensure compliance with protected species legislation.
- DCR also recommends aerial application of herbicide occur late in the growing season when most native plants have senesced but Phragmites will still uptake herbicide, as well as ensuring that the aerial application of herbicide is accurately targeted to Phragmites stands only, to limit potential adverse effects to surrounding wetlands.
- Contact the DCR DNH and resubmit project information if the scope of the project changes and/or six months has passed before it is utilized.

5. Federal Consistency Local and Regional Jurisdiction.

5(a) Jurisdiction. In accordance with CFR 930, Subpart A, § 930.6(b) of the Federal Consistency Regulations, DEQ, on behalf of the state, is responsible for securing necessary review and comment from other state agencies, the public, regional government agencies, and local government agencies, in determining the Commonwealth's concurrence or objection to a federal consistency certification.

5(b) Agency Findings. With regard to the proposed activity, the city has concern over the potential risks of impacts to the community neighborhoods and the waterworks reservoir resources that are in proximity to the treatment areas. The proposed activity areas identified in Figures 1 and 3 of the CZMA document are, in numerous instances, less than 100 feet away from residential properties situated to the north and the east

and approximately 2,900 feet from the Lee Hall reservoir and water supply intake facility. The off-target movement of pesticides (drift) from aerial application operations to human receptors in these neighborhoods represents an exposure risk and the reservoir facilities are key elements to regional drinking water treatment operations that could be adversely affected.

The city recognizes that uncontrollable meteorological variables can change rapidly, and it is unclear precisely what conditions represent limits for aerial treatment operations at the Ft. Eustis location. Therefore, the city requests that the following information be made available:

1. A statement or procedure describing how drift will be limited (other than low altitude application).

2. A clear benchmark of values for direct and indirect conditions that influence drift for these operations, as well as clarification on whether each condition independently generates the cancellation of the operation or if a cumulative set of lesser benchmark values creates a condition for cancelling the operation.

3. The means and methods of obtaining and characterizing on-site meteorological conditions data at the time of operation.

4. Any atmospheric dispersion data to show area of impact for anticipated drift distances corresponding to the range values for direct and indirect conditions that influence drift.

5. Confirmation that any treatment to the railroad spur property identified on Figures 1 and 3 will be done by land applicators.

6. The means and methods of community notification prior to the operations be provided.

It is the city's hope that relevant sections and appendices for aerial applications from the Integrated Pest Management Plan Joint Base Langley Ft Eustis- Plan years 2020-2024 have already addressed these issues, and the city looks forward to the opportunity to review the requested information.

5(c) DEQ Comments. On August 22, 2022, DEQ asked the USAF to respond to the city regarding its concerns. On September 14, 2022, the USAF states that it intends to respond to the city soon.

REGULATORY AND COORDINATION NEEDS

1. Air Quality Regulations. The following regulations may apply during construction:

- fugitive dust and emissions control (9VAC5-50-60 *et seq.*);

Contact DEQ TRO (Laura Corl at 757-518-2178 or Laura.Corl@deq.virginia.gov) for additional information on air regulations if necessary.

2. Wetlands. VMRC states that approval may be required from the local wetlands boards for the proposed project. Coordinate with local wetlands boards as necessary.

3. Wildlife Resources. Coordinate with DWR (Lee Brann at Lee.Brann@dwr.virginia.gov) regarding its comments and recommendations as necessary. Coordinate with the FWS as necessary regarding Bald Eagles.

4. Point Source Water Pollution. DEQ states that the proposed activities may require a VPDES pesticide general permit (VAG87). If necessary, contact DEQ TRO (Jeff Hannah at 757-407-2510).

5. Water Supply. Contact VDH (Arlene Warren at Arlene.Warren@vdh.virginia.gov) for additional information about its comments if necessary.

6. Natural Heritage Resources. Contact the DCR DNH (804-371-2708) about its recommendations and to re-submit project information and a map for an update on natural heritage information if the scope of the project changes and/or six months has passed before it is utilized.

7. Local Coordination. Coordinate with the City of Newport News (Louis J. Bott at bottlj@nnva.gov) regarding its concerns.

Thank you for the opportunity to comment on this FCD. The detailed comments of reviewers are attached. If you have questions, please do not hesitate to call me at 804-659-1915 or Julia Wellman at (804) 774-8237.

Sincerely,

Bettina Rayfield, Manager
Environmental Impact Review and Long Range Priorities Program

Enclosures

ec: Lee Brann, DWR
Allison Tillett, DCR
Arlene Warren, VDH
Roger Kirchen, DHR
Claire Gorman, VMRC
Terry Lasher, DOF
Ben McFarlane, Hampton Roads PDC
Louis J. Bott, City of Newport News
Mary Bunting, City of Hampton
Neil Morgan, York County

DEPARTMENT OF ENVIRONMENTAL QUALITY
DIVISION OF AIR PROGRAM COORDINATION

ENVIRONMENTAL REVIEW COMMENTS APPLICABLE TO AIR QUALITY

TO: Julia Wellman

We thank **OEIR** for providing DEQ-AIR an opportunity to review the following project: Accordingly, I am providing following comments for consideration.

Document Type: Federal Consistency Determination
Project Sponsor: US Department of the Air Force
Project Title: Aerial Application of Pesticide for Mosquito and Invasive Plant Species Control at Joint Base Langley-Eustis
Location: Newport News, Hampton, York County
Project Number: DEQ #22-110F

PROJECT LOCATION: **X OZONE ATTAINMENT AND EMISSION CONTROL AREA FOR NOX & VOC**

REGULATORY REQUIREMENTSMAY BE APPLICABLE TO: **X CONSTRUCTION** ☐ OPERATION

STATE AIR POLLUTION CONTROL BOARD REGULATIONS THAT MAY APPLY:

1. ☐ 9 VAC 5-40-5200 C & 9 VAC 5-40-5220 E – STAGE I
2. ☐ 9 VAC 5-45-760 et seq. – Asphalt Paving operations
3. **X 9 VAC 5-130 et seq. – Open Burning**
4. **X 9 VAC 5-50-60 et seq. Fugitive Dust Emissions**
5. ☐ 9 VAC 5-50-130 et seq. - Odorous Emissions; Applicable to_____
6. ☐ 9 VAC 5-60-300 et seq. – Standards of Performance for Toxic Pollutants
7. ☐ 9 VAC 5-50-400 Subpart_____, Standards of Performance for New Stationary Sources, designates standards of performance for the_____
8. ☐ 9 VAC 5-80-1100 et seq. of the regulations – Permits for Stationary Sources
9. ☐ 9 VAC 5-80-1605 et seq. Of the regulations – Major or Modified Sources located in PSD areas. This rule may be applicable to the _____
10. ☐ 9 VAC 5-80-2000 et seq. of the regulations – New and modified sources located in non-attainment areas
11. ☐ 9 VAC 5-80-800 et seq. Of the regulations – State Operating Permits. This rule may be applicable to _____

COMMENTS SPECIFIC TO THE PROJECT:

All precautions are necessary to restrict the emissions of volatile organic compounds (VOC) and oxides of nitrogen (NO_x).

(Kotur S. Narasimhan)
Office of Air Data Analysis **DATE: July 29, 2022**

DEPARTMENT OF ENVIRONMENTAL QUALITY
TIDEWATER REGIONAL OFFICE

Environmental Impact Review
Coordination Review

To: Office of Environmental Impact Review

From: Jeff Hannah, Regional VWPP Program Manager

Date: August 10, 2022

Project: Air Force Aerial Application of Pesticide, DEQ #22-110F

As requested, the DEQ Tidewater Regional Office has reviewed the supplied information and offers the following comments:

Air Compliance Program :
The following air regulations may be applicable: Virginia Administrative Code 9 VAC 5-50-60 *et seq*. which addresses the abatement of visible emissions and fugitive dust emissions, and Virginia Administrative Code 9 VAC 5-130-10 et *seq*. which addresses open burning. For additional information, contact John Brandt, DEQ-TRO at (757)407-2341.

Land Program (Solid and Hazardous Waste):
All construction and demolition waste, including any excess soil, must be characterized in accordance with the Virginia Hazardous Waste Management Regulations and disposed of at an appropriate facility as applicable.
For additional information, contact Melinda Woodruff, DEQ-TRO at melinda.woodruff@deq.virginia.gov .

Stormwater:
No comment as the proposed scope of work does not include land disturbing activities.

Virginia Water Protection Permit Program (VWPP):
The use of herbicides and pesticides within state surface waters does not require a VWPP permit, as it is authorized under the Virginia Pollution Discharge Elimination System (VPDES) program (9VAC25-210-60 2). These activities may require a VPDES pesticide general permit (VAG87). In addition, please be advised that pesticide and herbicide use is considered jurisdictional for the Virginia Marine Resources Commission (VMRC) when a tidal wetlands plant is located within 1.5 times the mean tide range above mean low water. The decision of whether a permit is required is generally up to the local wetlands board within the associated locality, and may depend upon the specific application/treatment plan. Provided that any and all necessary permits are obtained and complied with, the project will be consistent with DEQ program requirements. For additional information, contact Jeff Hannah, DEQ-TRO at (757)407-2510.

Water Permit Program (VPDES):

No comments as there does not appear to be any point source discharges of process water or wastewater associated with this project that would necessitate a VPDES permit.

Petroleum Storage Tank Program:

DEQ records indicate multiple reported petroleum releases along the proposed project footprints. Most of the cases have been closed based on limited risk to the environment. If evidence of a petroleum release is discovered during implementation of this project, it must be reported to DEQ, as authorized by CODE # 62.1-44.34.8 through 19 and 9 VAC 25-580-10 et seq. Contact Ms. Melinda Woodruff at (757)407-2516. Petroleum-contaminated soils and ground water generated during implementation of this project must be properly characterized and disposed of properly.

The removal, relocation, installation and operation of any regulated petroleum storage tank(s) either AST or UST must also be conducted in accordance with the Virginia Regulations 9 VAC 25-91-10 et seq and / or 9 VAC 25-580-10 et seq. Documentation and / or questions should be submitted to TRO Tanks at Tidewater Regional Office – 5636 Southern Blvd., Virginia Beach, VA 23462. tro.tanks@deq.virginia.gov.

Based on the submitted information, it appears the proposed project will result in a *[Level of impact]* environmental impact.

COMMONWEALTH of VIRGINIA
Marine Resources Commission
380 Fenwick Road
Bldg 96
Fort Monroe, VA 23651-1064

Jamie L. Green
Commissioner

July 28, 2022

Department of Environmental Quality
Attn: Julia Wellman
1111 East Main Street
Richmond, VA 23219

Re: FCD Aerial Application of Pesticide for Mosquito and Invasive Plant Species Control at Joint Base Langley-Eustis (DEQ #22-110F)

Dear Ms. Wellman,

This will respond to the request for comments regarding the Federal Consistency Determination for the Aerial Application of Pesticide for Mosquito and Invasive Plant Species Control at Joint Base Langley-Eustis (JBLE) project, prepared by the Department of the Air Force. Specifically, the Department of the Air Force has proposed to aerially apply pesticides and herbicides for mosquito and invasive plant species control at JBLE-Eustis and JBLE-Langley over an area that spans Newport News, Hampton, and York Counties, Virginia. We reviewed the provided project documents and found the proposed project is outside the jurisdictional areas of the Virginia Marine Resources Commission (VMRC) and will not require a permit from this agency.

Please be advised that the Virginia Marine Resources Commission (VMRC) pursuant to Chapters 12, 13, and 14 of Title 28.2 of the Code of Virginia administers permits required for submerged lands, tidal wetlands, and beaches and dunes. Additionally, the VMRC administers the enforceable policies of fisheries management, subaqueous lands, tidal wetlands, and coastal primary sand dunes and beaches, which comprise some of Virginia's Coastal Zone Management Program. VMRC staff has reviewed the submittal and offers the following comments:

Fisheries and Shellfish: None in close proximity of the project area.

Submerged Lands: None in close proximity of the project area.

Tidal Wetlands: The proposed project involves application of herbicide over tidal wetlands to target Phragmites australis. Phragmites is a jurisdictional tidal wetlands plant when it is located within 1 ½ times the mean tide range above mean low water. As such, approval may be required from the local wetlands boards. VMRC would likely discourage killing or removal of Phragmites within a jurisdictional tidal wetland without a plan for re-vegetation with other wetland species.

Beaches and Coastal Primary Sand Dunes: None in close proximity of the project area.

As such, this project has no foreseeable impact on the VMRC's enforceable policies. As proposed, we have no objection to the consistency findings provided by the applicant. Should the proposed project change, a new review by this agency may be required relative to these jurisdictional areas.

Please contact me at (757) 247-2250 or by email at lauren.chartrand@mrc.virginia.gov if you have questions. Thank you for the opportunity to comment.

Sincerely,

Lauren Chartrand
Environmental Engineer, Habitat Management

LC/al
HM

Commonwealth of Virginia

Wellman, Julia <julia.wellman@deq.virginia.gov>

Re: FCD Aerial Application of Pesticide for Mosquito and Invasive Plant Species Control at JBLE (DEQ #22-110F)

1 message

MRC - Scoping, rr <scoping@mrc.virginia.gov> Tue, Aug 2, 2022 at 4:56 PM
To: "Wellman, Julia" <julia.wellman@deq.virginia.gov>
Cc: Lauren Chartrand <lauren.chartrand@mrc.virginia.gov>

Hi Julia,

The above quote is a VMRC agency recommendation. Please let us know if you have any further questions.

Thanks,
Alie

On Tue, Aug 2, 2022 at 11:11 AM Wellman, Julia <julia.wellman@deq.virginia.gov> wrote:

> Good morning,
>
> Thank you for your letter. Is the following a recommendation or just a comment?
>
> "VMRC would likely discourage killing or removal of Phragmites within a
> jurisdictional tidal wetland without a plan for re-vegetation with other wetland species."
>
> On Thu, Jul 28, 2022 at 9:25 AM MRC - Scoping, rr <scoping@mrc.virginia.gov> wrote:
>
> > Good morning Julia,
> >
> > Please find attached the VMRC agency comments regarding the above referenced project. Thank you for the opportunity to comment.
> >
> > Best regards,
> > Alie
> >
> > --
> > Virginia Marine Resources Commission
> > Habitat Management Division
> > 380 Fenwick Road
> > Fort Monroe, Virginia 23651
>
> --
>
> Julia Wellman
> Environmental Impact Review Coordinator
>
> Department of Environmental Quality
> Environmental Impact Review and Long Range Priorities Program
> 1111 E Main Street, Suite 1400
> Richmond, VA 23219
>
> **NEW PHONE NUMBER:** 804-774-8237
> Julia.Wellman@DEQ.virginia.gov
> www.deq.virginia.gov
>
> **** For program updates and public notices, please subscribe to Constant Contact: https://lp.constantcontact.com/su/MVcCump/EIR ****

Commonwealth of Virginia

Wellman, Julia <julia.wellman@deq.virginia.gov>

ESSLog# 42384_22-110F_Pesticide and Herbicide Application at JBLA_DWR_HLB20220901

1 message

Brann, LEE <lee.brann@dwr.virginia.gov> Thu, Sep 1, 2022 at 11:38 AM
To: Julia Wellman <julia.wellman@deq.virginia.gov>
Cc: Tamara Doucette <tamara.doucette@dwr.virginia.gov>, "Martin, Amy" <amy.martin@dwr.virginia.gov>, "Trollinger, Jeff" <jeff.trollinger@dwr.virginia.gov>, Ruth Boettcher <ruth.boettcher@dwr.virginia.gov>

Ms. Wellman,

We have reviewed the project that proposes aerial application of pesticides and herbicides at Joint Base Langley-Eustis in Hampton and Newport News. We document State Endangered Canebrake Rattlesnakes from the Langley project area. The Langley project area also models out as potential habitat for State Threatened Henslow's Sparrows and Mabee's Salamanders. The Eustis project area models out as potential habitat for several federal and state listed species as well, including Canebrake Rattlesnakes, Henslow's Sparrows, and Mabee's Salamanders. The James River in the Eustis project area is designated an Anadromous Fish Use Area, known to support several species of anadromous fish.

To best protect listed species and other resources under our jurisdiction from activities associated with this project, we recommend that the pesticide and herbicide applications be performed by certified pesticide and herbicide applicators, and that the applications be performed in accordance with the label recommendations. We recommend that no pesticide be applied over open bodies of water that lack tree canopy cover or that are otherwise exposed from above. We recommend that no herbicide be applied over open bodies of water beyond that which is necessary for the control of coastal and estuarine wetland invasive plants. We also recommend that project activities proceed in accordance with the Langley Air Force Base and Fort Eustis Integrated Natural Resources Management Plans (INRMPs).

Several Colonial Waterbird colonies, known to support Yellow-Crowned Night Herons, Least Terns, Green Herons, Great Blue Herons, and other waterbird species, have been documented from the Langley and Eustis project areas. If rookeries are present in the project areas, flightless chicks may be impacted by the aerial spraying of pesticides because they are unable to leave the area and would be exposed either through drift or direct spraying. To best protect Colonial Waterbirds from activities associated with this project, we recommend a time of year restriction on any pesticide spraying from May 1 through July 31 of any year.

Historic and/or active Bald Eagle nests are documented from the Langley project area. The Eustis project site is also located within, or within close proximity to, a shoreline which has been designated as a Bald Eagle Concentration Zone. Significant habitat alteration, location of water-dependent facilities within concentration zones, or other recreational and commercial activities may result in adverse impacts upon eagles. Therefore, we recommend that the applicant ensure that this project is consistent with state and federal guidelines for protection of bald eagles; including coordination, if indicated, with the U.S. Fish and Wildlife Service regarding possible impacts upon bald eagles or the need for a federal bald eagle take permit.

This project is located within 2 miles of a documented occurrence of a state or federal threatened or endangered plant or insect species and/or other Natural Heritage coordination species. Therefore, we recommend coordination with VDCR-DNH regarding protection of these resources.

Assuming adherence to the recommendations for pesticide and herbicide application and the protection of listed species and/or designated resources under our jurisdiction, as depicted in **bolded font** above, we find this project to be consistent with the Wildlife and Inland Fisheries and Commonwealth Lands Enforceable Policies of the Coastal Zone Management Program.

Thank you,

--

Lee Brann
Environmental Services Biologist
Wildlife Information and Environmental Services
he/him/his
P 804.367.1295
Department of Wildlife Resources
CONSERVE. CONNECT. PROTECT.
A 7870 Villa Park Drive, P.O. Box 90778, Henrico, VA 23228
www.VirginiaWildlife.gov

Commonwealth of Virginia

Wellman, Julia <julia.wellman@deq.virginia.gov>

Re: [URL Verdict: Neutral][Non-DoD Source] DEQ 22-110F: Pesticide and Herbicide Application at JBLE_DWR_HLB20220913

1 message

Brann, LEE <lee.brann@dwr.virginia.gov> Tue, Sep 13, 2022 at 10:45 AM
To: "Wellman, Julia" <julia.wellman@deq.virginia.gov>
Cc: Ruth Boettcher <Ruth.Boettcher@dwr.virginia.gov>, Amy Martin <amy.martin@dwr.virginia.gov>, Tamara Doucette <tamara.doucette@dwr.virginia.gov>

Hi Julia,

I hope you are doing well. Sorry I missed your call back on 9/2. I've attached here some explanations on the need for each of the conditions for consistency for the JBLE pesticide/herbicide project. I hope these are helpful, but please let me know if there's anything else you need, or if anything needs clarification.

Thanks, Julia!

Lee

On Fri, Sep 9, 2022 at 2:15 PM Wellman, Julia <julia.wellman@deq.virginia.gov> wrote:

> Ruth and Amy,
>
> Please see the USAF's response regarding whether it can adhere to the recommendations that DWR has indicated are necessary for the proposed pesticide and herbicide application at Joint Base Langley Eustis.
>
> We think that pursuing a conditional concurrence pursuant to the federal consistency regulations would be appropriate. If the USAF does not adhere to the conditions (which would be your recommendations), then our concurrence would turn into an objection. Are you on board with a conditional concurrence?
>
> We have to include the following three items in bold in our conditional concurrence. Will you please review and edit the information below? Item 2 needs the majority of your attention. Please get back to me by September 13.
>
> **1. Conditions which must be satisfied:**
>
> - To best protect listed species and other resources under DWR's jurisdiction from activities associated with this project, the pesticide and herbicide applications must be performed by certified pesticide and herbicide applicators, and the applications must be performed in accordance with the label recommendations.
> - No pesticide should be applied over open bodies of water that lack tree canopy cover or that are otherwise exposed from above.
> - No herbicide should be applied over open bodies of water beyond that which is necessary for the control of coastal and estuarine wetland invasive plants.
> - Project activities should proceed in accordance with the Langley Air Force Base and Fort Eustis Integrated Natural Resources Management Plans (INRMPs).
> - To best protect Colonial Waterbirds from activities associated with this project, adhere to a time-of-year restriction on any pesticide spraying from May 1 through July 31 of any year.
>
> **2. Explanation of why the conditions are necessary to ensure consistency with specific enforceable policies of the management program:**
>
> DWR, for the first four bullets (above), please add a description of why the conditions/recommendations are necessary to ensure consistency. This description does not have to be extensive. A sentence or two could suffice. See example below.

For example, I think the following could explain the necessity of the TOYR. DWR, please let me know if you agree: Several Colonial Waterbird colonies, known to support Yellow-Crowned Night Herons, Least Terns, Green Herons, Great Blue Herons, and other waterbird species, have been documented from the Langley and Eustis project areas. If rookeries are present in the project areas, flightless chicks may be impacted by the aerial spraying of pesticides because they are unable to leave the area and would be exposed either through drift or direct spraying. Therefore, the time-of-year restriction is necessary.

3. Identification of the specific enforceable policy:

- Wildlife and Inland Fisheries, administered by the Department of Wildlife Resources

Please let me know if you have any questions.

Regards, Julia

---------- Forwarded message ---------
From: **JENNINGS, DAVID M GS-13 USAF ACC 633 CES/CEIE** <david.jennings.4@us.af.mil>
Date: Thu, Sep 8, 2022 at 4:40 PM
Subject: RE: [URL Verdict: Neutral][Non-DoD Source] DEQ 22-110F: Pesticide and Herbicide Application at JBLE
To: Wellman, Julia <julia.wellman@deq.virginia.gov>, JOHNSON, SHERRY M GS-12 USAF ACC 633 CES/CEIE <sherry.johnson.4@us.af.mil>
Cc: Bishop, Brian [USA - EMP] <BBishop@versar.com>

Good afternoon Ms. Wellman,

The Air Force should be able to adhere to the conditions below.

R,

Dave

David Jennings

Environmental Chief - 633 CES / CEIE

37 Sweeney Blvd

Langley AFB, VA 23665

Phone Number: 757-764-1046

DSN: 575-1046

Cell Phone: 757-846-3698

From: Wellman, Julia <julia.wellman@deq.virginia.gov>
Sent: Friday, September 2, 2022 3:59 PM
To: JENNINGS, DAVID M GS-13 USAF ACC 633 CES/CEIE <david.jennings.4@us.af.mil>; JOHNSON, SHERRY M GS-12 USAF ACC 633 CES/CEIE <sherry.johnson.4@us.af.mil>
Cc: Bishop, Brian [USA - EMP] <BBishop@versar.com>
Subject: [URL Verdict: Neutral][Non-DoD Source] DEQ 22-110F: Pesticide and Herbicide Application at JBLE

Good afternoon,

I am emailing regarding the federal consistency determination (FCD) that you submitted for the above-referenced project. I received comments (below) yesterday from the Virginia Department of Wildlife Resources.

DWR is responsible for administering the wildlife and inland fisheries enforceable policy of the Virginia Coastal Zone Management Program. As you may know, a proposed project has to be consistent with all of the enforceable policies in order for DEQ to concur with the federal agency that the project is consistent.

Will you please review the following email, specifically the conditions for consistency that DWR highlights, and let me know by **September 7** if the USAF can adhere to these conditions, including the time-of-year restriction?

Please let me know if you have any questions.

Regards, Julia

---------- Forwarded message ---------
From: **Brann, LEE** <lee.brann@dwr.virginia.gov>
Date: Thu, Sep 1, 2022 at 11:38 AM
Subject: ESSLog# 42384_22-110F_Pesticide and Herbicide Application at JBLA_DWR_HLB20220901
To: Julia Wellman <julia.wellman@deq.virginia.gov>
Cc: Tamara Doucette <tamara.doucette@dwr.virginia.gov>, Martin, Amy <amy.martin@dwr.virginia.gov>, Trollinger, Jeff <jeff.trollinger@dwr.virginia.gov>, Ruth Boettcher <ruth.boettcher@dwr.virginia.gov>

Ms. Wellman,

We have reviewed the project that proposes aerial application of pesticides and herbicides at Joint Base Langley-Eustis in Hampton and Newport News. We document State Endangered Canebrake Rattlesnakes from the Langley project area. The Langley project area also models out as potential habitat for State Threatened Henslow's Sparrows and Mabee's Salamanders. The Eustis project area models out as potential habitat for several federal and state listed species as well, including Canebrake Rattlesnakes, Henslow's Sparrows, and Mabee's Salamanders. The James River in the Eustis project area is designated an Anadromous Fish Use Area, known to support several species of anadromous fish.

To best protect listed species and other resources under our jurisdiction from activities associated with this project, we recommend that the pesticide and herbicide applications be performed by certified pesticide and herbicide applicators, and that the applications be performed in accordance with the label recommendations. We recommend that no pesticide be applied over open bodies of water that lack tree canopy cover or that are otherwise exposed from above. We recommend that no herbicide be applied over open bodies of water beyond that which is necessary for the control of coastal and estuarine wetland invasive plants. We also recommend that project activities proceed in accordance with the Langley Air Force Base and Fort Eustis Integrated Natural Resources Management Plans (INRMPs).

Several Colonial Waterbird colonies, known to support Yellow-Crowned Night Herons, Least Terns, Green Herons, Great Blue Herons, and other waterbird species, have been documented from the Langley and Eustis project areas. If rookeries are present in the project areas, flightless chicks may be impacted by the aerial spraying of pesticides because they are unable to leave the area and would be exposed either through drift or

direct spraying. To best protect Colonial Waterbirds from activities associated with this project, we recommend a time of year restriction on any pesticide spraying from May 1 through July 31 of any year.

Historic and/or active Bald Eagle nests are documented from the Langley project area. The Eustis project site is also located within, or within close proximity to, a shoreline which has been designated as a Bald Eagle Concentration Zone. Significant habitat alteration, location of water-dependent facilities within concentration zones, or other recreational and commercial activities may result in adverse impacts upon eagles. Therefore, we recommend that the applicant ensure that this project is consistent with state and federal guidelines for protection of bald eagles; including coordination, if indicated, with the U.S. Fish and Wildlife Service regarding possible impacts upon bald eagles or the need for a federal bald eagle take permit.

This project is located within 2 miles of a documented occurrence of a state or federal threatened or endangered plant or insect species and/or other Natural Heritage coordination species. Therefore, we recommend coordination with VDCR-DNH regarding protection of these resources.

Assuming adherence to the recommendations for pesticide and herbicide application and the protection of listed species and/or designated resources under our jurisdiction, as depicted in **bolded font** above, we find this project to be consistent with the Wildlife and Inland Fisheries and Commonwealth Lands Enforceable Policies of the Coastal Zone Management Program.

Thank you,

--

Lee Brann
Environmental Services Biologist
Wildlife Information and Environmental Services

he/him/his

P 804.367.1295
Department of Wildlife Resources
CONSERVE. CONNECT. PROTECT.

A 7870 Villa Park Drive, P.O. Box 90778, Henrico, VA 23228
www.VirginiaWildlife.gov

--

Julia Wellman
Environmental Impact Review Coordinator

Department of Environmental Quality
Environmental Impact Review and Long Range Priorities Program
1111 E Main Street, Suite 1400
Richmond, VA 23219

NEW PHONE NUMBER: 804-774-8237
Julia.Wellman@DEQ.virginia.gov
www.deq.virginia.gov

**** For program updates and public notices, please subscribe to Constant Contact: https://lp.constantcontact.com/su/MVcCump/EIR ****

> ****New EIR Website: https://www.deq.virginia.gov/permits-regulations/environmental-impact-review****
>
> --
>
> Julia Wellman
> Environmental Impact Review Coordinator
>
> Department of Environmental Quality
> Environmental Impact Review and Long Range Priorities Program
> 1111 E Main Street, Suite 1400
> Richmond, VA 23219
>
> **NEW PHONE NUMBER:** 804-774-8237
> Julia.Wellman@DEQ.virginia.gov
> www.deq.virginia.gov
>
> **** For program updates and public notices, please subscribe to Constant Contact: https://lp.constantcontact.com/su/MVcCump/EIR ****
>
> ****New EIR Website: https://www.deq.virginia.gov/permits-regulations/environmental-impact-review****

ESSLog# 42384_22-110F_Consistency Conditions Justifications.docx
15K

Rationales for DEQ 22-110F, Pesticide and Herbicide Application at JBLE, Compliance Conditions

(underlined, in italics)

1. To best protect listed species and other resources under DWR's jurisdiction from activities associated with this project, the pesticide and herbicide applications must be performed by certified pesticide and herbicide applicators, and the applications must be performed in accordance with the label recommendations. *Aerial applications must avoid, to the greatest practicable extent, adverse impacts upon non-target species/habitats, including species under DWR jurisdiction. Certified applicators are professionally trained in measures to avoid spills, over-applications, or other forms of misuse that may adversely impact non-target species/habitats in the project area. Pesticide and herbicide labels provide critical information on how to avoid impacts to non-target species while using the product.*

2. No pesticide should be applied over open bodies of water that lack tree canopy cover or that are otherwise exposed from above. *Aquatic and/or shore species under DWR jurisdiction that are exposed to pesticides may be adversely impacted by exposure. Pesticide that is applied over open bodies of water lacking tree canopy cover or other protection from above is not captured before reaching the water, where nearby aquatic and/or shore species may then be exposed.*

3. No herbicide should be applied over open bodies of water beyond that which is necessary for the control of coastal and estuarine wetland invasive plants. *DWR understands that some of the invasive coastal and estuarine wetland plants targeted for control in the project area occur in open bodies of water. However, herbicide applied at a greater quantity, which is not labeled for use in open water, or over a greater geographic area than is necessary for the control of the targeted invasive plants poses an unnecessary risk of exposure to aquatic and/or shore species in the project area, which may be adversely impacted by exposure.*

4. Project activities should proceed in accordance with the Langley Air Force Base and Fort Eustis Integrated Natural Resources Management Plans (INRMPs). *INRMPs are designed to align Department of Defense (DoD) land management practices with Virginia environmental goals and to ensure compliance with federal and state environmental laws and policies. INRMPs are the mechanism by which wildlife, fish, and game conservation and management is coordinated across federal and state agencies to ensure wildlife and their habitats are appropriately protected and managed on military lands.*

5. To best protect Colonial Waterbirds from activities associated with this project, we recommend a time of year restriction on any pesticide spraying from May 1 through July 31 of any year. *Several Colonial Waterbird colonies, known to support Yellow-Crowned Night Herons, Least Terns, Green Herons, Great Blue Herons, and other waterbird species, have been documented from the Langley and Eustis project areas. If rookeries are present in the project areas, flightless chicks may be impacted by the aerial spraying of pesticides because they are unable to leave the area and would be exposed either through drift or direct spraying. Therefore, the time-of-year restriction is necessary.*

Commonwealth of Virginia

Wellman, Julia <julia.wellman@deq.virginia.gov>

RE: [URL Verdict: Neutral][Non-DoD Source] DEQ 22-110F: Pesticide and Herbicide Application at JBLE

1 message

JENNINGS, DAVID M GS-13 USAF ACC 633 CES/CEIE <david.jennings.4@us.af.mil> Wed, Sep 14, 2022 at 11:40 AM
To: "Wellman, Julia" <julia.wellman@deq.virginia.gov>
Cc: "JOHNSON, SHERRY M GS-12 USAF ACC 633 CES/CEIE" <sherry.johnson.4@us.af.mil>

Good morning Julia,

Thanks for sending a summary to ensure we've captured everything in one place. Yes, the Air Force can adhere to the conditions as listed and we will ensure that the FONSI notes the time of year restrictions.

As far as the response to the city of Newport News, we have a draft of that just about ready to go and expect that to be done in the next couple of days. We'll info you on that.

R,

Dave

David Jennings

Environmental Chief - 633 CES / CEIE

37 Sweeney Blvd

Langley AFB, VA 23665

Phone Number: 757-764-1046

DSN: 575-1046

Cell Phone: 757-846-3698

From: Wellman, Julia <julia.wellman@deq.virginia.gov>
Sent: Tuesday, September 13, 2022 4:17 PM
To: JENNINGS, DAVID M GS-13 USAF ACC 633 CES/CEIE <david.jennings.4@us.af.mil>
Cc: JOHNSON, SHERRY M GS-12 USAF ACC 633 CES/CEIE <sherry.johnson.4@us.af.mil>
Subject: Re: [URL Verdict: Neutral][Non-DoD Source] DEQ 22-110F: Pesticide and Herbicide Application at JBLE

Dave, It was nice speaking with you this afternoon. As I mentioned, I have had some additional correspondence with DWR, and I am reaching out with a summary email.

In consultation with DWR, DEQ is proposing to issue a conditional concurrence. Our conditional concurrence needs to include the three sections in bold below. Per the federal consistency regulations, if the federal agency cannot adhere to

the conditions, a conditional concurrence turns into an objection.

Will the USAF adhere to the conditions listed below? As discussed, the fifth condition with the TOYR restriction is the one that changes the original project as described in the FCD.

1. Identification of the specific enforceable policy:

- Wildlife and Inland Fisheries, administered by the Department of Wildlife Resources

2. Conditions which must be satisfied:

1. To best protect listed species and other resources under DWR's jurisdiction from activities associated with this project, the pesticide and herbicide applications must be performed by certified pesticide and herbicide applicators, and the applications must be performed in accordance with the label recommendations.

2. No pesticide should be applied over open bodies of water that lack tree canopy cover or that are otherwise exposed from above.

3. No herbicide should be applied over open bodies of water beyond that which is necessary for the control of coastal and estuarine wetland invasive plants.

4. Project activities should proceed in accordance with the Langley Air Force Base and Fort Eustis Integrated Natural Resources Management Plans (INRMPs).

5. To best protect Colonial Waterbirds from activities associated with this project, adhere to a time-of-year restriction on any pesticide spraying from May 1 through July 31 of any year.

3. Explanations of why the conditions are necessary to ensure consistency with specific enforceable policies of the management program:

1. To best protect listed species and other resources under DWR's jurisdiction from activities associated with this project, the pesticide and herbicide applications must be performed by certified pesticide and herbicide applicators, and the applications must be performed in accordance with the label recommendations. *Aerial applications must avoid, to the greatest practicable extent, adverse impacts upon non-target species/habitats, including species under DWR jurisdiction. Certified applicators are professionally trained in measures to avoid spills, over-applications, or other forms of misuse that may adversely impact non-target species/habitats in the project area. Pesticide and herbicide labels provide critical information on how to avoid impacts to non-target species while using the product.*

2. No pesticide should be applied over open bodies of water that lack tree canopy cover or that are otherwise exposed from above. *Aquatic and/or shore species under DWR jurisdiction that are exposed to pesticides may be adversely impacted by exposure. Pesticide that is applied over open bodies of water lacking tree canopy cover or other protection from above is not captured before reaching the water, where nearby aquatic and/or shore species may then be exposed.*

3. No herbicide should be applied over open bodies of water beyond that which is necessary for the control of coastal and estuarine wetland invasive plants. *DWR understands that some of the invasive coastal and estuarine wetland plants targeted for control in the project area occur in open bodies of water. However, herbicide applied at a greater quantity, which is not labeled for use in open water, or over a greater geographic area than is necessary for the control of the targeted invasive plants poses an unnecessary risk of exposure to aquatic and/or shore species in the project area, which may be adversely impacted by exposure.*

4. Project activities should proceed in accordance with the Langley Air Force Base and Fort Eustis Integrated Natural Resources Management Plans (INRMPs). *INRMPs are designed to align Department of Defense (DoD) land management practices with Virginia environmental goals and to ensure compliance with federal and state environmental laws and policies. INRMPs are the mechanism by which wildlife, fish, and game conservation and*

management is coordinated across federal and state agencies to ensure wildlife and their habitats are appropriately protected and managed on military lands.

5. To best protect Colonial Waterbirds from activities associated with this project, we recommend a time of year restriction on any pesticide spraying from May 1 through July 31 of any year. *Several Colonial Waterbird colonies, known to support Yellow-Crowned Night Herons, Least Terns, Green Herons, Great Blue Herons, and other waterbird species, have been documented from the Langley and Eustis project areas. If rookeries are present in the project areas, flightless chicks may be impacted by the aerial spraying of pesticides because they are unable to leave the area and would be exposed either through drift or direct spraying. Therefore, the time-of-year restriction is necessary.*

Please let me know if you have any questions.

Regards, Julia

On Fri, Sep 9, 2022 at 5:33 PM Wellman, Julia <julia.wellman@deq.virginia.gov> wrote:

> Good afternoon,
>
> Thank you for your response. We are considering issuing a conditional concurrence for the proposed project pursuant to the federal consistency regulations. The conditions would be the protections highlighted in bold by the Department of Wildlife Resources. A conditional concurrence means that the federal agency would need to adhere to the conditions in order for DEQ to concur that the project is consistent.
>
> For my review, I need to clarify one item.
>
> Is the Air Force committed to adhering to the time-of-year-restriction on any pesticide spraying from May 1 through July 31 of any year as indicated by DWR?
>
> Please let me know if you have any questions.
>
> Regards, Julia
>
> On Thu, Sep 8, 2022 at 4:40 PM JENNINGS, DAVID M GS-13 USAF ACC 633 CES/CEIE <david.jennings.4@us.af.mil> wrote:
>
> > Good afternoon Ms. Wellman,
> >
> > The Air Force should be able to adhere to the conditions below.
> >
> > R,
> >
> > Dave

David Jennings

Environmental Chief - 633 CES / CEIE

37 Sweeney Blvd

Langley AFB, VA 23665

Phone Number: 757-764-1046

DSN: 575-1046

Cell Phone: 757-846-3698

From: Wellman, Julia <julia.wellman@deq.virginia.gov>
Sent: Friday, September 2, 2022 3:59 PM
To: JENNINGS, DAVID M GS-13 USAF ACC 633 CES/CEIE <david.jennings.4@us.af.mil>; JOHNSON, SHERRY M GS-12 USAF ACC 633 CES/CEIE <sherry.johnson.4@us.af.mil>
Cc: Bishop, Brian [USA - EMP] <BBishop@versar.com>
Subject: [URL Verdict: Neutral][Non-DoD Source] DEQ 22-110F: Pesticide and Herbicide Application at JBLE

Good afternoon,

I am emailing regarding the federal consistency determination (FCD) that you submitted for the above-referenced project. I received comments (below) yesterday from the Virginia Department of Wildlife Resources.

DWR is responsible for administering the wildlife and inland fisheries enforceable policy of the Virginia Coastal Zone Management Program. As you may know, a proposed project has to be consistent with all of the enforceable policies in order for DEQ to concur with the federal agency that the project is consistent.

Will you please review the following email, specifically the conditions for consistency that DWR highlights, and let me know by **September 7** if the USAF can adhere to these conditions, including the time-of-year restriction?

Please let me know if you have any questions.

Regards, Julia

---------- Forwarded message ---------
From: **Brann, LEE** <lee.brann@dwr.virginia.gov>
Date: Thu, Sep 1, 2022 at 11:38 AM
Subject: ESSLog# 42384_22-110F_Pesticide and Herbicide Application at JBLA_DWR_HLB20220901
To: Julia Wellman <julia.wellman@deq.virginia.gov>
Cc: Tamara Doucette <tamara.doucette@dwr.virginia.gov>, Martin, Amy <amy.martin@dwr.virginia.gov>, Trollinger, Jeff <jeff.trollinger@dwr.virginia.gov>, Ruth Boettcher <ruth.boettcher@dwr.virginia.gov>

Ms. Wellman,

We have reviewed the project that proposes aerial application of pesticides and herbicides at Joint Base Langley-Eustis in Hampton and Newport News. We document State Endangered Canebrake Rattlesnakes from the Langley project area. The Langley project area also models out as potential habitat for State Threatened Henslow's Sparrows and Mabee's Salamanders. The Eustis project area models out as potential habitat for several federal and state listed species as well, including Canebrake Rattlesnakes, Henslow's Sparrows, and Mabee's Salamanders. The James River in the Eustis project area is designated an Anadromous Fish Use Area, known to support several species of anadromous fish.

To best protect listed species and other resources under our jurisdiction from activities associated with this project, we recommend that the pesticide and herbicide applications be performed by certified pesticide and herbicide applicators, and that the applications be performed in accordance with the label recommendations. We recommend that no pesticide be applied over open bodies of water that lack tree canopy cover or that are otherwise exposed from above. We recommend that no herbicide be applied over open bodies of water beyond that which is necessary for the control of coastal and estuarine wetland invasive plants. We also recommend that project activities proceed in accordance with the Langley Air Force Base and Fort Eustis Integrated Natural Resources Management Plans (INRMPs).

Several Colonial Waterbird colonies, known to support Yellow-Crowned Night Herons, Least Terns, Green Herons, Great Blue Herons, and other waterbird species, have been documented from the Langley and Eustis project areas. If rookeries are present in the project areas, flightless chicks may be impacted by the aerial spraying of pesticides because they are unable to leave the area and would be exposed either through drift or direct spraying. To best protect Colonial Waterbirds from activities associated with this project, we recommend a time of year restriction on any pesticide spraying from May 1 through July 31 of any year.

Historic and/or active Bald Eagle nests are documented from the Langley project area. The Eustis project site is also located within, or within close proximity to, a shoreline which has been designated as a Bald Eagle Concentration Zone. Significant habitat alteration, location of water-dependent facilities within concentration zones, or other recreational and commercial activities may result in adverse impacts upon eagles. Therefore, we recommend that the applicant ensure that this project is consistent with state and federal guidelines for protection of bald eagles; including coordination, if indicated, with the U.S. Fish and Wildlife Service regarding possible impacts upon bald eagles or the need for a federal bald eagle take permit.

This project is located within 2 miles of a documented occurrence of a state or federal threatened or endangered plant or insect species and/or other Natural Heritage coordination species. Therefore, we recommend coordination with VDCR-DNH regarding protection of these resources.

Assuming adherence to the recommendations for pesticide and herbicide application and the protection of listed species and/or designated resources under our jurisdiction, as depicted in **bolded font** above, we find this project to be consistent with the Wildlife and Inland Fisheries and Commonwealth Lands Enforceable Policies of the Coastal Zone Management Program.

Thank you,

--

Lee Brann
Environmental Services Biologist
Wildlife Information and Environmental Services

he/him/his

P 804.367.1295
Department of Wildlife Resources
CONSERVE. CONNECT. PROTECT.

A 7870 Villa Park Drive, P.O. Box 90778, Henrico, VA 23228
www.VirginiaWildlife.gov

--

Julia Wellman
Environmental Impact Review Coordinator

Department of Environmental Quality
Environmental Impact Review and Long Range Priorities Program
1111 E Main Street, Suite 1400
Richmond, VA 23219

NEW PHONE NUMBER: 804-774-8237
Julia.Wellman@DEQ.virginia.gov
www.deq.virginia.gov

**** For program updates and public notices, please subscribe to Constant Contact: https://lp.constantcontact.com/su/MVcCump/EIR ****

****New EIR Website: https://www.deq.virginia.gov/permits-regulations/environmental-impact-review****

--

Julia Wellman
Environmental Impact Review Coordinator

Department of Environmental Quality
Environmental Impact Review and Long Range Priorities Program
1111 E Main Street, Suite 1400
Richmond, VA 23219

NEW PHONE NUMBER: 804-774-8237
Julia.Wellman@DEQ.virginia.gov
www.deq.virginia.gov

**** For program updates and public notices, please subscribe to Constant Contact: https://lp.constantcontact.com/su/MVcCump/EIR ****

****New EIR Website: https://www.deq.virginia.gov/permits-regulations/environmental-impact-review****

--

Julia Wellman
Environmental Impact Review Coordinator

Department of Environmental Quality
Environmental Impact Review and Long Range Priorities Program
1111 E Main Street, Suite 1400
Richmond, VA 23219

NEW PHONE NUMBER: 804-774-8237
Julia.Wellman@DEQ.virginia.gov
www.deq.virginia.gov

**** For program updates and public notices, please subscribe to Constant Contact: https://lp.constantcontact.com/su/MVcCump/EIR ****

****New EIR Website: https://www.deq.virginia.gov/permits-regulations/environmental-impact-review****

Commonwealth of Virginia

Wellman, Julia <julia.wellman@deq.virginia.gov>

Aerial application of pesticide for mosquito and invasive plant species (DHR 2022-0132/ DEQ 22-110F)

1 message

Holma, Marc <marc.holma@dhr.virginia.gov> Mon, Aug 1, 2022 at 2:18 PM
To: Julia Wellman <julia.wellman@deq.virginia.gov>

Dear Julia,

Please accept this email as DHR's official response to DEQ's request that we review and comment on the above referenced project. We believe that no historic properties listed in or eligible for listing in the NRHP or VLR will be affected by this undertaking.

Sincerely,
Marc

--
Marc Holma
Architectural Historian
Division of Review and Compliance
(804) 482-6090
marc.holma@dhr.virginia.gov

Commonwealth of Virginia

Wellman, Julia <julia.wellman@deq.virginia.gov>

Re: NEW PROJECT Air Force Aerial Application of Pesticide, DEQ 22-110F

1 message

Warren, Arlene <arlene.warren@vdh.virginia.gov> Wed, Jul 27, 2022 at 2:24 PM
To: Julia Wellman <julia.wellman@deq.virginia.gov>
Cc: rr Environmental Impact Review <eir@deq.virginia.gov>

Project Name: Aerial Application of Pesticide for Mosquito and Invasive Plant Species Control at Joint Base Langley-Eustis
Project #: **22-110F**
UPC #: N/A
Location: Newport News, Hampton, York County

VDH – Office of Drinking Water has reviewed the above project. Below are our comments as they relate to proximity to **public drinking water sources** (groundwater wells, springs and surface water intakes). Potential impacts to public water distribution systems or sanitary sewage collection systems **must be verified by the local utility.**

The following public groundwater wells are located within a 1 mile radius of the project site:

PWS ID Number	City/County	System Name	Facility Name
3700500	NEWPORT NEWS	NEWPORT NEWS, CITY OF	WELL 1A
3700500	NEWPORT NEWS	NEWPORT NEWS, CITY OF	WELL 1B
3700500	NEWPORT NEWS	NEWPORT NEWS, CITY OF	WELL 3B
3700500	NEWPORT NEWS	NEWPORT NEWS, CITY OF	WELL 3A

The following surface water intakes are located within a 5 mile radius of the project site:

PWS ID Number	System Name	Facility Name
3700500	NEWPORT NEWS, CITY OF	HARWOOD MILL
3700500	NEWPORT NEWS, CITY OF	LEE HALL
3700500	NEWPORT NEWS, CITY OF	SKIFFES CREEK

The project is not within the watershed of any public surface water intakes.

Best Management Practices should be employed, including Erosion & Sedimentation Controls and Spill Prevention Controls & Countermeasures on the project site.

Materials should be managed while on site and during transport to prevent impacts to nearby surface water.

The Virginia Department of Health – Office of Drinking Water appreciates the opportunity to provide comments. If you have any questions, please let me know.

Best Regards,

Arlene F. Warren
GIS Program Support Technician
Virginia Department of Health, Office of Drinking Water
109 Governor Street, 6th Floor
Richmond, VA 23219
804-356-6658 (office/cell/text)

On Mon, Jul 25, 2022 at 1:19 PM Fulcher, Valerie <valerie.fulcher@deq.virginia.gov> wrote:

Good afternoon - this is a new OEIR review request/project:

Document Type: Federal Consistency Determination
Project Sponsor: US Department of the Air Force
Project Title: Aerial Application of Pesticide for Mosquito and Invasive Plant Species Control at Joint Base Langley-Eustis
Location: Newport News, Hampton, York County
Project Number: DEQ #22-110F

The document is attached.

The due date for comments is AUGUST 22, 2022. You can send your comments either directly to JULIA WELLMAN by email (Julia.Wellman@deq.virginia.gov), or you can send your comments by regular interagency/U.S. mail to the Department of Environmental Quality, Office of Environmental Impact Review, P.O. Box 1105, Richmond, VA 23218.

If you cannot meet the deadline, please notify the project coordinator prior to the comment due date. Arrangements may be made to extend the deadline for comments if possible. An agency will be considered to have no concerns if comments are not received (or contact is made) within the review period. However, it is important that agencies consistently participate in accordance with Virginia Code Section 10.1-1192.

REVIEW INSTRUCTIONS:

A. Please review the document carefully. If the proposal has been previously reviewed (e.g. as a draft EIS or a Part 1 EIR), please consider whether your earlier comments have been adequately addressed.

B. Prepare your agency's comments in a form which would be acceptable for responding directly to a project proponent agency (agency stationary or email) and include the project number on all correspondence.

If you have any questions, please email Julia.

Thanks!

Valerie

--

Valerie A. Fulcher, CAP, OM, Admin/Data Coordinator Senior

Department of Environmental Quality

Environmental Enhancement - Office of Environmental Impact Review

1111 East Main Street

Richmond, VA 23219

NEW PHONE NUMBER: 804-659-1550

Email: Valerie.Fulcher@deq.virginia.gov

https://www.deq.virginia.gov/permits-regulations/environmental-impact-review

OUR ENFORCEABLE POLICIES HAVE BEEN UPDATED FOR 2021: https://www.deq.virginia.gov/permits-regulations/environmental-impact-review/federal-consistency

For program updates and public notices please subscribe to Constant Contact: https://lp.constantcontact.com/su/MVcCump/EIR

Matthew S. Wells
Director

Frank N. Stovall
Deputy Director

Darryl Glover
Deputy Director

Dam Safety, Floodplain

Soil and Water

COMMONWEALTH of VIRGINIA
DEPARTMENT OF CONSERVATION AND RECREATION
Conservation

MEMORANDUM

DATE**:** August 19, 2022

TO: Julia Wellman

FROM: Allison Tillett, Environmental Impact Review Coordinator

SUBJECT: DEQ 22-110F, Aerial Application of Pesticide at Joint Base Langley-Eustis

Division of Planning and Recreation Resources

The Department of Conservation and Recreation (DCR), Division of Planning and Recreational Resources (PRR), develops the *Virginia Outdoors Plan* and coordinates a broad range of recreational and environmental programs throughout Virginia. These include the Virginia Scenic Rivers program; Trails, Greenways, and Blueways; Virginia State Park Master Planning and State Park Design and Construction. PRR also administers the Land & Water Conservation Fund (LWCF) program in Virginia.

Division of Natural Heritage

The Department of Conservation and Recreation's Division of Natural Heritage (DCR) has searched its Biotics Data System for occurrences of natural heritage resources from the area outlined on the submitted map. Natural heritage resources are defined as the habitat of rare, threatened, or endangered plant and animal species, unique or exemplary natural communities, and significant geologic formations.

According to the information currently in our files, the Blows Creek Conservation Site, the Bailey Creek Forest Conservation Site and the Northwest Branch Back River Marshes Conservation Site are located within the project site. Conservation sites are tools for representing key areas of the landscape that warrant further review for possible conservation action because of the natural heritage resources and habitat they support. Conservation sites are polygons built around one or more rare plant, animal, or natural community designed to include the element and, where possible, its associated habitat, and buffer or other adjacent land thought necessary for the element's conservation. Conservation sites are given a biodiversity significance ranking based on the rarity, quality, and number of element occurrences they contain; on a scale of 1-5, 1 being most significant. These conservation sites have been given a biodiversity significance ranking of B5, which represents sites of general biodiversity significance. The natural heritage resource of concern at these sites is:

Myotis austroriparius	Southeastern myotis	G4/S2/NL/NL

The Southeastern myotis is a bat which occurs throughout the southeast of the United States, including coastal and piedmont areas from North Carolina to Florida and west to Texas, and north through the Mississippi Valley (NatureServe, 2009). Along the Atlantic coast, its northern range limit is in southeastern

Virginia. Throughout its range these bats roost in caves, buildings, mines, and hollow trees during the spring and summer. In the winter they can be found roosting in small groups in outdoor sites at areas over water, such as bridges, culverts, storm sewers, and boat houses as well as in hollow trees (Barbour and Davis, 1969). This bat forages on small insects in riparian floodplain forests or woodland wetlands with permanent open water nearby (Gardner et al., 1992; Humphrey and Gore, 1992). Uncommon among *Myotis* bats, the Southeastern myotis often gives birth to twins (Harvey, 1992).

Threats to the Southeastern myotis include human disturbance and physical alteration of caves and other sites used as hibernacula and maternity sites (NatureServe, 2009). Also, the clearing and draining of bottomland hardwood forest wetlands likely reduces summer roosting and foraging habitat (NatureServe, 2009).

Furthermore, according to a DCR biologist, there is potential for other rare bats including little brown bat (*Myotis lucifugus*, G3/S?/NL/LE), tri-colored bat (*Perimyotis subflavus*), Eastern big-eared bat (*Corynorhinus rafinesquii macrotis*, G3G4T3/S2/NL/LE) and Northern long-eared bat (*Myotis septentrionalis,* G1G2/S1S3/LT/LT) to occur if suitable habitat exists on site.

Due to the documented occurrences of Southeastern myotis and the potential for this site to support additional populations of rare bats, DCR recommends avoiding aerial pesticide spraying during their breeding season. Due to the legal status of some of the species listed above, DCR recommends coordination with the US Fish and Wildlife Service (USFWS) and the Virginia Department of Wildlife Resources (VDWR) to ensure compliance with protected species legislation.

DCR also recommends aerial application of herbicide occur late in the growing season when most native plants have senesced but Phragmites will still uptake herbicide, as well as ensuring that the aerial application of herbicide is accurately targeted to Phragmites stands only, to limit potential adverse effects to surrounding wetlands.

There are no State Natural Area Preserves under DCR's jurisdiction in the project vicinity.

Under a Memorandum of Agreement established between the Virginia Department of Agriculture and Consumer Services (VDACS) and the DCR, DCR represents VDACS in comments regarding potential impacts on state-listed threatened and endangered plant and insect species. The current activity will not affect any documented state-listed plants or insects.

New and updated information is continually added to Biotics. Please re-submit project information and map for an update on this natural heritage information if the scope of the project changes and/or six months has passed before it is utilized.

The VDWR maintains a database of wildlife locations, including threatened and endangered species, trout streams, and anadromous fish waters that may contain information not documented in this letter. Their database may be accessed from http://vafwis.org/fwis/ or contact Amy Martin at (804-367-2211) or amy.martin@dwr.virginia.gov. A documented occurrence of a state and federally listed animal is located within the submitted project boundary including a 100-foot buffer. Therefore, DCR recommends

coordination with NOAA Fisheries and Virginia's regulatory authority for the management and protection of this species, the VDWR, to ensure compliance with protected species legislation.

Division of State Parks

DCR's Division of State Parks is responsible for acquiring and managing, state parks. Park development and master planning are managed by the Division of Planning and Recreation Resources. Master plans are required prior to a parks opening and are updated every ten years (Virginia Code § 10.1-200 *et seq.*).

Division of Dam Safety and Floodplain Management

Dam Safety Program:
The Dam Safety program was established to provide proper and safe design, construction, operation and maintenance of dams to protect public safety. Authority is bestowed upon the program according to *The Virginia Dam Safety Act*, Article 2, Chapter 6, Title 10.1 (10.1-604 et seq) of the Code of Virginia and Dam Safety Impounding Structure Regulations (Dam Safety Regulations), established and published by the Virginia Soil and Water Conservation Board (VSWCB).

Floodplain Management Program:
The National Flood Insurance Program (NFIP) is administered by the Federal Emergency Management Agency (FEMA), and communities who elect to participate in this voluntary program manage and enforce the program on the local level through that community's local floodplain ordinance. Each local floodplain ordinance must comply with the minimum standards of the NFIP, outlined in 44 CFR 60.3; however, local communities may adopt more restrictive requirements in their local floodplain ordinance, such as regulating the 0.2% annual chance flood zone (Shaded X Zone).

All development within a Special Flood Hazard Area (SFHA), as shown on the locality's Flood Insurance Rate Map (FIRM), must be permitted and comply with the requirements of the local floodplain ordinance.

State Agency Projects Only
Executive Order 45, signed by Governor Northam and effective on November 15, 2019, establishes mandatory standards for development of state-owned properties in Flood-Prone Areas, which include Special Flood Hazard Areas, Shaded X Zones, and the Sea Level Rise Inundation Area. These standards shall apply to all state agencies.

1. Development in Special Flood Hazard Areas and Shaded X Zones
    A. All development, including buildings, on state-owned property shall comply with the locally-adopted floodplain management ordinance of the community in which the state-owned property is located and any flood-related standards identified in the Virginia Uniform Statewide Building Code.
    B. If any state-owned property is located in a community that does not participate in the NFIP, all development, including buildings, on such state-owned property shall comply with the NFIP requirements as defined in 44 CFR §§ 60.3, 60.4, and 60.5 and any flood-related standards identified in the Virginia Uniform Statewide Building Code.
        (1) These projects shall be submitted to the Department of General Services (DGS), for review and approval.

(2) DGS shall not approve any project until the State NFIP Coordinator has reviewed and approved the application for NFIP compliance.
(3) DGS shall provide a written determination on project requests to the applicant and the State NFIP Coordinator. The State NFIP Coordinator shall maintain all documentation associated with the project in perpetuity.

C. No new state-owned buildings, or buildings constructed on state-owned property, shall be constructed, reconstructed, purchased, or acquired by the Commonwealth within a Special Flood Hazard Area or Shaded X Zone in any community unless a variance is granted by the Director of DGS, as outlined in this Order.

The following definitions are from Executive Order 45:

Development for NFIP purposes is defined in 44 CFR § 59.1 as "Any man-made change to improved or unimproved real estate, including but not limited to buildings or other structures, mining, dredging, filling, grading, paving, excavation or drilling operations or storage of equipment or materials."

The Special Flood Hazard Area may also be referred to as the 1% annual chance floodplain or the 100-year floodplain, as identified on the effective Flood Insurance Rate Map and Flood Insurance Study. This includes the following flood zones: A, AO, AH, AE, A99, AR, AR/AE, AR/AO, AR/AH, AR/A, VO, VE, or V.

The Shaded X Zone may also be referred to as the 0.2% annual chance floodplain or the 500- year floodplain, as identified on the effective Flood Insurance Rate Map and Flood Insurance Study.

The Sea Level Rise Inundation Area referenced in this Order shall be mapped based on the National Oceanic and Atmospheric Administration Intermediate-High scenario curve for 2100, last updated in 2017, and is intended to denote the maximum inland boundary of anticipated sea level rise.

"State agency" shall mean all entities in the executive branch, including agencies, offices, authorities, commissions, departments, and all institutions of higher education.

"Reconstructed" means a building that has been substantially damaged or substantially improved, as defined by the NFIP and the Virginia Uniform Statewide Building Code.

Federal Agency Projects Only

Projects conducted by federal agencies within the SFHA must comply with federal Executive Order 11988: Floodplain Management.

DCR's Floodplain Management Program does not have regulatory authority for projects in the SFHA. The applicant/developer must reach out to the local floodplain administrator for an official floodplain determination and comply with the community's local floodplain ordinance, including receiving a local permit. Failure to comply with the local floodplain ordinance could result in enforcement action from the locality. For state projects, DCR recommends that compliance documentation be provided prior to the project being funded. For federal projects, the applicant/developer is encouraged reach out to the local floodplain administrator and comply with the community's local floodplain ordinance.

To find flood zone information, use the Virginia Flood Risk Information System (VFRIS):
www.dcr.virginia.gov/vfris

To find community NFIP participation and local floodplain administrator contact information, use DCR's Local Floodplain Management Directory: www.dcr.virginia.gov/dam-safety-and-floodplains/floodplain-directory

The remaining DCR divisions have no comments regarding the scope of this project. Thank you for the opportunity to comment.

CC: Troy Andersen, USFWS
Christine Vaccaro, NOAA Fisheries-Protected Species Division
Amy Martin, VDWR

Commonwealth of Virginia

Wellman, Julia <julia.wellman@deq.virginia.gov>

DEQ #22-110F : Aerial Application of Pesticide for Mosquito and Invasive Plant Species Control at Joint Base Langley-Eustis

1 message

Bott, Louis J. <bottlj@nnva.gov> Mon, Aug 22, 2022 at 3:29 PM
To: "Julia.Wellman@deq.virginia.gov" <Julia.Wellman@deq.virginia.gov>

The City of Newport News offers the following in response to the CZMA consistency determination for management of mosquitos and invasive species using aerial pesticide applications (DEQ 22-110F).

With regard to the proposed activity, the city has concern over the potential risks of impacts to the community neighborhoods and the waterworks reservoir resources that are in proximity to the treatment areas. The proposed activity areas identified in Figures 1 and 3 of the CZMA document are, in numerous instances, less than 100 feet away from residential properties situated to the north and the east and approximately 2,900 feet from the Lee Hall reservoir and water supply intake facility. The off-target movement of pesticides (drift) from aerial application operations to human receptors in these neighborhoods represents an exposure risk and the reservoir facilities are key elements to regional drinking water treatment operations that could be adversely affected.

The city recognizes that uncontrollable meteorological variables can change rapidly, and it is unclear precisely what conditions represent limits for aerial treatment operations at the Ft. Eustis location. Therefore, we request that the following information be made available:

1) A statement or procedure describing how drift will be limited (other than low altitude application).

2) A clear benchmark of values for direct and indirect conditions that influence drift for these operations, as well as clarification on whether each condition independently generates the cancellation of the operation or if a cumulative set of lesser benchmark values creates a condition for cancelling the operation.

3) The means and methods of obtaining and characterizing on-site meteorological conditions data at the time of operation.

4) Any atmospheric dispersion data to show area of impact for anticipated drift distances corresponding to the range values for direct and indirect conditions that influence drift.

5) Confirmation that any treatment to the railroad spur property identified on Figures 1 and 3 will be done by land applicators.

6) The means and methods of community notification prior to the operations be provided.

It is our hope that relevant sections and appendices for aerial applications from the Integrated Pest Management Plan Joint Base Langley Ft Eustis- Plan years 2020-2024 have already addressed these issues and we look forward to the opportunity to review the requested information.

Regards,

Louis J. Bott Jr. REM, CHMM

Environmental Division Manager

City of Newport News, Virginia

bottlj@nnva.gov (757)933-2350

Commonwealth of Virginia

Wellman, Julia <julia.wellman@deq.virginia.gov>

Fwd: DEQ #22-110F : Aerial Application of Pesticide for Mosquito and Invasive Plant Species Control at Joint Base Langley-Eustis

1 message

Wellman, Julia <julia.wellman@deq.virginia.gov> Mon, Aug 22, 2022 at 3:55 PM
To: sherry.johnson.4@us.af.mil
Cc: "Bishop, Brian [USA - EMP]" <BBishop@versar.com>, "Louis J." <bottlj@nnva.gov>

Good afternoon Sherry,

I am coordinating the review of the federal consistency determination for the above-referenced project. The City of Newport News has some concerns and questions regarding the proposed activity.

Will you please review the comments below and respond to Louis Bott with the city and copy me?

Please feel free to reach out if you have any questions.

Regards, Julia

---------- Forwarded message ---------
From: **Bott, Louis J.** <bottlj@nnva.gov>
Date: Mon, Aug 22, 2022 at 3:29 PM
Subject: DEQ #22-110F : Aerial Application of Pesticide for Mosquito and Invasive Plant Species Control at Joint Base Langley-Eustis
To: Julia.Wellman@deq.virginia.gov <Julia.Wellman@deq.virginia.gov>

The City of Newport News offers the following in response to the CZMA consistency determination for management of mosquitos and invasive species using aerial pesticide applications (DEQ 22-110F).

With regard to the proposed activity, the city has concern over the potential risks of impacts to the community neighborhoods and the waterworks reservoir resources that are in proximity to the treatment areas. The proposed activity areas identified in Figures 1 and 3 of the CZMA document are, in numerous instances, less than 100 feet away from residential properties situated to the north and the east and approximately 2,900 feet from the Lee Hall reservoir and water supply intake facility. The off-target movement of pesticides (drift) from aerial application operations to human receptors in these neighborhoods represents an exposure risk and the reservoir facilities are key elements to regional drinking water treatment operations that could be adversely affected.

The city recognizes that uncontrollable meteorological variables can change rapidly, and it is unclear precisely what conditions represent limits for aerial treatment operations at the Ft. Eustis location. Therefore, we request that the following information be made available:

1) A statement or procedure describing how drift will be limited (other than low altitude application).

2) A clear benchmark of values for direct and indirect conditions that influence drift for these operations, as well as clarification on whether each condition independently generates the cancellation of the operation or if a cumulative set of lesser benchmark values creates a condition for cancelling the operation.

3) The means and methods of obtaining and characterizing on-site meteorological conditions data at the time of operation.

4) Any atmospheric dispersion data to show area of impact for anticipated drift distances corresponding to the range values for direct and indirect conditions that influence drift.

5) Confirmation that any treatment to the railroad spur property identified on Figures 1 and 3 will be done by land applicators.

6) The means and methods of community notification prior to the operations be provided.

It is our hope that relevant sections and appendices for aerial applications from the Integrated Pest Management Plan Joint Base Langley Ft Eustis- Plan years 2020-2024 have already addressed these issues and we look forward to the opportunity to review the requested information.

Regards,

Louis J. Bott Jr. REM, CHMM

Environmental Division Manager

City of Newport News, Virginia

bottlj@nnva.gov (757)933-2350

--

Julia Wellman
Environmental Impact Review Coordinator

Department of Environmental Quality
Environmental Impact Review and Long Range Priorities Program
1111 E Main Street, Suite 1400
Richmond, VA 23219

NEW PHONE NUMBER: 804-774-8237
Julia.Wellman@DEQ.virginia.gov
www.deq.virginia.gov

**** For program updates and public notices, please subscribe to Constant Contact: https://lp.constantcontact.com/su/MVcCump/EIR ****

****New EIR Website: https://www.deq.virginia.gov/permits-regulations/environmental-impact-review****

Commonwealth of Virginia

Wellman, Julia <julia.wellman@deq.virginia.gov>

Re: DEQ #22-110F : Aerial Application of Pesticide for Mosquito and Invasive Plant Species Control at Joint Base Langley-Eustis

1 message

Wellman, Julia <julia.wellman@deq.virginia.gov> Wed, Sep 14, 2022 at 4:14 PM
To: "JENNINGS, DAVID M GS-13 USAF ACC 633 CES/CEIE" <david.jennings.4@us.af.mil>
Cc: "Bishop, Brian [USA - EMP]" <BBishop@versar.com>, "Louis J." <bottlj@nnva.gov>

Mr. Bott,

I understand that the USAF is working on a response to the city's concerns and will contact you soon.

Regards, Julia

On Tue, Sep 13, 2022 at 5:42 PM Wellman, Julia <julia.wellman@deq.virginia.gov> wrote:

> Dave, In addition, do you know if the USAF responded to the city regarding its concerns below?
>
> On Mon, Aug 22, 2022 at 3:55 PM Wellman, Julia <julia.wellman@deq.virginia.gov> wrote:
>
> > Good afternoon Sherry,
> >
> > I am coordinating the review of the federal consistency determination for the above-referenced project. The City of Newport News has some concerns and questions regarding the proposed activity.
> >
> > Will you please review the comments below and respond to Louis Bott with the city and copy me?
> >
> > Please feel free to reach out if you have any questions.
> >
> > Regards, Julia
> >
> > ---------- Forwarded message ---------
> > From: **Bott, Louis J.** <bottlj@nnva.gov>
> > Date: Mon, Aug 22, 2022 at 3:29 PM
> > Subject: DEQ #22-110F : Aerial Application of Pesticide for Mosquito and Invasive Plant Species Control at Joint Base Langley-Eustis
> > To: Julia.Wellman@deq.virginia.gov <Julia.Wellman@deq.virginia.gov>
> >
> > The City of Newport News offers the following in response to the CZMA consistency determination for management of mosquitos and invasive species using aerial pesticide applications (DEQ 22-110F).
> >
> > With regard to the proposed activity, the city has concern over the potential risks of impacts to the community neighborhoods and the waterworks reservoir resources that are in proximity to the treatment areas. The proposed activity areas identified in Figures 1 and 3 of the CZMA document are, in numerous instances, less than 100 feet away from residential properties situated to the north and the east and approximately 2,900 feet from the Lee Hall reservoir and water supply intake facility. The off-target movement of pesticides (drift) from aerial application operations to human receptors in these neighborhoods represents an exposure risk and the reservoir facilities are key elements to regional drinking water treatment operations that could be adversely affected.

The city recognizes that uncontrollable meteorological variables can change rapidly, and it is unclear precisely what conditions represent limits for aerial treatment operations at the Ft. Eustis location. Therefore, we request that the following information be made available:

1) A statement or procedure describing how drift will be limited (other than low altitude application).

2) A clear benchmark of values for direct and indirect conditions that influence drift for these operations, as well as clarification on whether each condition independently generates the cancellation of the operation or if a cumulative set of lesser benchmark values creates a condition for cancelling the operation.

3) The means and methods of obtaining and characterizing on-site meteorological conditions data at the time of operation.

4) Any atmospheric dispersion data to show area of impact for anticipated drift distances corresponding to the range values for direct and indirect conditions that influence drift.

5) Confirmation that any treatment to the railroad spur property identified on Figures 1 and 3 will be done by land applicators.

6) The means and methods of community notification prior to the operations be provided.

It is our hope that relevant sections and appendices for aerial applications from the Integrated Pest Management Plan Joint Base Langley Ft Eustis- Plan years 2020-2024 have already addressed these issues and we look forward to the opportunity to review the requested information.

Regards,

Louis J. Bott Jr. REM, CHMM

Environmental Division Manager

City of Newport News, Virginia

bottlj@nnva.gov (757)933-2350

--

Julia Wellman
Environmental Impact Review Coordinator

Department of Environmental Quality
Environmental Impact Review and Long Range Priorities Program
1111 E Main Street, Suite 1400
Richmond, VA 23219

NEW PHONE NUMBER: 804-774-8237
Julia.Wellman@DEQ.virginia.gov
www.deq.virginia.gov

**** For program updates and public notices, please subscribe to Constant Contact: https://lp.constantcontact.com/su/MVcCump/EIR ****

****New EIR Website: https://www.deq.virginia.gov/permits-regulations/environmental-impact-review****

--

Julia Wellman
Environmental Impact Review Coordinator

Department of Environmental Quality
Environmental Impact Review and Long Range Priorities Program
1111 E Main Street, Suite 1400
Richmond, VA 23219

NEW PHONE NUMBER: 804-774-8237
Julia.Wellman@DEQ.virginia.gov
www.deq.virginia.gov

**** For program updates and public notices, please subscribe to Constant Contact: https://lp.constantcontact.com/su/MVcCump/EIR ****

****New EIR Website: https://www.deq.virginia.gov/permits-regulations/environmental-impact-review****

--

Julia Wellman
Environmental Impact Review Coordinator

Department of Environmental Quality
Environmental Impact Review and Long Range Priorities Program
1111 E Main Street, Suite 1400
Richmond, VA 23219

NEW PHONE NUMBER: 804-774-8237
Julia.Wellman@DEQ.virginia.gov
www.deq.virginia.gov

**** For program updates and public notices, please subscribe to Constant Contact: https://lp.constantcontact.com/su/MVcCump/EIR ****

****New EIR Website: https://www.deq.virginia.gov/permits-regulations/environmental-impact-review****

Appendix B

Reasonably Foreseeable Future Actions

FORMAT PAGE

This section identifies reasonably foreseeable future and recently completed nearby projects that could reasonably affect environmental resources in conjunction with the Proposed Action. Actions identified in **Table B-1** would not interact with all resources; therefore, resources that potentially could result in reasonably foreseeable future direct or indirect impacts with the addition of the Proposed Action are noted in **Table B-1.**

Table B-1. Reasonably Foreseeable Project at and near Joint Base Langley – Eustis

Project	Project Summary	Time Frame	Relevance to Proposed Action	Resource Interaction
JBLE – Eustis				
Third Port Expansion and Dredging	Project includes construction and placement of new finger piers, replacement of mooring piles on north side of Skiffes Creek, installation of structures to control sedimentation at the General's Ramp, and new fender protection, mooring piles, and catwalk at landship.	Future (EA is currently being prepared.)	Would primarily affect floodplains and wetlands, water resources, and potential fish and wildlife habitat on JBLE – Eustis.	Air Quality, Geological Resources, Water Resources, Biological Resources
Third Port Maintenance Dredging	Project includes the removal of dredge material by use of hydraulic dredge (approximately 500,000 CY). Channel depth would be reestablished in accordance with historical requirements.	Future	Would primarily affect floodplains and wetlands, water resources, and potential fish and wildlife habitat on JBLE – Eustis.	Air Quality, Geological Resources, Water Resources, Biological Resources
Training Area 1 Shoreline Stabilization and Erosion Protection	The Proposed Action involves stabilizing and protecting Training Areas 1's 1,800 linear feet of contiguous peninsula shoreline along Bailey Creek and Skiffes Creek. The DAF is considering three proposed alternatives towards meeting the objectives and goals of the Proposed Action (Marsh Management, Living Shoreline, and Concrete Bulkhead). A Final EA was prepared in June 2021.	Present	Would primarily affect floodplains and wetlands, water resources, and potential fish and wildlife habitat on JBLE – Eustis.	Air Quality, Geological Resources, Water Resources, Biological Resources
Monopole Telecommunications Structure (Cell Tower)	The purpose and need of the Proposed Action are to construct a telecommunications structure that would provide acceptable coverage for telecommunications services, as well as a supporting structure for mounting a beacon for the airfield on JBLE—Eustis, Virginia. Construct a 133-foot monopole telecommunications structure within a 70-foot-by-70-foot lease area that would be accessible via an approximate	Present	Would primarily affect land use, aesthetics and visual resources, geological resources, utilities, and potential fish and wildlife habitat on JBLE – Eustis.	Aesthetics and Visual Resources, Air Quality, Geological Resources, Biological Resources

Project	Project Summary	Time Frame	Relevance to Proposed Action	Resource Interaction
Monopole Telecommunications Structure (Cell Tower) (continued)	471-foot-long by 30-foot-wide access/utility easement located off Condon Road adjacent to the Felker Army Airfield and a golf course on JBLE— Eustis, Virginia. The proposed lease area and portions of the access/utility easement would be located within a maintained grassed field, and the remaining portions of the access/utility easement would be located along an existing paved drive (Condon Road). A Final EA was prepared in December 2020.			
Access Control Point Main Gate Expansion	Project would construct and operation a new Access Control Point Main Gate at JBLE— Eustis that will meet DoD standards for the protection of military and civilian personnel, employees, and visitors from known and unknow security threats. Project would include demolition and removal of existing gate houses, canopy, visitor center, concrete island, pavement, concrete curb and gutter and fence line. New construction includes buildings for visitor control, vehicle inspection and overwatch, canopy spanning sentry booths, associated roadway (additional lanes), lighting, and backup generators.	Future (EA is currently being prepared.)	Would primarily affect land use, aesthetics and visual resources, geological resources, transportation, infrastructure, and utilities, and potential fish and wildlife habitat on JBLE – Eustis.	Aesthetics and Visual Resources, Air Quality, Geological Resources, Biological Resources
Forest Pest Suppression	JBLE – Eustis contains critical forest habitat needed to meet Army training. Several invasive forest insect pests have the potential to impact these resources in the near future, including the Asian long-horned beetle, spotted lanternfly, gypsy moth, sirex woodwasp, beech scale, and redbay ambrosia beetle. Additionally, several nonnative bark beetles have been documented on the installation. Furthermore, there is some risk of southern pine beetle outbreaks. Aerial applications of pesticides may be a part of the JBLE – Eustis integrated pest management	Future (No EA is being prepared, but rather AF 813 would be tiered to this EA).	Would primarily affect land use and biological resources on JBLE – Eustis; project would be similar in scope to the aerial application of pesticides but would be expected to be less frequent.	Land Use and Biological Resources

Project	Project Summary	Time Frame	Relevance to Proposed Action	Resource Interaction
Forest Pest Suppression (continued)	toolbox in controlling. If aerial applications were to be used, they would be employed in similar manners to which is discussed in the EA though different USEPA-registered pesticides may be utilized in accordance with their respective labels. Actual need and frequency remain uncertain though response would likely need to occur rapidly and based on surveillance.			
JBLE – Langley				
Fighter Ramp Weather Shelters	Project would construct five weather shelters in the fighter ramp area of JBLE –Langley.	Future	Would primarily affect land use, aesthetics and visual resources, geological resources, transportation, infrastructure, and utilities, and potential fish and wildlife habitat on JBLE – Langley.	Aesthetics and Visual Resources, Air Quality, Geological Resources, Biological Resources
FTU F-22 Weather Shelters	Project would construct 19 weather shelters on JBLE – Langley.	Present (Project is 10 percent complete.)	Would primarily affect land use, aesthetics and visual resources, geological resources, transportation, infrastructure, and utilities, and potential fish and wildlife habitat on JBLE – Langley.	Aesthetics and Visual Resources, Air Quality, Geological Resources, Biological Resources
Taxiway Repair	Project would make repairs to Taxiway Alpha, including the removal of concrete slabs, on JBLE – Langley.	Present (Project is 5 percent complete.)	Would primarily affect geological resources, water resources, transportation, infrastructure, and utilities, and potential fish and wildlife habitat on JBLE – Langley.	Air Quality, Geological Resources, Water Resources, Biological Resources
Runway and Taxiway Repairs	Project includes 10-foot-wide paved shoulders on Taxiways F, E, and sections of K, and 25-foot-wide paved shoulders on Taxiway D, sections of Taxiway K, and Runway 08-26. The project also includes 100-foot combined paved and unpaved shoulders for Runway 08-26 and 50-foot combined paved and unpaved shoulders for all taxiways.	Future (EA is currently being prepared.)	Would primarily affect land use, aesthetics and visual resources, geological resources, transportation, infrastructure, and utilities, and potential fish and wildlife habitat on JBLE – Langley.	Land Use, Aesthetics and Visual Resources, Air Quality, Geological Resources, Biological Resources

Project	Project Summary	Time Frame	Relevance to Proposed Action	Resource Interaction
Off-Base Activities				
Skiffes Creek Connector	Skiffes Creek Connector is a Virginia Department of Transportation project to create efficient local connectivity between Route 60 and Route 143, in the area between Route 199 and Route 238, in a manner that improves safety, emergency evacuation, and the movement of goods along the two primary roadways. The project is included in the Hampton Roads Transportation Planning Organization's fiscal year 2018-2021 Transportation Improvement Program and was added to the 2040 Long-Range Transportation Plan as a stand-alone project for preliminary engineering and right-of-way. The Skiffes Creek Connector project consists of design and construction of a new, two-lane connecting roadway between Route 60 and Route 143; new turn lanes and intersection improvements; two bridges—one bridge over Skiffes Creek and one bridge over the CSX railroad tracks and Route 143; and the addition of a multiuse path along eastbound Route 60 between Green Mount Parkway (Route 774) and the existing bus stop.	EA/FONSI completed in March 2019; construction began in spring 2021 and is still under way.	Would primarily affect regional land use, aesthetics and visual resources, geological resources, transportation, infrastructure, and utilities, and biological resources.	Land Use, Aesthetics and Visual Resources, Air Quality, Noise, Geological Resources, Biological Resources, and Water Resources
Surry-Skiffes Creek Transmission Line	On 26 February 2019, the Surry-Skiffes Creek Transmission Line project was energized, dramatically improving the electric reliability and bringing cleaner air to the 600,000 customers on the Virginia Peninsula. The project included the construction of a 7.7-mile electric transmission line across the James River from the Surry switchyard to the new Skiffes Creek switching station in James City County. The project will reduce reliance on Yorktown's oil-fired Unit 3, which is forecasted to close in 2022.	Decommis-sioning for the two Yorktown coal-fired generating units began in March 2022.	Would primarily affect regional land use, aesthetics and visual resources, geological resources, transportation, infrastructure, and utilities, and biological resources. A USACE-approved $90 million mitigation plan provided for preservation and enhancement of landscapes, protection of shorelines and maintenance of water quality for historic	Land Use, Transportation, Infrastructure, and Utilities, Biological Resources, and Water Resources

Project	Project Summary	Time Frame	Relevance to Proposed Action	Resource Interaction
Surry-Skiffes Creek Transmission Line (continued)			properties on federal, Commonwealth, municipal, county, and private lands.	
NASA Langley Research Center Launches and Landings	NASA's Langley Research Center has at least eight launches scheduled for 2022 and include the Axiom-1 mission to the International Space Station, NASA's SpaceX Crew-4 mission to the International Space Station, the first flight of NASA's X-57, small, experimental electric airplane, the CAPSTONE CubeSat Pathfinder mission, the Boeing Orbital Flight Test-2, the Artemis I launch, the launch of Psyche, and the Surface Water and Ocean Topography mission.	April through November 2022 dates are currently available.	Would primarily affect visual and aesthetic resources, air quality, noise, transportation, infrastructure, and utilities, and biological resources.	Aesthetics and Visual Resources, Air Quality, Noise, Transportation, Infrastructure, and Utilities, Biological Resources

JBLE – Eustis – Joint Base Langley – Eustis, Fort Eustis; **EA** – Environmental Assessment; **CY** – cubic yard; **DAF** – Department of the Air Force; **DoD** – Department of Defense; **USEPA** – US Environmental Protection Agency; **JBLE – Langley** – Joint Base Langley – Eustis, Langley Air Force Base; **FONSI** – Finding of No Significant Impact; **USACE** – US Army Corps of Engineers; **NASA** – National Aeronautics and Space Administration

FORMAT PAGE

Appendix C

National Environmental Policy Act Supporting Documentation

-

FORMAT PAGE

Air Quality Emissions Calculations and Air Conformity Applicability Analysis

FORMAT PAGE

Air Quality Emissions Calculations

1. Emissions Estimation Methodology and Assumptions

The Air Force's Air Conformity Applicability Model (ACAM) was used to estimate emissions from the DAF proposed action. ACAM was used for the following activities:

1. Aircraft operations at the airfield below the mixing height of 3,000 ft above ground level. This includes trim tests prior to takeoff, taxi/idle out, takeoff, climb-out, approach, landing, and taxi/idle in. No touch-and-go operations are included. The aircraft would then continue to operate in 'approach' mode the entire flight time immediately after climb out (CARB, 1990).
2. Emissions after the climb out mode of operations are associated with airspace operations.
3. For airfield operations, use of Ground support equipment (AGE and Auxiliary Power Units) was assumed.
4. Emissions from aircraft refueling and fuel storage. To be conservative, AVGAS is assumed to be the fuel that will be used by the helicopter aircraft.
5. Aircraft operations that are to take place only at Langley Airfield and the airspace environs in the vicinity are included. Transit emissions from Ohio to Langley are not included.
6. Emissions for flight operations for the C-130H aircraft were performed using the ACAM. Emissions for the Bell OII58A helicopter emissions are estimated manually using the standard relevant emission factors for mobile source emissions. Manual calculation methodology is identical to ACAM, and the algorithms are as shown below.

2. Data Inputs for Aerial Spraying [ACAM And Manual]

a. Aerial Spraying for Pesticides at Langley

Data from Final DOPAA for ACAM Model Inputs
Aircraft: C-130H
No. of Aircraft: 1
Spray Elevation: 150-300 ft.
Applications/year (max.): 3
Days/Application (max): 2
Spray: May through October
Sorties/Day: 1
Hours/Sortie Spraying for each Application: 2
Total Sorties Per Year: 6
(3 Applications/year * 2 Days/Application * 1 sortie/day)
Estimated Duration of Spray or Total Hours/Year Aerial Spraying Flight Time (max): 12 (720 mins) [Excluding LTO time]
(3 Applications/year * 2 Days/Application * 1 sortie/day * 2 Hours/sortie for spraying)

b. Aerial Spraying for Herbicides at Langley

Data from Final DOPAA for Manual Calculations
Aircraft: Bell OII58A
No. of Aircraft: 1
Spray Elevation: 150-300 ft.

Applications/year (max.): 1
Days/Application (max): 2
Spray: August through October
Sorties/Day: 8
Hours/Day Spraying Per Sortie: 0.1
Total Sorties Per Year: 16
(1 Applications/year * 2 Days/Application * 8 sortie/day)
Estimated Duration of Spray or Total Hours/Year Aerial Spraying Flight Time (max): 1.6 (96 mins) [Excluding LTO time]. Total 745 acres to be sprayed. This assumes that 100 gallons are sprayed in 6 mins, a spray rate of 16 acres/min at 80 mph based on information in USDA Forest Service. *A Pilot Project with Orthene® for Control of the Western Spruce Bud*, 1977, page 14.
(1 Application/year * 2 Days/Application * 8 sortie/day * 0.1 Hours/sortie for spraying)

3. ALGORITHM FOR MANUAL CALCULATIONS FOR Bell OII58A Helicopter

Aircraft Emissions per Mode for LTOs per Year
$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

Aircraft Emissions for LTOs per Year
$AE_{LTO} = AEM_{IDLE\_IN} + AEM_{IDLE\_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs)
AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs)
AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs)
$AEM_{APPROACH}$: Aircraft Emissions for Approach Mode (TONs)
$AEM_{CLIMBOUT}$: Aircraft Emissions for Climb-Out Mode (TONs)
$AEM_{TAKEOFF}$: Aircraft Emissions for Take-Off Mode (TONs)

Aircraft Emissions per Mode for Airspace Operations per Year
$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * AEM_{CLIMBOUT} / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
$AEM_{APPROACH}$: Aircraft Emissions for Approach* Mode (TONs)
2000: Conversion Factor pounds to TONs
*Emissions for the airspace operations are estimated using the approach power settings.

The ACAM summary and detailed reports are provided in this Appendix. The detailed report outlines the algorithms and assumptions and contains information on the constants and numeric conversions.

4. ASSUMPTIONS

The following are assumptions were used in the air quality analysis for the Preferred Alternative:

1. No construction activities or installation of permanent structures would be associated with the Preferred Alternative at JBLE. This includes no demolition, earth moving, hauling, or paving.
2. No new storage tanks would be installed - additional Jet A fuel and Avgas needed by contractor aircraft will be calculated based on engine type, number of sorties, and engine fuel consumption rate. Volatile organic compound (VOC) emissions are based upon the additional fuel handled using the emission estimation procedures in AP-42, Section 7.1.3. Because Jet-A has a very low volatility, the additional fueling operations will result in a minor increase in VOC emissions.
3. For the purposes of modeling, the project is assumed to start in May 2022 and end in October 2022.
4. Aircraft landing and takeoff (LTO) cycles - use/assume Air Conformity Applicability Model (ACAM) default "times in mode" to be conservative.
5. Assume mixing height is 3,000 ft (this matches USEPA and Air Force Guidance). Entire spraying operations will be in the mixing zone.
6. ACAM does not have separate inputs for time spent within the airspace. To represent the time spent at or below 3,000 ft, estimated minutes was assigned to approach power mode within the ACAM LTO input fields. No time was assigned to any other power modes, but default ACAM output also lists Trim Tests and TGOs; however, all inputs for these fields were set to zero.
7. Manual emission calculations were performed for the helicopter aerial spraying operations as the aircraft (and associated engine type) were not in ACAM. The methodology used was identical to ACAM methodology and algorithms.

5 REFERENCES

California Air Resources Board (CARB). 1990. Section 8.1. Agricultural Aircraft. Methodology for Agricultural Aircraft, page 8.1-2, paragraph 3. Internet URL: https://www.arb.ca.gov/ei/areasrc/fullpdf/full8-1.pdf.

ACAM Summary Report

1. General Information: The Air Force's Air Conformity Applicability Model (ACAM) was used to perform an analysis to assess the potential air quality impact/s associated with the action in accordance with the Air Force Manual 32-7002, Environmental Compliance and Pollution Prevention; the Environmental Impact Analysis Process (EIAP, 32 CFR 989); and the General Conformity Rule (GCR, 40 CFR 93 Subpart B). This report provides a summary of the ACAM analysis.

a. Action Location:

Base: LANGLEY AFB
State: Virginia
County(s): York
Regulatory Area(s): Norfolk-Virginia Beach-Newport News (Hampton Roads), VA

b. Action Title: AERIAL APPLICATION OF PESTICIDE FOR MOSQUITO AND INVASIVE PLANT SPECIES CONTROL-JOINT BASE LANGLEY-EUSTIS, FORT EUSTIS AND LANGLEY AIR FORCE BASE, VIRGINIA

c. Project Number/s (if applicable): N/A

d. Projected Action Start Date: 5 / 2022

e. Action Description:

The Proposed Action supports management of mosquito populations under conditions of disease risk and intolerable levels as well as management of invasive plant species, particularly common reed at JBLE. The Proposed Action includes control of adult mosquitoes over all of JBLE – Eustis' approximately 7,900 acres and over approximately 3,600 acres of JBLE – Langley. The Proposed Action also includes the control of common reed on approximately 600 acres at JBLE – Eustis and on approximately 145 acres on JBLE – Langley.

f. Point of Contact:

Name: Radhika Narayanan
Title: Envionmental Scientist
Organization: Versar Inc
Email: rnarayanan@versar.com
Phone Number:

2. Analysis: Total combined direct and indirect emissions associated with the action were estimated through ACAM on a calendar-year basis for the "worst-case" and "steady state" (net gain/loss upon action fully implemented) emissions. General Conformity under the Clean Air Act, Section 1.76 has been evaluated for the action described above according to the requirements of 40 CFR 93, Subpart B.

Based on the analysis, the requirements of this rule are: _____ applicable
__X__ not applicable

Conformity Analysis Summary:

2022

Pollutant	Action Emissions (ton/yr)	GENERAL CONFORMITY	
		Threshold (ton/yr)	Exceedance (Yes or No)
Norfolk-Virginia Beach-Newport News (Hampton Roads), VA			
VOC	1.464	100	No
NOx	0.632	100	No
CO	2.200		
SOx	0.115		
PM 10	0.099		
PM 2.5	0.089		
Pb	0.000		
NH3	0.000		
CO2e	343.6		

2023 - (Steady State)

Pollutant	Action Emissions (ton/yr)	GENERAL CONFORMITY	
		Threshold (ton/yr)	Exceedance (Yes or No)
Norfolk-Virginia Beach-Newport News (Hampton Roads), VA			
VOC	0.000	100	No
NOx	0.000	100	No
CO	0.000		
SOx	0.000		
PM 10	0.000		
PM 2.5	0.000		
Pb	0.000		
NH3	0.000		
CO2e	0.0		

None of estimated emissions associated with this action are above the conformity threshold values established at 40 CFR 93.153 (b); Therefore, the requirements of the General Conformity Rule are not applicable.

Radhika Narayanan, Environmental Scientist ____ DATE

ACAM Detail Report

1. General Information

- Action Location

Base: LANGLEY AFB
State: Virginia
County(s): York
Regulatory Area(s): Norfolk-Virginia Beach-Newport News (Hampton Roads), VA

- Action Title: AERIAL APPLICATION OF PESTICIDE FOR MOSQUITO AND INVASIVE PLANT SPECIES CONTROL-JOINT BASE LANGLEY-EUSTIS, FORT EUSTIS AND LANGLEY AIR FORCE BASE, VIRGINIA

- Project Number/s (if applicable): N/A

- Projected Action Start Date: 5 / 2022

- Action Purpose and Need:

The purpose of the Proposed Action is to (1) reduce mosquito (and other pest arthropods) populations to tolerable levels, (2) break the disease transmission cycle caused by vectoring arthropods, and (3) restore habitats impacted by invasive plant species such as common reed.

The Proposed Action is needed to control mosquitoes and invasive plant species across large areas of JBLE and to reach remote portions of JBLE that are not reasonably accessible for application by land or watercraft. Large-scale application of pesticide would reduce the potential threat of human disease caused by mosquito vectors, mosquito-induced discomfort, hardship, annoyance, and distraction experienced by personnel at JBLE.

- Action Description:

The Proposed Action supports management of mosquito populations under conditions of disease risk and intolerable levels as well as management of invasive plant species, particularly common reed at JBLE. The Proposed Action includes control of adult mosquitoes over all of JBLE – Eustis' approximately 7,900 acres and over approximately 3,600 acres of JBLE – Langley. The Proposed Action also includes the control of common reed on approximately 600 acres at JBLE – Eustis and on approximately 145 acres on JBLE – Langley.

- Point of Contact

Name: Radhika Narayanan
Title: Envionmental Scientist
Organization: Versar Inc
Email: rnarayanan@versar.com
Phone Number:

- Activity List:

Activity Type		Activity Title
2.	Aircraft	JBLE (Langley and Eustis) Aerial Spray Application using C130H-Airfield Operations

3.	Aircraft	JBLE (Langley and Eustis) Aerial Spray Application using C130H-Airspace Operations
4.	Tanks	Jet A Fuel Storage and Handling
5.	Tanks	AVGAS Fuel Storage and Handling

Emission factors and air emission estimating methods come from the United States Air Force's Air Emissions Guide for Air Force Stationary Sources, Air Emissions Guide for Air Force Mobile Sources, and Air Emissions Guide for Air Force Transitory Sources.

2. Aircraft

2.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location
County: York
Regulatory Area(s): Norfolk-Virginia Beach-Newport News (Hampton Roads), VA

- Activity Title: JBLE (Langley and Eustis) Aerial Spray Application using C130H-Airfield Operations

- Activity Description:
The aircraft and application system used for pesticide aerial spray operations would consist of a C-130H with a modular aerial spray system (MASS) and a differential global positioning system (GPS).
Maximum no of sorties (LTO) by one aircraft is 6 [1 sortie/day * 2 days/application max * 3 applications/year max]. No refilling assumed for aircraft. No engine testing is assumed. Default ACAM for AGE and Trim is assumed.

- Activity Start Date
Start Month: 5
Start Year: 2022

- Activity End Date
Indefinite: No
End Month: 10
End Year: 2022

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.188295
SO_x	0.023765
NO_x	0.256919
CO	0.305704
PM 10	0.016603

Pollutant	Total Emissions (TONs)
PM 2.5	0.014968
Pb	0.000000
NH_3	0.000000
CO_2e	67.7

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

Pollutant	Total Emissions (TONs)
VOC	0.181714

Pollutant	Total Emissions (TONs)
PM 2.5	0.012672

SO_x	0.021076	Pb	0.000000
NO_x	0.129468	NH_3	0.000000
CO	0.282696	CO_2e	63.8
PM 10	0.014214		

- Activity Emissions [Aerospace Ground Equipment (AGE) part]:

Pollutant	Total Emissions (TONs)	Pollutant	Total Emissions (TONs)
VOC	0.006581	PM 2.5	0.002296
SO_x	0.002689	Pb	0.000000
NO_x	0.127452	NH_3	0.000000
CO	0.023008	CO_2e	3.9
PM 10	0.002388		

2.2 Aircraft & Engines

2.2.1 Aircraft & Engines Assumptions

- Aircraft & Engine
Aircraft Designation: WC-130H
Engine Model: T56-A-15
Primary Function: Transport - Bomber
Aircraft has After burn: No
Number of Engines: 4

- Aircraft & Engine Surrogate
Is Aircraft & Engine a Surrogate? No
Original Aircraft Name:
Original Engine Name:

2.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

	Fuel Flow	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CO_2e
Idle	794.00	24.15	1.07	3.90	32.00	0.83	0.75	3234
Approach	1185.00	14.26	1.07	4.40	22.20	0.97	0.87	3234
Intermediate	1825.00	0.58	1.07	9.20	2.40	0.51	0.46	3234
Military	2302.00	0.46	1.07	9.30	2.10	0.50	0.45	3234
After Burn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3234

2.3 Flight Operations

2.3.1 Flight Operations Assumptions

- Flight Operations
Number of Aircraft: 1
Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: 6
Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: 0
Number of Annual Trim Test(s) per Aircraft: 12

- Default Settings Used: Yes

- Flight Operations TIMs (Time In Mode)

Taxi/Idle Out [Idle] (mins): 9.2 (default)
Takeoff [Military] (mins): 0.4 (default)
Takeoff [After Burn] (mins): 0 (default)
Climb Out [Intermediate] (mins): 1.2 (default)
Approach [Approach] (mins): 5.1 (default)
Taxi/Idle In [Idle] (mins): 6.7 (default)

Per the Air Emissions Guide for Air Force Mobile Sources, the defaults values for military aircraft equipped with after burner for takeoff is 50% military power and 50% afterburner. (Exception made for F-35 where KARNES 3.2 flight profile was used)

- Trim Test
Idle (mins): 12 (default)
Approach (mins): 27 (default)
Intermediate (mins): 9 (default)
Military (mins): 12 (default)
AfterBurn (mins): 0 (default)

2.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year
AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year
$AE_{LTO} = AEM_{IDLE\_IN} + AEM_{IDLE\_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs)
AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs)
AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs)
$AEM_{APPROACH}$: Aircraft Emissions for Approach Mode (TONs)
$AEM_{CLIMBOUT}$: Aircraft Emissions for Climb-Out Mode (TONs)
$AEM_{TAKEOFF}$: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year
AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

$AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs)
$AEM_{APPROACH}$: Aircraft Emissions for Approach Mode (TONs)
$AEM_{CLIMBOUT}$: Aircraft Emissions for Climb-Out Mode (TONs)
$AEM_{TAKEOFF}$: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

$AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$

$AEPS_{POL}$: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

$AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs)
$AEPS_{IDLE}$: Aircraft Emissions for Idle Power Setting (TONs)
$AEPS_{APPROACH}$: Aircraft Emissions for Approach Power Setting (TONs)
$AEPS_{INTERMEDIATE}$: Aircraft Emissions for Intermediate Power Setting (TONs)
$AEPS_{MILITARY}$: Aircraft Emissions for Military Power Setting (TONs)
$AEPS_{AFTERBURN}$: Aircraft Emissions for After Burner Power Setting (TONs)

2.4 Auxiliary Power Unit (APU)

2.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

Number of APU per Aircraft	Operation Hours for Each LTO	Exempt Source?	Designation	Manufacturer
1	1	No	GTCP 85-180L	

2.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

Designation	Fuel Flow	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CO_2e
GTCP 85-180L	272.6	0.493	0.289	1.216	3.759	0.131	0.037	910.8

2.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

APU_{POL} = APU * OH * LTO * EF_{POL} / 2000

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

2.5 Aerospace Ground Equipment (AGE)

2.5.1 Aerospace Ground Equipment (AGE) Assumptions

- Default Settings Used: Yes

- AGE Usage
Number of Annual LTO (Landing and Take-off) cycles for AGE: 6

- Aerospace Ground Equipment (AGE) (default)

Total Number of AGE	Operation Hours for Each LTO	Exempt Source?	AGE Type	Designation
1	1	No	Air Compressor	MC-1A - 18.4hp
1	1	No	Air Conditioner	MA-3D - 120hp
1	11	No	Generator Set	A/M32A-86D
1	1	No	Heater	H1
1	3	No	Hydraulic Test Stand	MJ-2A
1	10	No	Light Cart	NF-2
1	0.25	No	Start Cart	A/M32A-60A

2.5.2 Aerospace Ground Equipment (AGE) Emission Factor(s)

- Aerospace Ground Equipment (AGE) Emission Factor (lb/hr)

Designation	Fuel Flow	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CO_2e
MC-1A - 18.4hp	1.1	0.267	0.008	0.419	0.267	0.071	0.068	24.8
MA-3D - 120hp	7.1	0.053	0.050	4.167	0.317	0.109	0.105	161.7
A/M32A-86D	6.5	0.294	0.046	6.102	0.457	0.091	0.089	147.0
H1	0.4	0.100	0.011	0.160	0.180	0.006	0.006	8.9
MJ-2A	0.0	0.190	0.238	3.850	2.460	0.083	0.076	172.0
NF-2	0.0	0.010	0.043	0.110	0.080	0.010	0.010	22.1
A/M32A-60A	0.0	0.270	0.306	1.820	5.480	0.211	0.205	221.1

2.5.3 Aerospace Ground Equipment (AGE) Formula(s)

- Aerospace Ground Equipment (AGE) Emissions per Year
AGE_{POL} = AGE * OH * LTO * EF_{POL} / 2000

AGE_{POL}: Aerospace Ground Equipment (AGE) Emissions per Pollutant (TONs)
AGE: Total Number of Aerospace Ground Equipment
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)

2000: Conversion Factor pounds to tons

3. Aircraft

3.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location
County: York
Regulatory Area(s): Norfolk-Virginia Beach-Newport News (Hampton Roads), VA

- Activity Title: JBLE (Langley and Eustis) Aerial Spray Application using C130H-Airspace Operations

- Activity Description:
The aircraft and application system used for pesticide aerial spray operations would consist of a C-130H with a modular aerial spray system (MASS) and a differential global positioning system (GPS). Estimated total flight time spent in airspace for aerial spraying is 720 minutes [3 applications/year max * 2 days/application * 2 hours flight time per application per day]. ACAM default TIM is not used. All estimated total time in minutes has been allocated to 'approach' mode as aircraft will be flying low. No trim tests, engine testing, AGE or APU assumed.

- Activity Start Date
Start Month: 5
Start Year: 2022

- Activity End Date
Indefinite: No
End Month: 10
End Year: 2022

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	1.216663
SO_x	0.091292
NO_x	0.375408
CO	1.894104
PM 10	0.082760

Pollutant	Total Emissions (TONs)
PM 2.5	0.074484
Pb	0.000000
NH_3	0.000000
CO_2e	275.9

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

Pollutant	Total Emissions (TONs)
VOC	1.216663
SO_x	0.091292
NO_x	0.375408
CO	1.894104
PM 10	0.082760

Pollutant	Total Emissions (TONs)
PM 2.5	0.074484
Pb	0.000000
NH_3	0.000000
CO_2e	275.9

3.2 Aircraft & Engines

3.2.1 Aircraft & Engines Assumptions

- Aircraft & Engine
Aircraft Designation: WC-130H
Engine Model: T56-A-15
Primary Function: Transport - Bomber
Aircraft has After burn: No
Number of Engines: 4

- Aircraft & Engine Surrogate
Is Aircraft & Engine a Surrogate? No
Original Aircraft Name:
Original Engine Name:

3.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

	Fuel Flow	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CO_2e
Idle	794.00	24.15	1.07	3.90	32.00	0.83	0.75	3234
Approach	1185.00	14.26	1.07	4.40	22.20	0.97	0.87	3234
Intermediate	1825.00	0.58	1.07	9.20	2.40	0.51	0.46	3234
Military	2302.00	0.46	1.07	9.30	2.10	0.50	0.45	3234
After Burn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3234

3.3 Flight Operations

3.3.1 Flight Operations Assumptions

- Flight Operations
Number of Aircraft: 1
Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: 6
Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: 0
Number of Annual Trim Test(s) per Aircraft: 0

- Default Settings Used: No

- Flight Operations TIMs (Time In Mode)
Taxi/Idle Out [Idle] (mins): 0
Takeoff [Military] (mins): 0
Takeoff [After Burn] (mins): 0
Climb Out [Intermediate] (mins): 0
Approach [Approach] (mins): 720
Taxi/Idle In [Idle] (mins): 0

Per the Air Emissions Guide for Air Force Mobile Sources, the defaults values for military aircraft equipped with after burner for takeoff is 50% military power and 50% afterburner. (Exception made for F-35 where KARNES 3.2 flight profile was used)

- Trim Test
Idle (mins): 0
Approach (mins): 0
Intermediate (mins): 0
Military (mins): 0

AfterBurn (mins): 0

3.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

$AE_{LTO} = AEM_{IDLE\_IN} + AEM_{IDLE\_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs)
AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs)
AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs)
$AEM_{APPROACH}$: Aircraft Emissions for Approach Mode (TONs)
$AEM_{CLIMBOUT}$: Aircraft Emissions for Climb-Out Mode (TONs)
$AEM_{TAKEOFF}$: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

$AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs)
$AEM_{APPROACH}$: Aircraft Emissions for Approach Mode (TONs)
$AEM_{CLIMBOUT}$: Aircraft Emissions for Climb-Out Mode (TONs)
$AEM_{TAKEOFF}$: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

$AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$

$AEPS_{POL}$: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)

1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

$AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs)
$AEPS_{IDLE}$: Aircraft Emissions for Idle Power Setting (TONs)
$AEPS_{APPROACH}$: Aircraft Emissions for Approach Power Setting (TONs)
$AEPS_{INTERMEDIATE}$: Aircraft Emissions for Intermediate Power Setting (TONs)
$AEPS_{MILITARY}$: Aircraft Emissions for Military Power Setting (TONs)
$AEPS_{AFTERBURN}$: Aircraft Emissions for After Burner Power Setting (TONs)

3.4 Auxiliary Power Unit (APU)

3.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: No

- Auxiliary Power Unit (APU)

Number of APU per Aircraft	Operation Hours for Each LTO	Exempt Source?	Designation	Manufacturer

3.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

Designation	Fuel Flow	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CO_2e

3.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

$APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

4. Tanks

[redacted]

4.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location

County: York
Regulatory Area(s): Norfolk-Virginia Beach-Newport News (Hampton Roads), VA

- Activity Title: Jet A Fuel Storage and Handling

- Activity Description:
Additional Jet A Fuel for Aerial Spraying Aircraft - C-130H
Fuel use hroughput estimated using number of sorties, type of aircraft and fuel flow rate for aircraft.

- Activity Start Date
Start Month: 5
Start Year: 2022

- Activity End Date
Indefinite: No
End Month: 10
End Year: 2022

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.002267
SO_x	0.000000
NO_x	0.000000
CO	0.000000
PM 10	0.000000

Pollutant	Total Emissions (TONs)
PM 2.5	0.000000
Pb	0.000000
NH_3	0.000000
CO_2e	0.0

4.2 Tanks Assumptions

- Chemical
Chemical Name: Jet kerosene (JP-5, JP-8 or Jet-A)
Chemical Category: Petroleum Distillates
Chemical Density: 7
Vapor Molecular Weight (lb/lb-mole): 130
Stock Vapor Density (lb/ft^3): 0.000170775135930213
Vapor Pressure: 0.00725
Vapor Space Expansion Factor (dimensionless): 0.068

- Tank
Type of Tank: Vertical Tank
Tank Height (ft): 24
Tank Diameter (ft): 12
Annual Net Throughput (gallon/year): 9775

4.3 Tank Formula(s)

- Vapor Space Volume
$VSV = (PI / 4) * D^2 * H / 2$

VSV: Vapor Space Volume (ft^3)
PI: PI Math Constant
D^2: Tank Diameter (ft)
H: Tank Height (ft)

2: Convertion Factor (Vapor Space Volume is assumed to be one-half of the tank volume)

- Vented Vapor Saturation Factor

VVSF = 1 / (1 + (0.053 * VP * H / 2))

VVSF: Vented Vapor Saturation Factor (dimensionless)
0.053: Constant
VP: Vapor Pressure (psia)
H: Tank Height (ft)

- Standing Storage Loss per Year

SSL_{VOC} = 365 * VSV * SVD * VSEF * VVSF / 2000

SSL_{VOC}: Standing Storage Loss Emissions (TONs)
365: Number of Daily Events in a Year (Constant)
VSV: Vapor Space Volume (ft^3)
SVD: Stock Vapor Density (lb/ft^3)
VSEF: Vapor Space Expansion Factor (dimensionless)
VVSF: Vented Vapor Saturation Factor (dimensionless)
2000: Conversion Factor pounds to tons

- Number of Turnovers per Year

NT = (7.48 * ANT) / ((PI / 4.0) * D * H)

NT: Number of Turnovers per Year
7.48: Constant
ANT: Annual Net Throughput
PI: PI Math Constant
D^2: Tank Diameter (ft)
H: Tank Height (ft)

- Working Loss Turnover (Saturation) Factor per Year

WLSF = (18 + NT) / (6 * NT)

WLSF: Working Loss Turnover (Saturation) Factor per Year
18: Constant
NT: Number of Turnovers per Year
6: Constant

- Working Loss per Year

WL_{VOC} = 0.0010 * VMW * VP * ANT * WLSF / 2000

0.0010: Constant
VMW: Vapor Molecular Weight (lb/lb-mole)
VP: Vapor Pressure (psia)
ANT: Annual Net Throughput
WLSF: Working Loss Turnover (Saturation) Factor
2000: Conversion Factor pounds to tons

5. Tanks

[redacted]

5.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location
County: York
Regulatory Area(s): Norfolk-Virginia Beach-Newport News (Hampton Roads), VA

- Activity Title: AVGAS Fuel Storage and Handling

- Activity Description:
Additional Avgas fuel for aerial spraying helicopter - Bell O1158A Herlicopter
Use data estimated using number of sorties, type of aircraft and fuel flow rate for helicopter.

- Activity Start Date
Start Month: 5
Start Year: 2022

- Activity End Date
Indefinite: No
End Month: 10
End Year: 2022

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.056820
SO_x	0.000000
NO_x	0.000000
CO	0.000000
PM 10	0.000000

Pollutant	Total Emissions (TONs)
PM 2.5	0.000000
Pb	0.000000
NH_3	0.000000
CO_2e	0.0

5.2 Tanks Assumptions

- Chemical
Chemical Name: Gasoline (RVP 6)
Chemical Category: Petroleum Distillates
Chemical Density: 5.6
Vapor Molecular Weight (lb/lb-mole): 69
Stock Vapor Density (lb/ft^3): 0.0331725401626428
Vapor Pressure: 2.6533
Vapor Space Expansion Factor (dimensionless): 0.068

- Tank
Type of Tank: Vertical Tank
Tank Height (ft): 17.2
Tank Diameter (ft): 8
Annual Net Throughput (gallon/year): 234

5.3 Tank Formula(s)

- Vapor Space Volume
$VSV = (PI / 4) * D^2 * H / 2$

VSV: Vapor Space Volume (ft^3)

PI: PI Math Constant
D^2: Tank Diameter (ft)
H: Tank Height (ft)
2: Convertion Factor (Vapor Space Volume is assumed to be one-half of the tank volume)

- Vented Vapor Saturation Factor

VVSF = 1 / (1 + (0.053 * VP * H / 2))

VVSF: Vented Vapor Saturation Factor (dimensionless)
0.053: Constant
VP: Vapor Pressure (psia)
H: Tank Height (ft)

- Standing Storage Loss per Year

SSL_{VOC} = 365 * VSV * SVD * VSEF * VVSF / 2000

SSL_{VOC}: Standing Storage Loss Emissions (TONs)
365: Number of Daily Events in a Year (Constant)
VSV: Vapor Space Volume (ft^3)
SVD: Stock Vapor Density (lb/ft^3)
VSEF: Vapor Space Expansion Factor (dimensionless)
VVSF: Vented Vapor Saturation Factor (dimensionless)
2000: Conversion Factor pounds to tons

- Working Loss Turnover (Saturation) Factor per Year

WLSF = 1

WLSF: Working Loss Turnover (Saturation) Factor per Year

- Working Loss per Year

WL_{VOC} = 0.0010 * VMW * VP * ANT * WLSF / 2000

0.0010: Constant
VMW: Vapor Molecular Weight (lb/lb-mole)
VP: Vapor Pressure (psia)
ANT: Annual Net Throughput
WLSF: Working Loss Turnover (Saturation) Factor
2000: Conversion Factor pounds to tons

FORMAT PAGE

Coastal Zone Management Act Consistency Determination

FORMAT PAGE

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 633D AIR BASE WING
LANGLEY AIR FORCE BASE VA

1 Jul 22

Bettina Rayfield
Virginia Department of Environmental Quality
Office of Environmental Impact Review
629 East Main Street
Richmond, Virginia 23219-2405

Dear Ms. Rayfield,

As part of your review of the Environmental Assessment for Aerial Application of Pesticide for Mosquito and Invasive Plant Species Control at Joint Base Langley-Eustis we have prepared a Federal Consistency Determination pursuant to the Coastal Zone Management Act (CZMA) of 1972. The determination is attached.

If you have any questions, please contact me at 757-225-4223 or email david.jennings.4@us.af.mil.

Sincerely

JENNINGS.DAVID.M.1189439110 Digitally signed by JENNINGS.DAVID.M.1189439110 Date: 2022.07.01 16:08:55 -04'00'

DAVID M. JENNINGS
Chief, Environmental Element

Attachment:

Coastal Zone Management Act (CZMA) Federal Consistency Determination for Aerial Application of Pesticide for Mosquito and Invasive Plant Species Control at Joint Base Langley-Eustis, Virginia

Coastal Zone Management Act (CZMA) Federal Consistency Determination for Aerial Application of Pesticide for Mosquito and Invasive Plant Species Control at Joint Base Langley-Eustis, Virginia

This document provides the Commonwealth of Virginia with a Consistency Determination under the Coastal Zone Management Act (CZMA) Section 307(c)(1) (or [2]) and 15 Code of Federal Regulations (CFR) Part 930, Subpart C, for the proposed aerial application of pesticide for mosquito and invasive plant species control at Joint Base Langley-Eustis (JBLE), Virginia. The information in this Consistency Determination is provided pursuant to 15 CFR § 930.39. The federally approved Virginia Coastal Management Program is a network of Virginia state agencies and local governments that administers enforceable laws, regulations, and policies that protect the state's coastal resources and fosters sustainable development. The Commonwealth of Virginia can require that federal actions be consistent with the state's Coastal Zone Management Program's laws and enforceable policies. The Virginia Department of Environmental Quality (DEQ) is the lead agency for Virginia's networked Coastal Zone Management Program.

Proposed Federal Agency Activity

A Draft Environmental Assessment (EA) and proposed Finding of No Significant Impact/Finding of No Practicable Alternative are being prepared by the Department of the Air Force (DAF) to analyze the impacts of aerial application of pesticide for mosquito and invasive plant species (primarily common reed [*Phragmites australis*]) control at JBLE (which consists of Langley Air Force Base [JBLE – Langley] and Fort Eustis [JBLE – Eustis]), Virginia. The purpose of the Proposed Action is to (1) reduce mosquito (and other pest arthropods) populations to tolerable levels, (2) break the disease transmission cycle caused by vectoring arthropods, and (3) restore habitats impacted by invasive plant species such as common reed.

The Proposed Action is needed to control mosquitoes and invasive plant species across large areas of JBLE and to reach remote portions of JBLE that are not reasonably accessible for application by land or watercraft. Large-scale application of pesticide would reduce the potential threat of human disease caused by mosquito vectors, as well as mosquito-induced discomfort, hardship, annoyance, and distraction experienced by personnel at JBLE. An outbreak of mosquito-borne illness among base personnel could seriously degrade mission-essential operations and readiness. Additionally, the efficiency of military training, maintenance operations, range management, natural resources management, military police, fire and emergency services, and others who work outdoors may be adversely affected when mosquito populations reach intolerable levels. Control of invasive plant species such as common reed in coastal and estuarine wetlands would improve the biological diversity and functions of wetlands, increase recreational opportunities, reduce visual restrictions by tall herbaceous vegetation, and support training opportunities and force protection.

The goal of the Proposed Action is to aerially apply pesticides to achieve the maximum kill of the targeted pests (particularly mosquitoes and common reed) with minimal adverse impacts on the environment and as part of the overall Integrated Pest Management philosophy as articulated in the installations' Integrated Pest Management Plans (IPMPs). This would include control of mosquitoes over all of JBLE – Eustis' approximately 7,900 acres (Figure 1) and over approximately 3,000 acres of JBLE – Langley (Figure 2). Common reed control would occur within specific areas where aerial applications would be feasible within the approximately 600 acres of common reed at JBLE – Eustis (Figure 3) and on approximately 145 acres on JBLE – Langley (Figure 4).

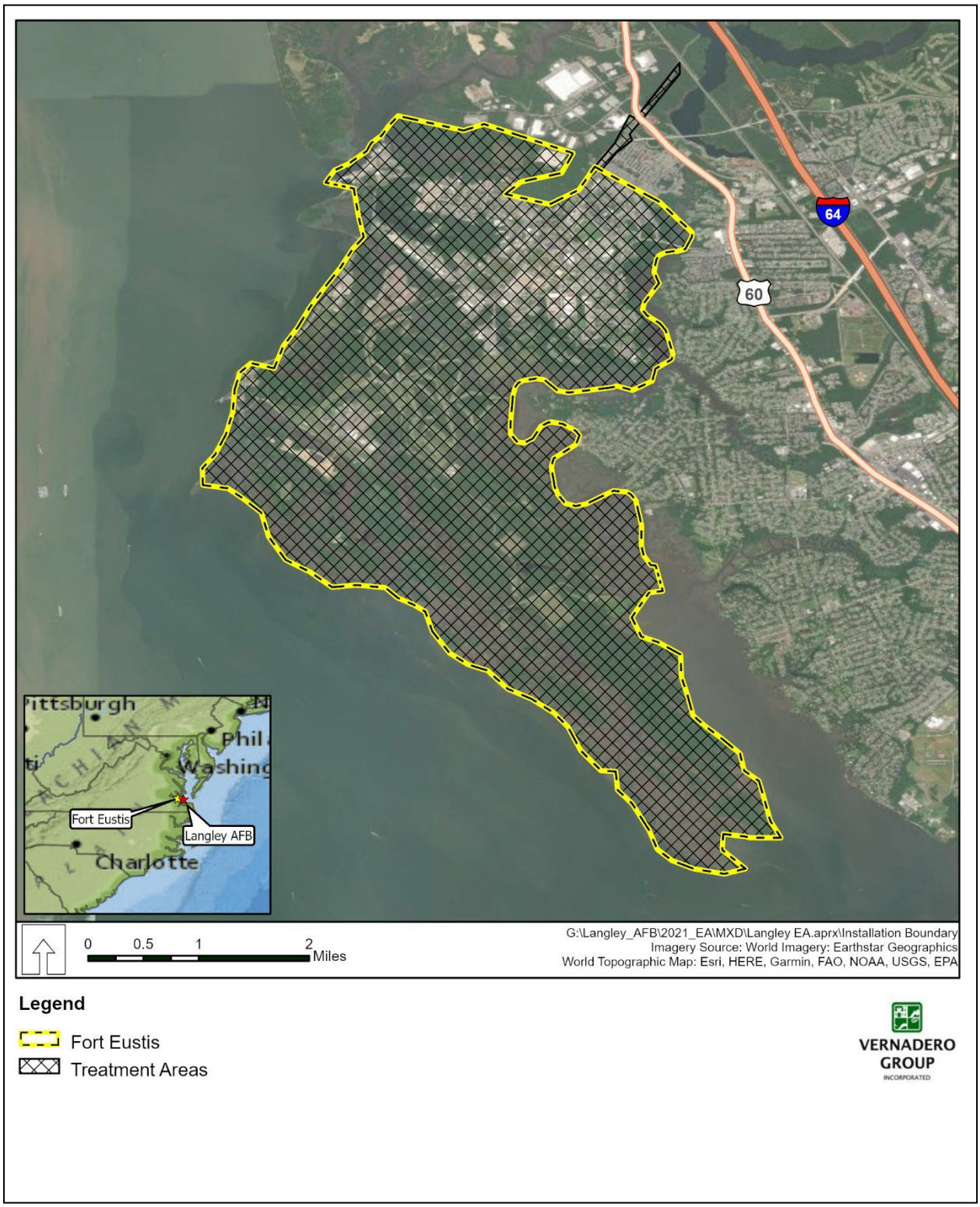


Figure 1. Proposed Adult Mosquito Treatment Areas at Joint Base Langley-Eustis — Eustis

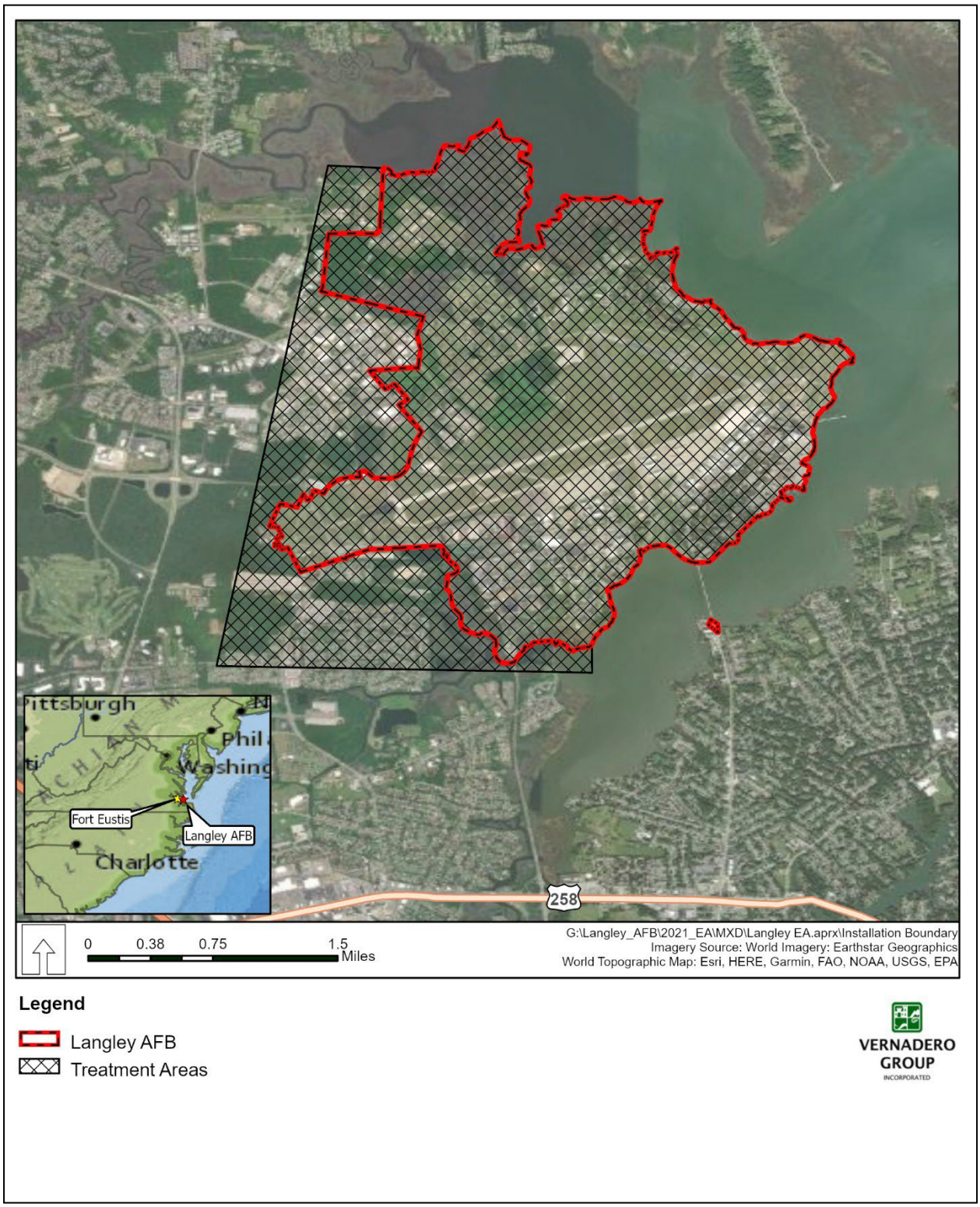


Figure 2. Proposed Adult Mosquito Treatment Areas at Joint Base Langley-Eustis — Langley

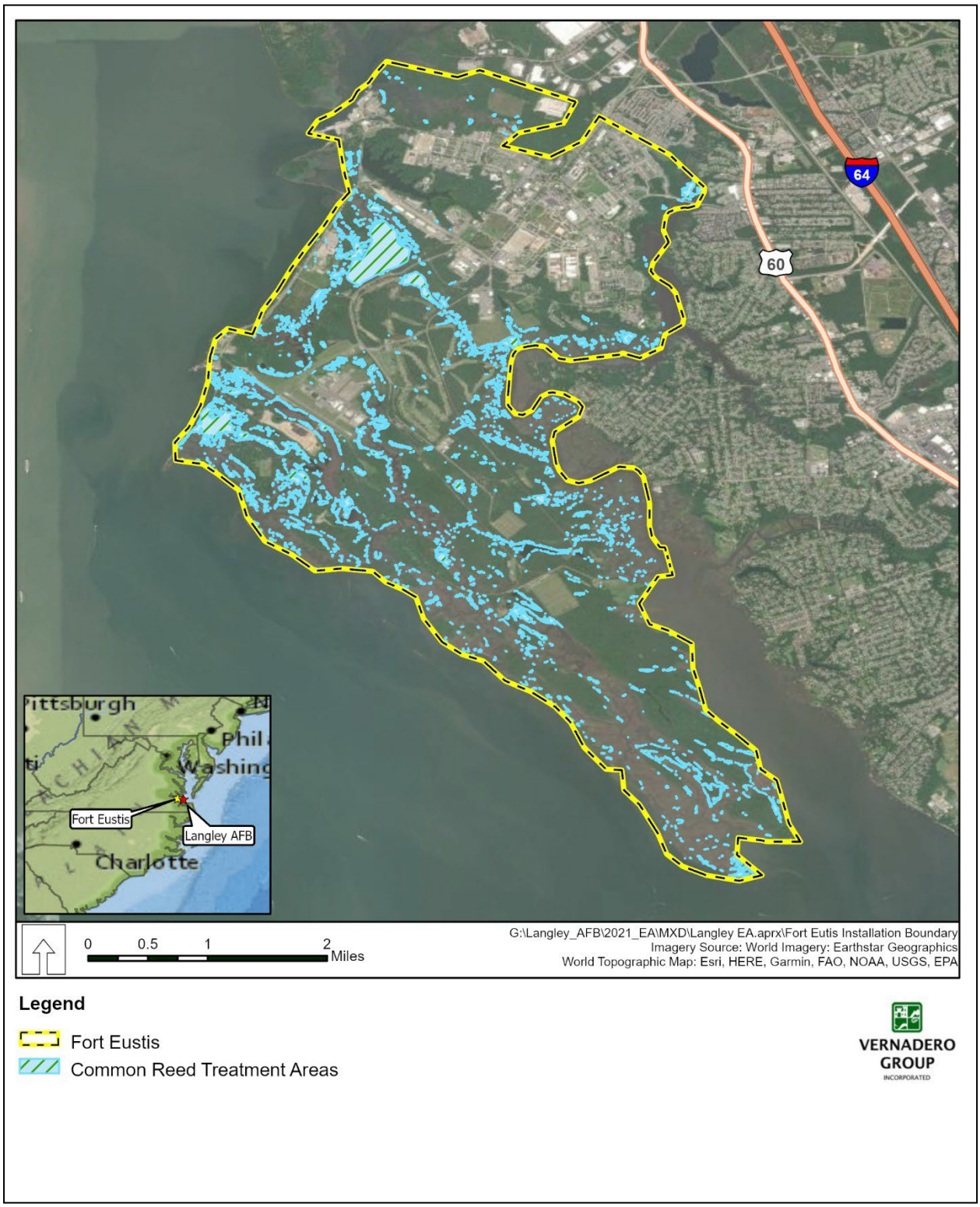


Figure 3. Proposed Common Reed Treatment Areas at Joint Base Langley-Eustis — Eustis

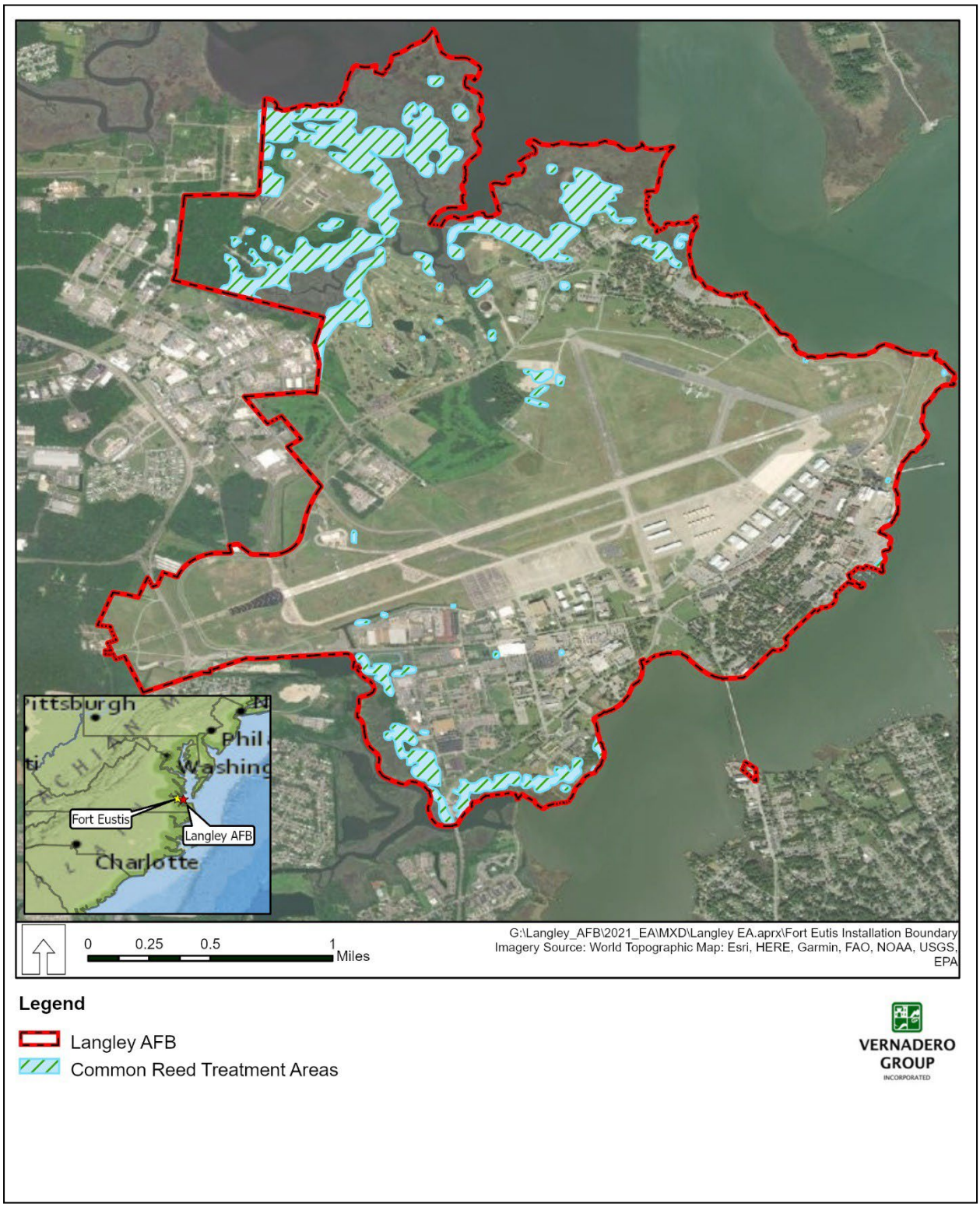


Figure 4. Proposed Common Reed Treatment Areas at Joint Base Langley-Eustis — Langley

Aerial application of pesticides for mosquito control would not exceed three applications per year and would typically occur from May through October. Aerial application of herbicides for common reed control would not exceed one application per year, with the need expected to be reduced in succeeding years depending on the efficacy determined through annual monitoring.

The decision to aerially apply pesticides for adult mosquito control would be based upon a combination of the threat of human and animal disease; environmental and climatic conditions; adult mosquito surveillance; and customer complaints. The heaviest mosquito infestations typically occur from May through October on and around JBLE. Based on several decades of surveillance data, the DAF has established 45 females per trap night and 75 females per trap night as the thresholds for the chemical control of adult mosquitoes at JBLE – Eustis and JBLE – Langley, respectively. Therefore, when adult mosquito surveillance data indicate threshold limits have exceeded the capabilities of ground control methods, an aerial application would be required. If there are reports of disease-positive specimen pools in the local area, if mosquito populations create a significant decline in the quality of life, or if there is the threat of a disease outbreak, the threshold requirements could be waived.

Requests for aerial application of pesticides for mosquito control would be coordinated with the Air Force Civil Engineer Center Operations Directorate (AFCEC/COSC) Pest Management Professionals, the Public Health section at the 633 Medical Group, McDonald Army Health Center Department of Public Health, and Installation Pest Management Coordinators. The DAF would obtain all necessary permits (e.g., VAG87/Virginia Pollutant Discharge Elimination System [VPDES] permit) prior to implementing aerial application actions.

Pesticides, such as those with naled as the active ingredient would be aerially applied to control adult mosquitoes on JBLE. The current formulation that is anticipated to be applied is Trumpet® EC (NSN 6840- 01-532-5414 and US Environmental Protection Agency (USEPA) Registration No. 5481-481), which is an organophosphate containing 78 percent naled (1,2-dibromo-2,2-dichloroethyl dimethyl phosphate). Applications would be made at an ultralow-volume (ULV) application rate of 0.5 ounce to 1.2 fluid ounces of undiluted Trumpet® EC per acre. Other pesticides such as pyrethrins, neo-pyrethrins, and formulations of malathion may also be used to control adult mosquitoes. Additionally, control of mosquito larvae via aerial platforms would include *Bacillus thuringiensis israelensis* (Bti), *Bacillus sphaericus* (B.s.), and other mosquito larva control products in conjunction with adult mosquito control techniques. All pesticides used in the US must be registered (licensed) by the USEPA. When used in accordance with its labeling, approved pesticides pose minimal risks to people and the environment. Additional constraints and best management practices (BMPs) would be adhered to by the DAF and its applicators to further minimize environmental risks.

This 757th Airlift Squadron (located at the Youngstown Air Reserve Station, Ohio) would provide all aircraft, aircrews, and Department of Defense-certified entomologists to coordinate and oversee all aspects of the aerial application of pesticides. JBLE – Eustis and JBLE – Langley would purchase the pesticide that would be used on each installation. The aircraft and application system used would consist of a C-130H with a modular aerial application system and a differential global positioning system (GPS). All environmentally sensitive areas (e.g., active bald eagle nests) would be identified on aerial application maps prior to any mission for avoidance or proper approval for treatment. Aircraft application overflights would occur at an elevation of 300 feet above ground level, and adult mosquito missions would occur from two hours before sunset to sunset, depending on weather conditions. Aerial application would be completed in one night, with the potential for one additional night of application if weather or mechanical issues cause delays.

If the 757th Airlift Squadron Aerial Spray Unit is unavailable, an alternative certified aerial applicator would be selected after consultation with the AFCEC/COSC Pest Management Professionals. Further, if services are contracted, then proper coordination with local air traffic control personnel and base operations would also be arranged to ensure safety. In addition to holding a valid Virginia Pesticide Business License and valid Virginia Applicator Certificate for Category 11, contracted applicators would need to obtain a Civil Aircraft Landing Permit to take off and depart from a military installation and treat areas on JBLE, particularly in consideration of ongoing military flight operations.

Under the Preferred Alternative, common reed control would be accomplished primarily through aerial application of USEPA-registered herbicides containing imazapyr or glyphosate as the active ingredient, or other herbicides approved for vegetation control via aerial platforms. Herbicides are most effective on common reed in late summer to early fall (August through October) because the plant continues to grow while other plants in adjacent areas begin to go dormant, which reduces the risk of damage to nontarget plant species. Application would typically be completed within one day, with the potential for one additional day of application if weather or mechanical issues cause delays. Requests for aerial application of herbicides for control of common reed would be coordinated by the Installation Pest Management Coordinators, Air Combat Command (ACC), 733rd Security Forces Squadron, Force Support Squadron, 1st Fighter Wing, and Office of Public Affairs. The DAF would obtain all necessary permits (e.g., National Pollutant Discharge Elimination System [NPDES] permit, VPDES permits, etc.) prior to implementing the Preferred Alternative.

Aerial application of herbicides for the control of invasive plant species would be through contracted helicopter pesticide application services. Past contractors have used Bell OII58A (or an alternative), Bell206 BII, Bell 206 L3, or Bell OH58A (+) helicopters to aerial apply herbicides within common reed treatment areas. All aircraft staging and refueling would occur within the installation boundaries. A certified aerial applicator would be selected after consultation with the ACC Entomologist (HQ ACC/A700). Further, proper coordination with local air traffic control personnel and base operations would also be arranged to ensure safety. In addition to holding a valid Virginia Pesticide Business License and valid Virginia Applicator Certificate for Category 11, contractor applicators would need to obtain a Civil Aircraft Landing Permit to take off and depart from a military installation and treat areas on JBLE, particularly in consideration of ongoing military flight operations.

If the proposed aerial application project is scheduled, the Office of Public Affairs would disseminate information to base personnel concerning the proposed times of application, targeted areas for aerial application of pesticides, the presence of low-flying aircraft, the relatively harmless properties of the herbicides to nontarget plants and vertebrate animals, and to property.

Environmental Consequences of the Proposed Action

Potential effects on the land or water uses or natural resources of Virginia from the Proposed Action are provided in the EA in the following:

Section 3.2, Air Quality and Climate Change. The implementation of the Proposed Action would result in short-term, minor, adverse effects on air quality. They are anticipated to temporarily affect local air quality due to exhaust emissions of criteria pollutants from aircraft operations. However, emissions of volatile organic compounds (VOCs) and nitrogen oxide from aircraft operations are minor and do not exceed the General Conformity rule *de minimis* thresholds. Also, drift emissions of pesticides and herbicides during and after aerial application would occur and would result in some adverse effects on air quality. However, BMPs would reduce drift from aerial application and reduce impacts to air quality. Most of the herbicides and pesticides have low volatility and on

application are most likely to subside onto the ground, water, and vegetation where they quickly biodegrade and hydrolyze. This further reduces the chance for volatile chemicals to be emitted into the air.

Section 3.3, Aesthetics and Visual Resources. Minor, short-term impacts would result during pesticide application activities. These activities would be visible on JBLE and in the airspace above JBLE and would include the presence of helicopters, vehicles, and equipment during aerial application events. The Proposed Action would not result in any substantial adverse effects on scenic viewsheds, cause any damage to scenic resources, or degrade any existing aesthetic or visual character on JBLE or in its vicinity. However, short- and long-term beneficial impacts from the removal of common reed would be expected as the visual restrictions of the tall herbaceous vegetation would be reduced on the installations.

Section 3.4, Geological Resources. Impacts to soil resources were found to be short-term and negligible to minor. Naled and its anerobic soil degradate DDVP (dichlorvos) degrade rapidly in the environment through chemical hydrolysis and biodegradation and have a low bioaccumulation potential (USEPA 2020a). Terrestrial, aquatic, and forestry dissipation studies show that both naled and DDVP have a dissipation half-life of less than two days, and there was no evidence of movement of naled or DDVP through the soil profile (USEPA 2020a). Other pesticides, such as pyrethrins, neo-pyrethrins, and formulations of malathion, may also be used on adult mosquitoes, as well as the use of Bti and B.s. to control mosquito larvae. These products also generally degrade rapidly in the environment so impacts on soils from these pesticides would be short term and negligible. Given the ULV application rates, infrequency of aerial application, conformance to label application instructions, and the rapid degradation of the pesticide, impacts to soils would be negligible. Imazapyr is nonvolatile, persistent, and mobile in soil with a half-life of a minimum of 313 days with some reports suggesting a half-life of 8.1 years (US Department of Agriculture [USDA] 2011). However, direct application into surface water allows imazapyr to degrade quickly via photolysis with a half-life of three to five days in surface water (USEPA 2006). Use of imazapyr may result in minor, short-term, adverse impacts on soils in upland areas, but it would be expected to have negligible impacts on soils in wetland areas. Glyphosate biodegrades via microbial activity into naturally occurring elements, first to aminomethylphosphonic acid (a weak organic acid) then to carbon dioxide, with no residual soil activity; further, its persistence and mobility in soils is low (USEPA 2020a). Use of glyphosate may result in minor, short-term, adverse impacts on soils.

Section 3.5, Water Resources. Impacts to surface water and groundwater were found to be short term and negligible to minor. For naled-containing pesticides, given the ULV application rates, infrequency of aerial application, conformance to label application instructions, and the rapid degradation of the pesticide, impacts to surface water or groundwater resources from this pesticide would be negligible. Additionally, the potential impacts from use of pyrethrins, neo-pyrethrins, and formulations of malathion to control adult mosquitoes and Bti and B.s. to control of mosquito larvae would be short term and negligible because these products generally degrade rapidly in the environment. Imazapyr rapidly degrades in open water and is, therefore, ideal for aquatic environments. There would be a negligible, short-term, adverse impact to surface waters from the application of imazapyr-containing herbicides. In terms of groundwater impacts, because imazapyr is persistent and mobile in soils, it has the potential to leach into groundwater (DAF 2013). Use of imazapyr may result in minor, short-term adverse impacts on groundwater. Glyphosate is strongly adsorbed onto soil particles, with low potential to move through soil to contaminate groundwater (DAF 2013). Impacts to groundwater from aerial application of glyphosate-containing pesticides would be negligible. When glyphosate applications contact surface water from runoff, glyphosate is removed by binding to sediment and is then degraded by microbes into natural substances such as carbon dioxide, with a half-life of less than seven days

(DAF 2013). Given the infrequency of glyphosate application, and its application in accordance with label instructions, impacts to surface waters would be short term and minor for this herbicide.

Section 3.6 Biological Resources.

Mosquito Treatment. No impacts to terrestrial, semiaquatic, or aquatic vegetation are expected from the proposed mosquito treatment. Adherence to the precautions outlined in the JBLE – Eustis and JBLE – Langley IPMPs and the pesticide labels would minimize the use of pesticide applications to the areas and times necessary to control mosquitoes and would only be undertaken when environmental conditions are conducive to minimize exposure from drift and runoff to nontargeted areas.

Potential effects on wildlife from aerial mosquito control would be short term and minor. The application of pesticides at low rates and their low persistence makes the risk to birds, mammals, reptiles, and terrestrial-phase amphibians low (USEPA 2021). Pyrethrins and pyrethroids are practically nontoxic to birds and have a low toxicity to mammals (USEPA 2016, 2022; National Pesticide Information Center 2014). While malathion is slightly to moderately toxic to birds, acute and chronic effects are expected to be minimal since it is unlikely that birds would feed exclusively on items while residue is present (USDA 2019). The infrequent application, low concentration for aerial application, and adherence to label requirements would further reduce potential impacts from the use of malathion. The loss of nontarget insects may temporarily reduce the prey base for insectivorous birds and mammals, potentially reducing dietary intake and causing the need for increased foraging activities until nontarget species numbers recover. While low-altitude overflights during mosquito treatment may startle bald eagle nesting and fledging, active nests would be avoided during treatment and several studies indicate that most raptors did not display adverse reactions to overflights and most negative responses were to repeated overflights (Manci et al. 1988; Pagel et al. 2010). Long-term beneficial effects may occur from the localized reduction in the mosquito population that may decrease the spread of mosquito-borne zoonotic diseases such as West Nile virus, eastern equine encephalitis, and St Louis encephalitis.

Potential impacts to fish and other aquatic organisms would be short term and minor. Naled, pyrethrins and pyrethroids, and malathion have been found to be moderately toxic to very highly toxic to freshwater fish and other aquatic organisms. However, due to the limited number of applications, along with the strict adherence to label requirements that restricts the application of these products over waterbodies and used only when weather conditions facilitate the movement of drift away from waterbodies minimizes the potential for adverse impacts.

Impacts on nontarget terrestrial and aquatic terrestrial invertebrates may be short term and minor. The pesticides proposed for use to control adult mosquitoes are highly to very highly toxic to nontarget invertebrates. However, due to the limited number of annual applications and the quick dissipation of naled, as well as adherence to the label instructions and the measures outlined in the JBLE – Eustis and JBLE – Langley IPMP, potential impacts to invertebrates would be minimized.

Potential impacts to federal and state listed species would be the same as those described above for fish and wildlife. While multiple federal and state listed species have the potential to occur on JBLE, multiple surveys have documented only two listed birds (red knot [*Calidris canutus rufa*] and gull-billed tern [*Sterna niloticai]*), four bats (northern long-eared bat [*Myotis septentrionalis*], little brown bat [*Myotis lucifugus*], tri-colored bat [*Perimyotis subflavus*], and Rafinesque's eastern big-eared bat [*Corynorhinus rafinesquii macrotis*]). The red knot and the gull-billed tern have been observed on JBLE – Langley only as occasional transient visitors and would have the potential to be impacted only if present at the time of treatment. Potential impacts to listed bats would be short term and negligible. Listed bats would not be active at the time of treatment and would likely not be directly exposed to treatment. The abundance of prey base may be temporarily reduced after

treatment that may necessitate bats to expand their foraging areas until insect abundance recovers.

The federal and state listed Atlantic sturgeon use the James River, and these waters are also listed as designated critical habitat. As discussed above, the potential impact of pesticides to fish is low and would not impact designated critical habitat physical or biological features.

Common Reed Treatment. The Proposed Action would have the intended long-term and direct adverse impacts on target vegetation within the treatment areas by either killing or slowing its growth. Any nontarget vegetation within the treatment area would also be adversely affected; however, common reed forms dense monotypic stands that push out other plants, and as such the number and diversity of native plants within the treatment areas would be sparse to nonexistent. Nontarget terrestrial or emergent vegetation that is adjacent to the treated areas may be adversely impacted from drift; however, adherence to label and IPMP requirements to minimize the potential for drift would minimize these impacts. Long-term beneficial impacts to native species may occur from the removal and control of common reed by allowing for reestablishment in and around treated areas. Both glyphosate and imazapyr pose a low risk to submerged aquatic and nonvascular plants when applied using label specifications (USEPA 2006, 2009).

Potential impacts to wildlife, freshwater or estuarine/marine fish, and aquatic invertebrates would be short term and negligible. The USEPA identified limited to no risk to these species from the application of glyphosate or imazapyr (USEPA 2006, 2009, 2020b). Studies indicate that imazapyr acid and salt are practically nontoxic to honeybees, which are surrogates for terrestrial invertebrate testing (USEPA 2006). However, studies indicate acute adverse effects on honeybees from the use of glyphosate (USEPA 2020b); therefore, there may be short-term, minor impacts to terrestrial invertebrates within the treatment areas. Removal or reducing growth and spread of common reed and allowing for the reestablishment of desired native vegetation in and around treated areas would likely provide improved habitat for wildlife and would result in long-term beneficial impacts.

The potential impacts to federal and state listed species would be the same as those described for wildlife above. Potential adverse effects on the Atlantic and shortnose sturgeon are expected to be negligible. No potential direct risks from glyphosate to estuarine/marine fish have been identified and, while the effects of imazapyr on estuarine/marine fish have not been characterized, they are assumed to have similar sensitivity (practically nontoxic) as freshwater fish. The Proposed Action for common reed control may provide long-term beneficial effects on Atlantic sturgeon designated critical habitat physical or biological features. There may be short-term minor adverse effects on monarch butterflies near the treatment areas from helicopter rotorwash during treatment and the loss of milkweed, such as swamp milkweed (*Asclepias incarnata*), that may be near treatment areas. Adherence to label and IPMP requirements to minimize drift to not treat areas that may impact nontarget pollinator nectar plants and habitat would also minimize potential impacts. No adverse effects on the state listed Harper's fimbristylis (*Fimbristylis perpusilla)* are expected. While this species is listed with the potential to be found on JBLE – Langley, it has not been identified on the base and is unlikely to occur due to the heavy manipulation and grounds maintenance on the base.

Section 3.7, Health and Safety. The quantities of pesticide proposed for application at JBLE via aerial application are not considered to present a threat to human health at ground level when applied at label-recommended rates. Personnel in the areas proposed for pesticide application would be notified ahead of time and asked to avoid the areas during applications. Aerial pesticide application would not occur when conditions could increase the likelihood of drift (e.g., high or

gusty winds, high temperatures, low humidity, or temperature inversions), and droplet size would also be controlled per specimen label instructions to minimize drift. By implementing all applicable safety precaution measures and BMPs summarized in the site-specific IPMPs, the impacts of the Proposed Action on health and safety would be negligible in both the short and long term.

Enforceable Policies

The Virginia Coastal Resources Management Program contains the enforceable policies listed below.

1. Tidal and Nontidal Wetlands

The purpose of this policy is to preserve tidal and nontidal wetlands, prevent their despoliation and destruction, and accommodate necessary economic development in a manner consistent with wetlands preservation.

The locations proposed for aerial application are located on and near wetlands, as both common reed and mosquitoes thrive in those areas. Common reed would ultimately be replaced with native vegetation. There would be no need to fill or alter wetlands on JBLE beyond replacing an invasive wetland vegetation species with native species. Therefore, there would be no loss or destruction of wetlands on the installation under the Proposed Action.

2. Subaqueous Lands

This management program for subaqueous lands establishes conditions for granting or denying permits to use state-owned bottomlands based on considerations of potential effects on marine and fisheries resources, wetlands, other reasonable and permissible uses of state waters and state-owned bottomlands, adjacent or nearby properties, anticipated public and private benefits, water quality, and submerged aquatic vegetation.

The Proposed Action would not impact subaqueous lands.

3. Dunes and Beaches

This program's purpose is to preserve and protect coastal primary sand dunes and beaches, to prevent their despoliation and destruction, and whenever practical, to accommodate necessary economic development in a manner consistent with the protection of such features.

There are no sand dunes or beaches in the project area; therefore, no impacts are anticipated.

4. Chesapeake Bay Preservation Areas

This policy is focused on protecting and improving the water quality of the Chesapeake Bay, its tributaries, and other state waters by minimizing the effect of human activity upon these waters. The policy ensures that land use and development performance criteria and standards are implemented in Chesapeake Bay Preservation Areas (CPBAs). The designated CBPAs are composed of the following: Resource Protection Areas (RPA), Resource Management Areas (RMA), and Intensely Developed Areas (IDA). Each type of CBPA is subject to performance criteria and development criteria.

JBLE – Eustis is required by the federal CZMA to follow the Chesapeake Bay Preservation Act (Virginia Code §10.1-2100) to the maximum extent practicable. JBLE – Eustis established 100-foot upland buffers as Resource Protection Areas at tidal creeks, streams, and wetlands in conjunction with the 100-foot buffers established by the city of Newport News. JBLE – Langley also established 100-foot upland buffers at tidal creeks, streams, and wetlands, in conjunction with the 100-foot buffers established by the city of Hampton. The objective is to maintain these buffers as vegetated with native vegetation to the greatest extent practical.

The Proposed Action would not change the existing vegetation buffers that are required for CPBAs. No land development is proposed; therefore, the majority of the criteria do not apply.

5. Marine Fisheries

This program stresses the conservation and promotion of the seafood and marine resources, including fish, shellfish, and marine organisms, and seeks to manage fisheries to maximize food production and recreational opportunities within the Commonwealth's territorial waters. Marine fishery management shall be based upon the best scientific, economic, biological, and sociological information available, shall be responsive to the needs of interested and affected citizens, shall promote efficiency in the utilization of the resources, and shall draw upon all available capabilities in carrying out research, administration, management, and enforcement.

The Proposed Action does not include marine fishing or impact the management of marine fisheries. While there is no Essential Fish Habitat (EFH) within the proposed treatment areas, EFH is in the James River, which are immediately adjacent to JBLE – Eustis. Within the James River, the New England/Mid-Atlantic Fishery Management Council identified EFH for Atlantic herring (*Clupea harengus*) and bluefish (*Pomatomus saltatrix*); red hake (*Urophycis chuss*) and windowpane flounder (*Scophthalmus aquosus*) within the Northeast Multispecies Fisheries Management Plan (FMP); clearnose skate (*Raja eglanteria*) within the Northeast Skate FMP; Atlantic butterfish (*Peprilus triacanthus*) within the Atlantic Mackerel, Squid, & Butterfish FMP; and summer flounder (*Paralichthys dentatus*) and black sea bass (*Centropristis striata*) in the Summer Flounder, Scup, Black Sea Bass FMP. Blue (*Callinectes sapidus*) are also common in the James River and their tributaries.

There is the potential for short-term, minor, adverse impacts to the EFH identified in the James River. This would include the direct impacts from the presence of pesticides in the water because of drift or runoff, or indirectly from the potential negative impacts to aquatic invertebrate prey. However, as previously discussed, while naled, pyrethrins and pyrethroids, and malathion have been found to be moderately toxic to very highly toxic to freshwater fish and other aquatic organisms, the potential for adverse impacts would be minimized by the limited number of applications, along with the strict adherence to label requirements that restricts the application of these products over waterbodies and their use to only those times when weather conditions facilitate the movement of drift away from waterbodies.

6. Wildlife and Inland Fisheries

This policy states that no person shall import, export, take, pursue, kill, or possess in the Commonwealth any fish or wildlife, or stock any species of fish in inland waters, in a manner that negatively impacts the Commonwealth's efforts in conserving, protecting, replenishing, propagating and increasing of the supply of game birds, game animals, fish and other wildlife of the Commonwealth. The policy also states that no person shall harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, possess, collect, transport, sell or offer to sell, or attempt to do so, any species of fish or wildlife listed as threatened or endangered by the Board of Game and Inland Fisheries, except under express conditions.

Impacts to wildlife and freshwater fish from aerial mosquito control are expected to be short term and negligible to minor due to the low amount of pesticides that would be used, adherence to label requirements, and the low persistence of most of these pesticides. Low- altitude overflights during mosquito treatment may startle bald eagles during nesting and fledging; however, active nests would be avoided during treatment. Furthermore, studies indicate that most raptors do not

display adverse reactions to overflights and most negative responses are from repeated overflights. There is the potential for short-term, minor, adverse impacts on fish and other aquatic organisms. While some of the pesticides proposed for use are classified as highly toxic to some fish species, adherence to the label requirements to avoid application over waterbodies and restrict use to optimal weather conditions minimizes the potential for drift and runoff into aquatic habitats. As with other wildlife and fish, the potential direct impacts to federal and state listed birds and mammals for aerial mosquito control would be short term and minor. Long-term beneficial effects may occur because of the localized reduction in the mosquito population that may decrease the spread of mosquito-borne zoonotic diseases.

Potential direct impacts from herbicide application to wildlife, freshwater, or estuarine/marine fish and aquatic invertebrates would be short term and negligible due to the low to no risk associated to these species from the use of glyphosate or imazapyr. Removal or reducing growth and spread of common reed and allowing for the reestablishment of desired native vegetation in and around treated areas would likely provide improved habitat for wildlife and would result in long-term beneficial impacts. The potential impacts to federal and state listed species would be the same as those described for wildlife and fish above. Potential adverse effects on the Atlantic and shortnose sturgeon are expected to be negligible as no potential direct risks from glyphosate to estuarine/marine fish have been identified and, while the effects of imazapyr on estuarine/marine fish have not been characterized, they are assumed to have similar sensitivity (practically nontoxic) as freshwater fish. In addition, control of common reed may provide long-term benefits to the physical or biological features of designated Atlantic sturgeon critical habitat.

7. Plant Pests and Noxious Weeds

This policy states that no person shall sell, barter, offer for sale, move, transport, deliver, ship, or offer to ship into or within the Commonwealth any plant pests in any living stage, unless such plant pests are not injurious, are generally present already, or are for scientific purposes subject to specified safeguards. No person shall move, transport, deliver, ship, or offer for shipment into or within the Commonwealth any noxious weed, or part thereof, unless such noxious weed is generally present already or it is for scientific purposes subject to prescribed standards.

The Proposed Action does not involve the movement or sale of plant pests or noxious weeds.

8. Commonwealth Lands

A. Virginia Department of Game and Inland Fisheries (DGIF)

Dams and Fish Passage: Any person owning or having control of any dam or other obstruction in the streams of the Commonwealth that may interfere with the free passage of anadromous and other migratory fish shall provide every such dam or other obstruction with a suitable fishway, to the extent necessary.

Back Bay: Unless determined to not be harmful for fish and wildlife resources or habitats, no person shall drill, dredge, or conduct other operations designed to recover or obtain shells, minerals or any other substance on lands owned by or under the control of the Commonwealth under Back Bay, its tributaries and the North Landing River from the North Carolina line to North Landing Bridge.

Damage to Boundary Enclosures and Entry to Refuges: No person shall damage the boundary enclosure of or enter a game refuge owned, leased, or operated by the Board of Game and Inland fisheries for the purpose of molesting any bird or animal, or permit his dog or livestock to go thereon.

Protection of Aquatic and Terrestrial Habitats Used or Owned by DGIF: No person shall damage or destroy any pond, pool, flume, dam, pipeline, property, or appliance belonging to, controlled by

or being utilized by DGIF or its Board; or interfere with, obstruct, pollute, or diminish the natural flow of water into or through a fish hatchery.

B. Virginia Department of Conservation and Recreation (DCR)

Protection of Virginia State Parks: For purposes of these policies, "park" means all designated state parks, parkways, historical and natural areas, natural area preserves, sites, and other areas under the jurisdiction of the Department of Conservation and Recreation. No person shall damage, pollute, or otherwise alter any natural or manmade feature of any park. Research and educational programming that involves limited and specified sampling or collecting of resources can be conducted to further the understanding of the specified natural and cultural resources of a site. No person shall dispose of any garbage or waste material in any part of a park other than in designated containers.

Fire Prevention: No person shall kindle, build, maintain, or use a fire in any park other than in places provided or designated for such purposes, and only if continuously supervised by a competent person over 16 years of age. No person shall throw away any lighted match, cigarette, cigar, or other burning object in the confines of any park until the object is entirely extinguished.

Hunting and Fishing in State Parks: No person shall hunt or molest in any way any bird or animal, or possess any wild bird or animal, within the confines of any park, except in designated hunting areas. Likewise, no person shall take fish in any park unless done via bait fishing by cast net, crabbing by line and net, or licensed fishing by hook and line, all of which are limited to areas in each park designated for those activities.

Feeding Wildlife in State Parks Prohibited: No person shall feed wildlife in any park, except for DCR sponsored programmatic activities. 4 Va. Admin. Code § 5-30-422 Boating and Vehicles in State Parks: No person shall operate a boat in a bathing area in a park. It is illegal to operate a motor vehicle in any area of a park that is not designated for or customarily used by motor vehicles, unless engaged in fire control, park maintenance, or other necessary park- related activities. Further, no person shall operate, anywhere in a park, a vehicle that is excessively loaded.

The Proposed Action does not involve dams, the Back Bay area, game refuges, land owned by DGIF, or Virginia State Park lands.

9. Point Source Air Pollution

In addition to the requirements of the Clean Air Act established by the Federal Government and the Commonwealth of Virginia, which in accordance with 15 CFR § 923.45 are part of the Commonwealth's Coastal Zone Management Program, the following air quality policies apply: It is the policy of the Commonwealth, after observing the effects of air pollution, to abate, control, and prohibit air pollution throughout the Commonwealth. Policies for asphalt paving operations, open burning, fugitive dust emissions, state operating permits, and new sources reviews are further described.

Dust or particulate emissions could be generated during staging, refueling, or refilling activities during aerial application events, especially from the movement of vehicles on unpaved roads. As per Virginia Department of Environmental Quality regulations (9 Virginia Administrative Code 5-50-90), any fugitive dust that may be generated from the proposed project must be kept to a minimum by using control methods outlined in the regulations and this CZMA enforceable policy.

No new stationary source of air emissions would be constructed or stationed permanently at either of the installations for the proposed aerial application of pesticides and herbicides. Impacts to air quality from the operation of aircraft would be minor as emissions from the aircraft are intermittent and short term.

Drift of aerially applied pesticides, either in particulate or vapor form, can affect animals and humans that are in the immediate vicinity of the drift. However, drift impacts from aerial application would be controlled using all best management practices and drift prevention requirements that are included as part of the Preferred Alternative. Also, pesticide labels have information on how to reduce the risk of drift. The implementation of the Preferred Alternative would follow prescribed label instructions, be consistent with good practices, and perform application when weather conditions are appropriate to minimize risk of drift.

The volatile components contained in herbicides and pesticides can evaporate, post-application, and become airborne, resulting in emissions of VOCs. Most of the chemicals proposed for use are either not extremely volatile or do not evaporate easily. The pesticides would most likely subside onto the ground, water, and vegetation where they would quickly biodegrade and hydrolyze. This further reduces the chance for volatile chemicals to be emitted into the air.

10. Point Source Water Pollution

This policy focuses on protecting existing high quality state waters and restoring all other state waters to such condition of quality that any such waters will permit all reasonable public uses and will support the propagation and growth of all aquatic life, including game fish, which might reasonably be expected to inhabit them; safeguard the clean waters of the Commonwealth from pollution; prevent any increase in pollution; reduce existing pollution; promote and encourage the reclamation and reuse of wastewater in a manner protective of the environment and public health; and promote water resource conservation, management and distribution, and encourage water consumption reduction in order to provide for the health, safety, and welfare of the present and future citizens of the Commonwealth.

Virginia Code specifies special regulatory requirements regarding discharges of pesticides into surface waters. Pesticide applications at both installations shall be performed in accordance with VPDES General Permit VAG87 as specified in 9VAC25-800. Additionally, at JBLE – Eustis compliance with the VPDES General Permit is met by all applicators with adherence to the Fort Eustis Pesticide Discharge Management Plan.

Both installations ensure that, when applying pesticides, VPDES permitting requirements are met in accordance with the installation's IPMP and that all pesticides are USEPA-approved and applied according to the label. These procedures minimize water pollution from pesticide application.

11. Nonpoint Source Water Pollution

This policy aims to control stormwater runoff to protect the quality and quantity of state waters from the potential harm of unmanaged stormwater; to control soil erosion and sediment deposition in order to prevent unreasonable degradation of properties, stream channels, state waters, and other natural resources; and to otherwise act to control nonpoint source water pollution to ensure the general health, safety, and welfare of the citizens of the Commonwealth.

The discharge of stormwater associated with both industrial and nonindustrial activities is regulated under current VPDES permits. JBLE – Langley has 24 permitted stormwater outfalls under the General Industrial Stormwater Permit VAR052285, which are visually inspected quarterly. The permit also has a requirement to develop and implement a Stormwater Pollution Prevention Plan (SWPPP), which involves the assessment of stormwater outfalls, outdoor material storage and usage areas, erosion and sediment control inspection, and inspection of existing materials management practices. The plan is reviewed annually and updated as necessary when there are major changes at JBLE – Langley. JBLE – Langley also has a Municipal Separate Storm Sewer System (MS4) Permit VAR040140. The JBLE – Langley MS4 permit

(VAR040140) covers 83 nonindustrial outfalls associated with this permit, which are visually inspected annually.

JBLE – Eustis complies with a VPDES permit that involves monitoring seven outfalls for contaminants at Eustis Lake and Browns Lake as well as other outfalls that discharge into the James and Warwick rivers. JBLE – Eustis has a SWPPP for management of stormwater runoff and pollution prevention. It identifies the locations of buildings in which regulated and nonregulated industrial activities occur, provides locations for all 144 stormwater outfalls, and describes local drainage patterns. Stormwater runoff is conveyed off the installation into the James River or Warwick River.

Both installations ensure that, when applying pesticides, VPDES permitting requirements are met in accordance with the installation's IPMP and that all pesticides are USEPA approved and applied according to the label. These procedures minimize water pollution from pesticide application.

For all herbicide applications, in the short term after application, soils may be more susceptible to erosion after the common reed has died but before other vegetation has been established. Follow-up monitoring and native planting would be carried out to prevent erosion and sedimentation in accordance with each installation's IPMP and Integrated Natural Resources Management Plan.

12. Shoreline Sanitation

The purpose of this program is to ensure that sewage is disposed of in a safe and sanitary manner that protects the public health and welfare and the environment. Therefore, any type of sewage systems that are located within or impact the coastal zone are subject to the following:

The Proposed Action does not impact any sewage systems or propose the installation of a new sewage system.

Advisory Policies for Geographic Area of Particular Concern

A. Coastal Natural Resource Areas

Coastal Natural Resource Areas are areas that have been designated as vital to estuarine and marine ecosystems and/or are of great importance to areas immediately inland of the shoreline. These areas receive special attention from the Commonwealth because of their conservation, recreational, ecological, and aesthetic values. These areas include the following resources: wetlands, aquatic spawning, nursing, and feeding grounds, coastal primary sand dunes, barrier islands, significant wildlife habitat areas, public recreation areas, sand gravel resources, and underwater historic sites.

Wetlands cover approximately 3,600 acres on JBLE – Eustis and 652 acres on JBLE – Langley. JBLE – Eustis also contains approximately 80 acres of ephemeral/vernal pools. Under the proposed aerial mosquito control, the ULV pesticide application rates, infrequency of aerial application, conformance to label application instructions to avoid application of waterbodies and the rapid degradation of the pesticide, impacts to wetlands from this action would be negligible. Under the proposed aerial treatment of common reed, herbicides containing imazapyr or glyphosate as the active ingredient would be used for the control of common reed. Imazapyr rapidly degrades in open water and is, therefore, ideal for aquatic environments. There would be a negligible short-term, adverse impact to surface waters from application of imazapyr-containing herbicides. When glyphosate applications come into contact with surface water, glyphosate is removed by binding to sediment and is then degraded by microbes into natural substances such as carbon dioxide, with a half-life of less than seven days; impacts to surface waters would be short term and minor for this herbicide. Impacts are further minimized by infrequent application, application in accordance with label instructions, and application in accordance with VPDES

permits. No impact to wetland vegetation is expected from aerial mosquito control. Under the Proposed Action for common reed control, any nontarget terrestrial and emergent vegetation within the treatment areas would be adversely affected. However, common reed forms dense monotypic stands that push out other plants, and as such the number and diversity of native plants within the treatment areas would be sparse to nonexistent. Nontarget terrestrial or emergent vegetation that is adjacent to the treated areas may be adversely impacted from drift, however, adherence to label and IPMP requirements to minimize the potential for drift would minimize these impacts. Long-term beneficial impacts to native species may occur from the removal and control of common reed by allowing for reestablishment in and around treated areas. Both glyphosate and imazapyr pose a low risk to submerged aquatic and nonvascular plants when applied using label specifications (USEPA 2006, 2009).

As discussed above in **Marine Fisheries**, there are multiple EFHs in the James River adjacent to JBLE – Eustis. While potential minor, adverse impacts from drift or runoff of pesticides could occur, the pesticides dissipate quickly and the potential to harm fish is low. Additionally, no impacts to blue crab are expected.

Coastal primary sand dunes, barrier islands, significant wildlife habitat areas, public recreation areas, sand gravel resources, and underwater historic sites are not located on JBLE.

B. Coastal Natural Hazard Areas

This policy covers areas vulnerable to continuing and severe erosion and areas susceptible to potential damage from wind-, tidal-, and storm-related events including flooding. New buildings and other structures should be designed and sited to minimize the potential for property damage due to storms or shoreline erosion. The areas of concern are highly erodible areas and coastal high hazard areas, including flood plains.

The Proposed Action does not involve construction of buildings or structures in coastal natural hazard areas.

C. Waterfront Development Areas

These areas are vital to the Commonwealth because of the limited number of areas suitable for waterfront activities. The areas of concern are commercial ports, commercial fishing piers, and community waterfronts.

The Proposed Action would not impact areas suitable for waterfront activities.

Advisory Policies for Shorefront Access Planning and Protection

A. Virginia Public Beaches

These public shoreline areas will be maintained to allow public access to recreational resources.

There are no public beaches within the project area; consequently, the Proposed Action would not affect public access to beaches.

B. Virginia Outdoors Plan (VOP)

The VOP, which is published by Virginia's Department of Conservation and Recreation (DCR), identifies recreational facilities in the Commonwealth that provide recreational access. Prior to initiating any project, consideration should be given to the proximity of the project site to recreational resources identified in the VOP.

The Proposed Action is not located near recreational resources and would have no impact on the VOP.

C. Parks, Natural Areas, and Wildlife Management Areas

The recreational values of these areas should be protected and maintained.

There are no public parks, natural areas, or wildlife management areas on JBLE.

D. Waterfront Recreational Land Acquisition

It is the policy of the Commonwealth to protect areas, properties, lands, or any estate or interest therein, of scenic beauty, recreational utility, historical interest, or unusual features which may be acquired, preserved, and maintained for the citizens of the Commonwealth.

The Proposed Action does not limit the ability of the Commonwealth in any way to acquire, preserve, or maintain waterfront recreational lands.

E. Waterfront Recreational Facilities

Boat ramps, public landings, and bridges shall be designed, constructed, and maintained to provide points of water access when and where practicable.

The Proposed Action does not involve the design, construction, or maintenance of any boat ramps, public landings.

F. Waterfront Historic Properties

The Commonwealth has a long history of settlement and development, and much of that history has involved both shorelines and near-shore areas. The protection and preservation of historic shorefront properties is primarily the responsibility of the Virginia Department of Historic Resources.

No historic shorefront properties would be affected by the Proposed Action.

Consistency Determination

Based upon the information and analysis presented above and included in the EA, the DAF finds that the Proposed Action is consistent to the maximum extent practicable with the enforceable policies of the Virginia Coastal Resources Management Program.

Pursuant to 15 CFR § 930.41, the Virginia Coastal Resources Management Program has 60 days from the receipt of this letter in which to concur with or object to this Federal Consistency Determination or to request an extension under 15 CFR § 930.41(b). Virginia's concurrence will be presumed if its response is not received by JBLE on the 60th day from receipt of this determination.

01 Jul 22

Date

JENNINGS.DAVID.M.1189439110 Digitally signed by JENNINGS.DAVID.M.1189439110 Date: 2022.07.01 16:09:17 -04'00'

Signature

References

Department of the Air Force (DAF). 2013. *Final Environmental Assessment Addressing Aerial Application of Herbicides at Joint Base Charleston-Weapons Stations, Charleston, SC.* February 2013.

Manci, K.M., D.N. Gladwin, R. Villella, and M.G. Cavendish. 1988. *Effects of Aircraft Noise and Sonic Booms on Domestic Animals and Wildlife: A Literature Synthesis*. US Fish and Wildlife Service, National Ecology Research Center, Fort Collins, Colorado. NERC-88/29. 88 pp. June.

National Oceanic and Atmospheric Administration. 2022. National Oceanic and Atmospheric Administration Fisheries Essential Fish Habitat Mapper; New England and Mid-Atlantic. Accessed 23 January 2022. <https://www.habitat.noaa.gov/apps/efhmapper/?page=page_3&views=view_12>.

National Pesticide Information Center. 2014. Pyrethrins General Fact Sheet. Oregon State University and the US Environmental Protection Agency (USEPA, cooperative agreement # X8-83560101).

Pagel, J.E, D.M. Whittington, and G.T. Allen. 2010. *Interim Golden Eagle Inventory and Monitoring Protocols, and Other Recommendations*. US Fish and Wildlife Service, Division of Migratory Bird Management. February.

US Department of Agriculture (USDA). 2011. *Final Report Human Health and Ecological Risk Assessment.* US Department of Agriculture, Forest Service, Southern Region. 16 December 2011.

US Department of Agriculture (USDA). 2019. *Web Soil Survey.* Natural Resources Conservation Service. Accessed 13 January 2022. <https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm>.

US Environmental Protection Agency (USEPA). 2006. *Reregistration Eligibility Decision (RED) Document for Imazapyr.* Case Number 3078. US Environmental Protection Agency.

US Environmental Protection Agency (USEPA). 2009. *Registration Review – Preliminary Ecological Risk Assessment for Glyphosate and Its Salts*.

US Environmental Protection Agency (USEPA). **2016.** *Ecological Risk Management Rationale for Pyrethroids in Registration Review.* Office of Chemical Safety and Pollution Prevention.

US Environmental Protection Agency (USEPA). **2020a.** *Draft Ecological Risk Assessment for the Registration Review of Dichlorvos (DDVP), Naled, and Trichlorfon.* Office of Chemical Safety and Pollution Prevention. 17 June 2020.

US Environmental Protection Agency (USEPA). 2020b. *Glyphosate Interim Registration Review Decision*. Case Number 0178. Docket Number EPA-HQ-OPP-2009-0361. January 2020.

US Environmental Protection Agency (USEPA). 2021. *Naled for Mosquito Control*. Accessed 21 January 2022. <https://www.epa.gov/mosquitocontrol/naled-mosquito-contro>l.

US Environmental Protection Agency (USEPA). 2022. *Controlling Adult Mosquitoes*. Accessed 31 March 2022. < https://www.epa.gov/mosquitocontrol/controlling-adult-mosquitoes>.

FORMAT PAGE

FORMAT PAGE

US Fish and Wildlife Service IPaC Information for Planning and Consultation Lists and Verification Letter

FORMAT PAGE

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Virginia Ecological Services Field Office
6669 Short Lane
Gloucester, VA 23061-4410
Phone: (804) 693-6694 Fax: (804) 693-9032
http://www.fws.gov/northeast/virginiafield/

In Reply Refer To: October 27, 2021
Consultation Code: 05E2VA00-2022-SLI-0438
Event Code: 05E2VA00-2022-E-01500
Project Name: Aerial Dispersal of Pesticide for Mosquito and Invasive Species Control at JBLE, VA

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*). Any activity proposed on National Wildlife Refuge lands must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered

species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List
- USFWS National Wildlife Refuges and Fish Hatcheries

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Virginia Ecological Services Field Office
6669 Short Lane
Gloucester, VA 23061-4410
(804) 693-6694

Project Summary

Consultation Code: 05E2VA00-2022-SLI-0438
Event Code: Some(05E2VA00-2022-E-01500)
Project Name: Aerial Dispersal of Pesticide for Mosquito and Invasive Species Control at JBLE, VA
Project Type: VEGETATION MANAGEMENT
Project Description: The Proposed Action supports management of mosquito populations under conditions of disease risk and intolerable levels as well as management of invasive plant species, particularly common reed, at JBLE. The Proposed Action includes control of adult mosquitoes over all of JBLE – Eustis' approximately 7,900 acres and over approximately 3,600 acres of JBLE – Langley. The Proposed Action also includes the control of common reed on approximately 600 acres at JBLE – Eustis and on approximately 145 acres on JBLE – Langley. Aerial dispersal of pesticides for adult mosquito control would not exceed three applications per year and would typically occur from May through October. Herbicides are most effective on common reed in late summer to early fall (August through October) because the plant continues to grow while other plants in adjacent areas begin to go dormant, which reduces the risk of damage to nontarget plant species.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@37.1257145,-76.60068326522074,14z

Counties: James City and Newport News counties, Virginia

Endangered Species Act Species

There is a total of 3 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

---

1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Northern Long-eared Bat *Myotis septentrionalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Threatened

Birds

NAME	STATUS
Eastern Black Rail *Laterallus jamaicensis ssp. jamaicensis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/10477	Threatened

Insects

NAME	STATUS
Monarch Butterfly *Danaus plexippus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

USFWS National Wildlife Refuge Lands And Fish Hatcheries

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Virginia Ecological Services Field Office
6669 Short Lane
Gloucester, VA 23061-4410
Phone: (804) 693-6694 Fax: (804) 693-9032
http://www.fws.gov/northeast/virginiafield/

In Reply Refer To: October 27, 2021
Consultation Code: 05E2VA00-2022-SLI-0461
Event Code: 05E2VA00-2022-E-01596
Project Name: Aerial Dispersal of Pesticide for Mosquito and Invasive Species Control at JBLE, VA

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*). Any activity proposed on National Wildlife Refuge lands must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered

species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List
- USFWS National Wildlife Refuges and Fish Hatcheries

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Virginia Ecological Services Field Office
6669 Short Lane
Gloucester, VA 23061-4410
(804) 693-6694

Project Summary

Consultation Code: 05E2VA00-2022-SLI-0461
Event Code: Some(05E2VA00-2022-E-01596)
Project Name: Aerial Dispersal of Pesticide for Mosquito and Invasive Species Control at JBLE, VA
Project Type: VEGETATION MANAGEMENT
Project Description: The Proposed Action supports management of mosquito populations under conditions of disease risk and intolerable levels as well as management of invasive plant species, particularly common reed, at JBLE. The Proposed Action includes control of adult mosquitoes over all of JBLE – Eustis' approximately 7,900 acres and over approximately 3,600 acres of JBLE – Langley. The Proposed Action also includes the control of common reed on approximately 600 acres at JBLE – Eustis and on approximately 145 acres on JBLE – Langley. Aerial dispersal of pesticides for adult mosquito control would not exceed three applications per year and would typically occur from May through October. Herbicides are most effective on common reed in late summer to early fall (August through October) because the plant continues to grow while other plants in adjacent areas begin to go dormant, which reduces the risk of damage to nontarget plant species.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@37.08753285,-76.35723027426434,14z

Counties: Hampton County, Virginia

Endangered Species Act Species

There is a total of 2 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

---

1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Birds

NAME	STATUS
Eastern Black Rail *Laterallus jamaicensis ssp. jamaicensis*	Threatened

No critical habitat has been designated for this species.
Species profile: https://ecos.fws.gov/ecp/species/10477

Insects

NAME	STATUS
Monarch Butterfly *Danaus plexippus*	Candidate

No critical habitat has been designated for this species.
Species profile: https://ecos.fws.gov/ecp/species/9743

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

USFWS National Wildlife Refuge Lands And Fish Hatcheries

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Virginia Ecological Services Field Office
6669 Short Lane
Gloucester, VA 23061-4410
Phone: (804) 693-6694 Fax: (804) 693-9032
http://www.fws.gov/northeast/virginiafield/

In Reply Refer To: October 27, 2021
Consultation code: 05E2VA00-2022-TA-0438
Event Code: 05E2VA00-2022-E-01501
Project Name: Aerial Dispersal of Pesticide for Mosquito and Invasive Species Control at JBLE, VA

Subject: Verification letter for the 'Aerial Dispersal of Pesticide for Mosquito and Invasive Species Control at JBLE, VA' project under the January 5, 2016, Programmatic Biological Opinion on Final 4(d) Rule for the Northern Long-eared Bat and Activities Excepted from Take Prohibitions.

Dear Carey Lynn Perry:

The U.S. Fish and Wildlife Service (Service) received on October 27, 2021 your effects determination for the 'Aerial Dispersal of Pesticide for Mosquito and Invasive Species Control at JBLE, VA' (the Action) using the northern long-eared bat (*Myotis septentrionalis*) key within the Information for Planning and Consultation (IPaC) system. This IPaC key assists users in determining whether a Federal action is consistent with the activities analyzed in the Service's January 5, 2016, Programmatic Biological Opinion (PBO). The PBO addresses activities excepted from "take"[1] prohibitions applicable to the northern long-eared bat under the Endangered Species Act of 1973 (ESA) (87 Stat.884, as amended; 16 U.S.C. 1531 et seq.).

Based upon your IPaC submission, the Action is consistent with activities analyzed in the PBO. The Action may affect the northern long-eared bat; however, any take that may occur as a result of the Action is not prohibited under the ESA Section 4(d) rule adopted for this species at 50 CFR §17.40(o). Unless the Service advises you within 30 days of the date of this letter that your IPaC-assisted determination was incorrect, this letter verifies that the PBO satisfies and concludes your responsibilities for this Action under ESA Section 7(a)(2) with respect to the northern long-eared bat.

Please report to our office any changes to the information about the Action that you submitted in IPaC, the results of any bat surveys conducted in the Action area, and any dead, injured, or sick northern long-eared bats that are found during Action implementation. If the Action is not completed within one year of the date of this letter, you must update and resubmit the information required in the IPaC key.

This IPaC-assisted determination allows you to rely on the PBO for compliance with ESA Section 7(a)(2) only for the northern long-eared bat. It **does not** apply to the following ESA-protected species that also may occur in the Action area:

- Eastern Black Rail *Laterallus jamaicensis ssp. jamaicensis* Threatened
- Monarch Butterfly *Danaus plexippus* Candidate

If the Action may affect other federally listed species besides the northern long-eared bat, a proposed species, and/or designated critical habitat, additional consultation between you and this Service office is required. If the Action may disturb bald or golden eagles, additional coordination with the Service under the Bald and Golden Eagle Protection Act is recommended.

---

[1]Take means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct [ESA Section 3(19)].

Action Description
You provided to IPaC the following name and description for the subject Action.

1. Name

Aerial Dispersal of Pesticide for Mosquito and Invasive Species Control at JBLE, VA

2. Description

The following description was provided for the project 'Aerial Dispersal of Pesticide for Mosquito and Invasive Species Control at JBLE, VA':

> The Proposed Action supports management of mosquito populations under conditions of disease risk and intolerable levels as well as management of invasive plant species, particularly common reed, at JBLE. The Proposed Action includes control of adult mosquitoes over all of JBLE – Eustis' approximately 7,900 acres and over approximately 3,600 acres of JBLE – Langley. The Proposed Action also includes the control of common reed on approximately 600 acres at JBLE – Eustis and on approximately 145 acres on JBLE – Langley. Aerial dispersal of pesticides for adult mosquito control would not exceed three applications per year and would typically occur from May through October. Herbicides are most effective on common reed in late summer to early fall (August through October) because the plant continues to grow while other plants in adjacent areas begin to go dormant, which reduces the risk of damage to nontarget plant species.

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@37.1257145,-76.60068326522074,14z

Determination Key Result

This Federal Action may affect the northern long-eared bat in a manner consistent with the description of activities addressed by the Service's PBO dated January 5, 2016. Any taking that may occur incidental to this Action is not prohibited under the final 4(d) rule at 50 CFR

§17.40(o). Therefore, the PBO satisfies your responsibilities for this Action under ESA Section 7(a)(2) relative to the northern long-eared bat.

Determination Key Description: Northern Long-eared Bat 4(d) Rule

This key was last updated in IPaC on May 15, 2017. Keys are subject to periodic revision.

This key is intended for actions that may affect the threatened northern long-eared bat.

The purpose of the key for Federal actions is to assist determinations as to whether proposed actions are consistent with those analyzed in the Service's PBO dated January 5, 2016.

Federal actions that may cause prohibited take of northern long-eared bats, affect ESA-listed species other than the northern long-eared bat, or affect any designated critical habitat, require ESA Section 7(a)(2) consultation in addition to the use of this key. Federal actions that may affect species proposed for listing or critical habitat proposed for designation may require a conference under ESA Section 7(a)(4).

Determination Key Result

This project may affect the threatened Northern long-eared bat; therefore, consultation with the Service pursuant to Section 7(a)(2) of the Endangered Species Act of 1973 (87 Stat.884, as amended; 16 U.S.C. 1531 et seq.) is required. However, based on the information you provided, this project may rely on the Service's January 5, 2016, *Programmatic Biological Opinion on Final 4(d) Rule for the Northern Long-Eared Bat and Activities Excepted from Take Prohibitions* to fulfill its Section 7(a)(2) consultation obligation.

Qualification Interview

1. Is the action authorized, funded, or being carried out by a Federal agency?

   Yes

2. Have you determined that the proposed action will have "no effect" on the northern long-eared bat? (If you are unsure select "No")

   No

3. Will your activity purposefully **Take** northern long-eared bats?

   No

4. [Semantic] Is the project action area located wholly outside the White-nose Syndrome Zone?

   Automatically answered
   No

5. Have you contacted the appropriate agency to determine if your project is near a known hibernaculum or maternity roost tree?

   Location information for northern long-eared bat hibernacula is generally kept in state Natural Heritage Inventory databases – the availability of this data varies state-by-state. Many states provide online access to their data, either directly by providing maps or by providing the opportunity to make a data request. In some cases, to protect those resources, access to the information may be limited. A web page with links to state Natural Heritage Inventory databases and other sources of information on the locations of northern long-eared bat roost trees and hibernacula is available at www.fws.gov/midwest/endangered/mammals/nleb/nhisites.html.

   Yes

6. Will the action affect a cave or mine where northern long-eared bats are known to hibernate (i.e., hibernaculum) or could it alter the entrance or the environment (physical or other alteration) of a hibernaculum?

   No

7. Will the action involve Tree Removal?

   No

Project Questionnaire

If the project includes forest conversion, report the appropriate acreages below. Otherwise, type '0' in questions 1-3.

1. Estimated total acres of forest conversion:

0

2. If known, estimated acres of forest conversion from April 1 to October 31

0

3. If known, estimated acres of forest conversion from June 1 to July 31

0

If the project includes timber harvest, report the appropriate acreages below. Otherwise, type '0' in questions 4-6.

4. Estimated total acres of timber harvest

0

5. If known, estimated acres of timber harvest from April 1 to October 31

0

6. If known, estimated acres of timber harvest from June 1 to July 31

0

If the project includes prescribed fire, report the appropriate acreages below. Otherwise, type '0' in questions 7-9.

7. Estimated total acres of prescribed fire

0

8. If known, estimated acres of prescribed fire from April 1 to October 31

0

9. If known, estimated acres of prescribed fire from June 1 to July 31

0

If the project includes new wind turbines, report the megawatts of wind capacity below. Otherwise, type '0' in question 10.

10. What is the estimated wind capacity (in megawatts) of the new turbine(s)?

0