

**Final
Environmental Assessment
of Mosquito Control
at Joint Base Charleston – Weapons Station**



U.S. AIR FORCE

**Department of the Air Force
Air Mobility Command
628th Airlift Wing
Joint Base Charleston, South Carolina**

April 2011

Report Documentation Page

Form Approved
OMB No. 0704-0188

Public reporting burden for the collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to a penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.

1. REPORT DATE APR 2011		2. REPORT TYPE		3. DATES COVERED 00-00-2011 to 00-00-2011	
4. TITLE AND SUBTITLE Final Environmental Assessment of Mosquito Control at Joint Base Charleston - Weapons Station				5a. CONTRACT NUMBER	
				5b. GRANT NUMBER	
				5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S)				5d. PROJECT NUMBER	
				5e. TASK NUMBER	
				5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Air Force Center for Engineering and the Environment, AFCEE/TDX, Lackland AFB, TX, 78236-9853				8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)				10. SPONSOR/MONITOR'S ACRONYM(S)	
				11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release; distribution unlimited					
13. SUPPLEMENTARY NOTES					
14. ABSTRACT					
15. SUBJECT TERMS					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON
a. REPORT unclassified	b. ABSTRACT unclassified	c. THIS PAGE unclassified			

FINDING OF NO SIGNIFICANT IMPACT

ENVIRONMENTAL ASSESSMENT OF MOSQUITO CONTROL AT JOINT BASE CHARLESTON - WEAPONS STATION CHARLESTON, SOUTH CAROLINA

INTRODUCTION

Under the proposed action, Joint Base Charleston (JB CHS) would manage mosquito populations on two parcels known as the Naval Weapons Station (NWS) spoil area and the Old Naval Weapons Station (ONWS) spoil area by participating in the Charleston County Public Works Department's Mosquito Control Program. The County uses standard surveillance techniques to determine where mosquito hot spots are located within the county and to ensure only problem areas are treated when necessary.

The NWS and ONWS dredge spoil areas are recognized breeding grounds for mosquitoes. These parcels are located along the Cooper River near the Charleston - Berkeley County line, comprising approximately 472 acres. The County typically treats dredge spoil areas by aerial application of pesticides. Public notifications are made by the County prior to any aerial spraying. The County's Mosquito Control Program would ensure proper application of pesticides as determined by label recommendations, implement Best Management Practices, and coordinate activities with the JB CHS Installation Pest Manager and the JB CHS Public Affairs Office.

The attached Environmental Assessment (EA) was prepared to evaluate alternatives for mosquito control at the NWS and ONWS dredge spoil areas.

FINDING OF NO SIGNIFICANT IMPACT

After a review of the attached EA prepared in accordance with the requirements of the National Environmental Policy Act, the Council on Environmental Quality regulations, and the USAF's Environmental Impact Analysis Process (32 Code of Federal Regulations 989, as amended), and the completion of the public review period, I determine that the Proposed Action will not have a significant impact on the quality of the human or natural environment and, therefore, an Environmental Impact Statement does not need to be prepared.



MARTHA A. MEEKER, Colonel, USAF
Commander, 628th Air Base Wing

18 APR 2011

Date

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1.0 PURPOSE OF AND NEED FOR ACTION

1.1 BACKGROUND

The Cooper River in the vicinity of Joint Base Charleston-Weapons Station (JB CHS-WS) is periodically dredged in order to retain navigability and to maintain operational capabilities and readiness of the docks. The JB CHS-WS docks are adjacent two parcels known as the Naval Weapons Station (NWS) spoil area and the Old Naval Weapons Station (ONWS) spoil area, where the dredged materials are deposited. These dredge spoil areas serve as breeding grounds for mosquitoes, producing about 80 million mosquitoes per acre per rainfall (an estimated ten-fold increase over natural areas).

The NWS and ONWS parcels comprise 472 acres, and can be inundated by mosquitoes at times during season. Extensive mosquito-breeding habitats are common in this area because of the geomorphic features and climate which contribute to the perpetuation of considerable expanses of wetlands and open water. Unlike natural breeding habitats, there are no natural predators for mosquitoes living on the dredge spoil areas.

Large populations of mosquitoes restrict outdoor work and effectiveness of personnel. The human and mosquito populations frequently interface and, if improperly managed, would result in the spread of serious diseases. Large mosquito populations can cause human pain, discomfort, and stress.

Maintenance personnel, base security forces, and others who work outdoors on the dredge storage areas may be adversely affected when the mosquito population is high. While each individual's predisposition to mosquito bites varies, morale and productivity are generally adversely impacted during periods of high mosquito activity. Adverse psychological reactions can be a factor in some individuals. The overall effect can result in reduced productivity and negative morale for assigned personnel and nearby civilian communities.

Efficient mosquito vectors of arboviral encephalitides, including West Nile Virus (WNV), are present on the portion of JB CHS-WS used by the Navy. WNV first appeared in the United States in 1999. Previous outbreaks have occurred in Europe, Africa and the Middle East. Mosquitoes become infected with WNV when they feed on infected birds. After an incubation period of 10 days to two weeks, infected mosquitoes can transmit WNV to humans and animals while biting to take blood. The incubation period in humans is usually five to 15 days; there is no vaccine or treatment for WNV in humans. WNV is not transmitted from person-to-person. Symptoms include fever, headache and body aches. More severe symptoms include high fever, stupor, convulsions and, rarely, death. Eastern Equine Encephalitis (EEE) and St. Louis Encephalitis (SLE) are also endemic to the region. Malaria, Dengue, and Yellow Fever have been documented sporadically from travelers and military personnel in South Carolina who have contracted the diseases while overseas in areas, such as Latin America. In addition, dog heartworm, *Dirofilaria immitis*, a mosquito-borne filarial parasite of canines that on occasion has been found in man, is prevalent throughout coastal South Carolina.

In Charleston County:

- 50+ species of mosquitoes live in Charleston County
- 30 of these species bite people and pets
- the two salt marsh species (*Ochlerotatus sollicitans*, *Ochlerotatus taeniorhynchus*) occur in the greatest numbers

1.2 PURPOSE OF THE ACTION

Purpose of the Action: To reduce mosquito populations on the NWS and ONWS dredge spoil areas. The Navy managed the mosquito populations on the two Naval Weapon Station Charleston (NWSC) dredge spoil area parcels by participating in the County's mosquito management program. The action is the continuation of the County's aerial spraying. When JB CHS-WS was established in October 2010, comprising the former NWSC and Charleston AFB, management functions of these parcels transferred from Navy to Air Force. As such, aerial spraying for pesticides (now under the Air Force's purview) must meet Air Force criteria for NEPA documentation.

1.3 NEED FOR THE ACTION

Need for the Action: Control or alleviate the effects of mosquitoes on the human environment. As the NWS and ONWS dredge spoil areas are recognized breeding grounds for mosquitoes, there is a need to sustain efforts to reduce the threat of a mosquito-borne disease outbreak. Additionally, there is a need to continue providing a functional and effective environment for outdoor activities in support of the JB CHS-WS mission as well as the adjacent civilian communities.

1.4 SELECTION STANDARDS

Selection standards are used to evaluate an alternative's ability to fulfill the action's purpose and need. The purpose and need statement is a declaration of the broad goals and objectives of the JB CHS-WS mosquito control effort. NEPA and its companion regulation require development and identification of reasonable alternatives to a proposed action. In determining the scope of alternatives to be considered, emphasis is placed on what is "reasonable". Reasonable alternatives include those that are practical or feasible from the technical and economic standpoint and using common sense, rather than what is simply desirable.

Selection standards for mosquito control include:

- effectiveness (in protecting human health and alleviating effects on the human environment)
- occurs within the boundaries the NWS and ONWS spoil areas
- does not impede JB CHS-WS mission requirements
- does not impede ongoing dredging activities
- economically feasible
- does not conflict with local flight activities
- is compatible regional pest control efforts
- does not significantly increase use of pesticides, or is counter to Air Force pest management policies

1.5 LOCATION OF THE ACTION

The Air Force proposes to manage mosquito populations on two parcels known as the NWS spoil area and the ONWS spoil area. Both parcels are located on the west bank of the Cooper River near the Charleston – Berkeley County line. The NWS parcel comprises 435.9 acres at 32°54'60" North Latitude and 79°56'34" West Longitude. The ONWS parcel comprises 36.2 acres at 32°54'43" North Latitude and 79°57'28" West Longitude.

Figure 1-1. Joint Base Charleston – Location Map

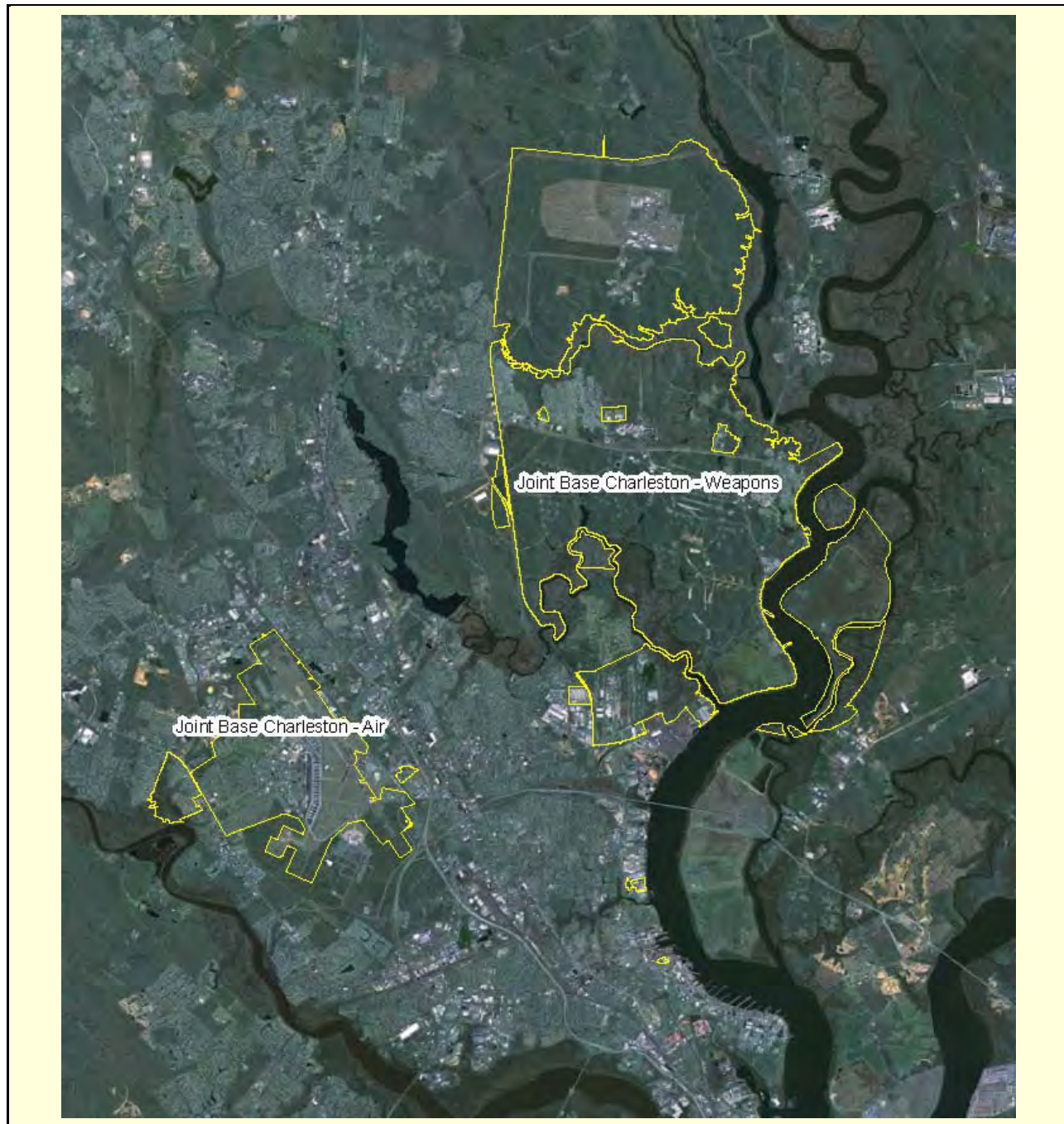


Figure 1-2. Aerial Photo Showing Dredge Spoil Areas in Vicinity



Figure 1-3. Aerial Photo Showing NWS Spoil Area



Figure 1-4. Aerial Photo Showing ONWS Spoil Area



1.6 PUBLIC AND AGENCY INVOLVEMENT

On Friday, March 4, 2011, the Air Force published a notice of availability of the draft Environmental Assessment (EA) and the draft Finding of No Significant Impact of Mosquito Control at Joint-Base Charleston-Weapons Station, Charleston, South Carolina (FONSI) in the Charleston Post and Courier. The public comment period was 15 days. In addition, the Air Force distributed copies of the draft EA and FONSI to potentially interested federal, state, and local agencies as well as potentially interested Indian Nations. The notice of availability, the distribution list and responses received are presented in Appendix C. Correspondence was received from both agencies and Indian Nations. There were no public comments.

As a result of subsequent correspondence with the National Marine Fisheries Service on March 29, 2011, the final EA now includes a discussion of the essential fish habitat (EFH) and the Air Force decision that there is no adverse affect on the EFH in the vicinity of the proposed action.

1.7 ENVIRONMENTAL RESOURCES ELIMINATED FROM FURTHER ANALYSIS

In compliance with NEPA, CEQ, and USAF regulations and guidelines, this document focuses on those conditions and resource areas that are potentially subject to impacts. These resources include air quality, water resources, biological resources, noise, land use, and organisms.

Some environmental resources and conditions that are often analyzed in an EA have been eliminated from analysis or review. The following paragraphs identify these resource areas and the basis for such exclusions.

Air Installation Compatible Use Zone – If implementing mosquito control via aerial dispersion, spraying would be performed using similar aircraft and flight patterns as previously conducted. Due to the limited number of flights, and their short-nature, no impact to the AICUZ is anticipated. Accordingly, the USAF has eliminated AICUZ from further analysis.

Cultural resources – The parcels, or areas of potential impact, are areas of secondary deposits, and therefore have no cultural resources. JB CHS has identified buildings which were considered eligible for the National Register of Historic Places (NRHP). None of these buildings are located on NWS and ONWS parcels. Additionally, there are no known Native American resources on these parcels. Accordingly, the USAF has eliminated detailed examination of cultural resources, including historic structures and buildings, archaeological resources, and tribal resources.

Socioeconomic – There are no children, elderly, low income, or Native American population on the NWS and ONWS parcels. No conditions were indentified, with regard to the action of providing mosquito control, which would indicate a socioeconomic impact or environmental justice effect to these populations. Accordingly, the USAF has eliminated Socioeconomics from further analysis.

Safety and Occupational Health – The personnel at NWS and ONWS would not be applying insecticides, and the quantities of treatment materials applied via aerial dispersal do not present a threat to human health at ground-level when applied at label recommended rates. Flying activities are coordinated with FAA and installation air controllers, consequently their activities are de-conflicted from other flying activities. Radio and electronic emissions from the aircraft would not impact operations on the parcels. There are no known ordnance or explosive safety issues at these parcels. Therefore the USAF has eliminated Safety and Occupational Health from further analysis.

2.0 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

2.1 PROPOSED ACTION

JB CHS proposes to manage mosquito populations on the NWS spoil area and the ONWS spoil area by participating in Charleston County Public Works Department’s Mosquito Control Program (MCP). The proposed action would allow the Charleston County to continue seasonal aerial spraying of larval mosquito control on the NWS and ONWS parcels, comprising approximately 472 acres. In addition, when there is an infestation of adult mosquitoes, it would also allow for control of the breeding population of mosquitoes. In addition, when there is an infestation of adult mosquitoes, it would also allow for adulticide spraying for control of the mosquito population.

2.1.1 MOSQUITO TARGET SPECIES

The mosquitoes of primary concern are those that develop in the NWS and ONWS dredge spoil areas. With more than 50 species of mosquitoes known to exist in Charleston County (see Appendix A), there are several dominant species found in the area which are known to transmit diseases such as EEE, SLE, and WNV. These include, but are not limited to, *Ochlerotatus sollicitans* and *Ochlerotatus taeniorhynchus* which breed in salt marshes; *Anopheles crucians* which also breeds in salt marshes, along lake margins, and in freshwater swamps; *Aedes vexans* which breeds in temporary freshwater pools; *Aedes albopictus* which is a container breeding mosquito; and *Culex salinarius* which breeds in waters both clear and with high organic content, but especially sunny ground collections in pools, ditches, and artificial containers.

Aedes albopictus is the introduced Asian tiger mosquito found in the area and is capable of transmitting EEE, WNV, Dengue, and Yellow Fever. The Asian tiger mosquito is a day-time biter which has become widespread across the eastern United States area over the past few decades. Now that Dengue has become established in southern Florida, there is concern that it will spread northward in areas where the vector (*Aedes albopictus*) has become established. There was an imported case of Dengue in Charleston in 2010. Similarly, malaria has been documented sporadically from travelers and military personnel who have contracted malaria while overseas.

Additionally, dog heartworms, or specifically *Dirofilaria immitis*, are mosquito-borne filarial nematode parasites of canines occasionally found in humans.

2.1.2 FACTORS DETERMINING IF AND WHEN TO TREAT

Charleston County uses the following factors to determine if and when aerial spraying is necessary to treat impending infestations:

- a) Regional illness and mortality reports attributable to mosquito-borne disease(s)
- b) Mosquito population potential as influenced by environmental and climatic conditions (e.g. tidal influence or hurricanes)
- c) Surveillance through standard mechanisms such as
 - 1) light trap counts
 - 2) larval dipping

- 3) landing rates
- 4) verified citizen requests

Aerial spraying is scheduled when impending infestation cannot be managed by any other means, as determined by officials from Charleston County MCP in coordination with JB CHS Public Health personnel, and South Carolina Department of Health and Environmental Control (SCDHEC). Aerial spray operations with the Charleston County MCP are coordinated with the JB CHS Installation Pest Management Coordinator.

The County manages mosquito populations at NWS and ONWS parcels using larvicides, either microbial insecticides or insect growth regulators, applied in accordance with EPA labeling instructions. Rarely, adult mosquitoes would need to be controlled. The County would control adult mosquito populations by aerial application of Trumpet (naled) for adult mosquitoes. Trumpet would be applied only when Charleston Mosquito Control Office surveillance demonstrates that the adult mosquito populations are uncontrolled. Trumpet would be applied according to all EPA directed labeling instructions. No aerial application would be done at night.

2.1.2.1 Disease Surveillance

The Charleston Mosquito Control Office monitors mosquito-borne diseases. Reporting of occurrences of EEE, SLE, and WNV cases takes place through the same agency. Evidence of viral activity, as demonstrated by horse or avian cases, is an important indication that a human threat may exist and that spraying is warranted. It should be noted from a surveillance standpoint, that widespread vaccinations of horses could mask this group as a disease risk indicator.

2.1.2.2 Mosquito Forecasts

The heaviest mosquito infestations occur in the dredge spoil areas on JB CHS-WS from April through October. However, dense populations of mosquitoes have been known to exist throughout Charleston County well before and after this typical time range. *Ochlerotatus* species in the egg stage may remain viable for several years. *Ochlerotatus* mosquitoes are strong fliers and commonly fly up to 10 miles from their breeding places for a blood meal. The development time for some *Culex* species is as short as one to two weeks from egg to adult when average temperatures are near 80°F in July. Peak mosquito activity usually occurs during the last week in June and continues throughout the month of July.

In order to minimize the areas to be sprayed and number of times to be sprayed each year, aerial spraying (using larvicide and/or adulticide) would only occur when Charleston County determines the necessity to manage impending infestations.

2.1.2.3 Adult and Larval Mosquito Surveillance

Charleston County depends heavily on surveillance data, gathered by County officials, and who have several methods of sampling the mosquito population at the NWS and ONWS parcels.

The County has pre-determined sites to take landing rate counts to determine when mosquitoes have “popped off” and become flying adults. A landing rate count (LRC) is conducted by having a technician stand in one place for a pre-determined amount of time (usually 3 to 5 minutes) and observing how many mosquitoes land on him/her in one minute. Higher counts can prompt the County to schedule a spray mission. The assumption is made that there are far more mosquitoes

about than are counted, in that, LRCs are performed later than when the mosquitoes are about at peak active time (usually right after dusk/just before dawn and other times during the night).

The County uses weekly New Jersey light traps for day-to-day local population monitoring. The County also uses CDC traps for scheduled WNV diseases surveillance in coordination with SCDHEC. Monitoring areas are located throughout the County.

The County periodically conducts aerial and ground surveillance of immature mosquitoes or breeding sites for larvae and pupae. Where possible, the breeding areas are treated to prevent maturation to the adult stage, which would result in the non-need for spraying. However, spraying for larvae is not 100% effective and often additional spraying for adult mosquitoes is occasionally required to sufficiently control mosquitoes originating at the NWS and ONWS parcels.

2.1.2.4 Human Complaints

The Charleston County Mosquito Control Office documents complaints of biting mosquitoes. Although subjective in nature, complaints are used as indication of building mosquito populations. If complaints are received, the County would use surveillance data at the NWS and ONWS parcels to determine if larvicide control is no longer adequate to control mosquito populations.

2.1.2.5 Treatment Method

Overflights of spray aircraft would be at an elevation of 100 to 300 feet. Application of each pesticide follows all labeling guidelines established by EPA during pesticide registration.

The County typically uses two helicopters (Bell Jet Ranger and an OH 369) as well as fixed-wing aircraft (typically subcontracted Piper Aztec or Air Tractor). All aerial applicators are certified in United States Environmental Protection Agency (USEPA) Category 11 through the state of South Carolina.

If an emergency should arise, the 757th Airlift Squadron (757 AS), Youngstown Air Reserve Base (ARB), Ohio, JB CHS or governmental officials may request the 757 AS for assistance in aerial spraying. The 757 AS would provide aircraft, aircrews, and South Carolina State certified/DoD certified Entomologists to coordinate and oversee all aerial application and disposal of pesticides, as appropriate. The 757 AS would typically provide C-130H aircraft specially outfitted for aerial spray application with Modular Aerial Spray System (MASS) and Differential Global Positioning System (DGPS) which would follow comparable flight paths and elevations over the treatment areas. JB CHS and the County have procedures in place to implement and coordinate emergency operations as necessary.

2.1.2.6 Treatment Materials

2.1.2.6.1 Larvicides

To manage mosquitoes in their larval stages, the County would use a microbial larvicide, known as *Bacillus thuringiensis* var. *israelensis*, (*B.t.i*), naturally-occurring bacterium that may be aerially applied to wetlands. One commercially available formulation of *B.t.i* is VectoBac® 12AS, which is in aqueous suspension form. The County might also make the choice, to pre-treat or treat areas with Altosid® Liquid, depending on what species are being treated. Altosid® Liquid is an insect growth regulator (IGR) with methoprene as the active ingredient. Methoprene is an

ingredient found in nearly all over the counter (OTC) insecticides to control fleas, ticks and other similar insects.

Altosid[®] Liquid Larvicide Concentrate (USEPA Reg 2724-446) may be applied to 2nd, 3rd or 4th larval instar mosquitoes. This insect growth regulator is a formulation of 20% methoprene (Isopropyl-11-methoxy-3,7,11-trimethyl-2,4-dodecadienoate) and 80% other ingredients. The label recommended rate of application is 0.75 to 1 fluid ounce of Altosid[®] Liquid Larvicide Concentrate per acre with or without water as directed on the label.

VectoBac[®] 12AS (USEPA Reg 73049-38) may be applied to control 1st, 2nd, or 3rd instar larval mosquitoes. It is a formulation of 11.6% *B.t.i* containing 1200 International Toxic Units per milligram and 88.4% inert ingredients. The label recommended rate of application is 0.25 to 2.0 pints per acre (undiluted). VectoBac[®] 12AS may also be applied with sufficient water to provide uniform coverage. The amount of water needed per acre would depend on weather, spray equipment, and mosquito habitat characteristics.

2.1.2.6.2 Adulticides

Trumpet, a naled-based adulticide is recommended in aerial application to perform adult mosquito control. The preferred formulation is Trumpet EC (Emulsifiable Concentrate) which combines 78% naled and 22% inert ingredients. The emulsifier in Trumpet EC allows equipment to be flushed with water after application for proper rinsing. The label recommended rate of application is 0.6 to 1.2 ounces of undiluted Trumpet per acre by means of aerial ultra-low-volume (ULV) Equipment. The rate of application to be used by the County at NWS and ONWS parcels is 1 ounce per acre.

Appendix B includes specimen labels for each of the following pesticides:

- Trumpet is a registered trademark of AMVAC Chemical Corp, Los Angeles, CA.
- Vectobac is a registered trademark of Abbott Laboratories, North Chicago, IL.
- Altosid is a registered trademark of Wellmark International, Shaumburg, IL.

Links for the material safety data sheets for each pesticide can be found in Section 8.0.

The treatment materials above are based on active ingredients which are known to be effective and are applied per label recommendations. Should the County replace the above listed treatment materials with other insecticides, using best management practices, it would be appropriate for JB CHS to also apply the replacement treatment materials to facilitate effective regional approach to managing the mosquito populations.

2.2 NO ACTION ALTERNATIVE

A “no action” alternative provides no mosquito control on the NWS or ONWS dredge spoil areas. JB CHS-WS would not continue to participate in the County’s regional pest management program, nor provide other means for controlling mosquito populations.

As a result, base personnel and contractor employees would be at risk of serious disease, morale and work efficiency would be adversely affected, and the County’s attempts to control the mosquito population in the Cooper River area would be undermined as the spoil areas at the subject properties would serve as breeding grounds for mosquitoes that would eventually migrate to surrounding areas putting the local populations at risk.

2.3 ALTERNATIVES ELIMINATED FROM DETAILED STUDIES

Three alternatives were eliminated from further study during the assessment process because they either did not support mission activities, meet objectives or were not feasible for other reasons.

Eliminated alternatives include:

1. JB CHS-WS could conduct its own ground-based chemical insecticide treatment on the NWS and ONWS parcels. This alternative would be physically and economically impossible, given the total acreage (more than 470 acres) proposed for treatment and the inaccessibility of the majority of the wetlands to ground equipment. In addition, ground application has limited application range and requires a greater amount of active ingredient per given treatment area.
2. JB CHS-WS could arrange for the 757 AS to conduct aerial chemical insecticide treatment over JB CHS's two parcels (while the County completed its portions of Cooper River treatment area). The Air Force under this alternative would use similar chemicals and require close coordination with the County to ensure proper application. This alternative has no advantage since it would have similar environmental impacts as the Proposed Action. However, there is a potential disadvantage if sprayings are not properly coordinated, e.g., scheduling, application rates, response to inclement weather. There would be increased flight activity as the 757 AS aircraft would fly to and from Youngstown ARB, approximately 580 miles away. This approach would also be more expensive and less efficient than the comprehensive effort led by the County in the area.
3. JB CHS-WS could mechanically manipulate the surface of the NWS and ONWS parcels to reduce the number of breeding sites, however, because of the nature of the dredge spoil areas, any manipulation would be temporary and would not alleviate the mosquito breeding areas.

3.0 AFFECTED ENVIRONMENT

3.1 AIR QUALITY

The NWS and ONWS parcels, as is the entire County of Charleston, are in attainment for all National Ambient Air Quality Standard (NAAQS) parameters. Both JB CHS-Air and JB CHS-WS have submitted an application to renew its Non-title V State Air Operating Permit. Under the aforementioned permit, the base limits emissions to below that of a major source. Thus, JB CHS is not subject to a Title V operating permit.

3.2 WATER RESOURCES

3.2.1 DRINKING WATER SUPPLY

There is no drinking water supply at the NWS or ONWS parcels, as there are no residents or full-time workers at the dredge spoil areas. There are no public supply wells or piped utilities.

In the vicinity of these parcels, local utilities are typically used to provide drinking water. As such, the Charleston Water System is responsible for sampling and monitoring water supply for water quality standards set by the USEPA and SCDHEC. In the vicinity of these parcels, most sanitary and industrial wastewater is discharged to the North Charleston Sewer District for treatment.

3.2.2 GROUND WATER

All South Carolina groundwater is classified as having the potential to serve as water supplies (Class GB) per state regulation. However, this area depends on surface water supplies rather than groundwater. The surficial aquifers produce the highest yields but chloride levels (e.g. salt water intrusion) prevent potable or consumptive use in this area. Groundwater is used for industrial and non-consumptive community uses, such as fire fighting. Several industries (e.g. marine docks, plants, wood treating facilities) that have historically operated or are continuing operations in the vicinity of the parcels had the potential to impact human health and the environment.

Six aquifers, or water-bearing geologic layers, exist at various depths below these parcels and the Charleston peninsula. The six major aquifer systems, in ascending order, are the Middendorf, Black Creek, Pee Dee, Black Mingo, Tertiary Limestone, and surficial aquifer systems.

3.2.3 SURFACE WATER

The NWS and ONWS parcels, located on the river's west bank, are within the Cooper River watershed. Both parcels have berms and trench/weir systems to prevent runoff from the sites into surrounding surface water. Both sites have a vegetative buffer separating the parcels from surrounding surface water. The NWS parcel is bounded on the southeast by the Cooper River and on the northeast by the Back River reservoir. The nearest surface water to the ONWS is an unnamed creek which flows into the Cooper River.

Although there are no freshwater ponds on the NWS and ONWS parcels, there are numerous cracks and fissures which develop (fill and drain repeatedly) in the drying dredge/fill material.

Figure 3-1. Photo of NWS Spoil Area



3.3 BIOLOGICAL RESOURCES

Animals located within the proposed treatment area may include mammals (e.g. raccoons, opossums, and squirrels), assorted bird species, (e.g., hawks, wading birds), amphibians, insects (e.g., beetles, flies, moths). Types of plants include common marsh plants and invasive species such as phragmites.

3.3.1 THREATENED AND ENDANGERED SPECIES

A rare, threatened, and endangered (RTE) plant survey was conducted at the former NWSC in 1987 and 1993. No threatened and endangered plant species were found on NWSC.

A RTE amphibians and reptiles survey was conducted in 1994 at NWSC by South Carolina Department of Natural Resources (SCDNR). No federal or state threatened or endangered species were found during this survey.

NWSC was surveyed for mammals in 2001 by SCDNR. Although one bat, the Southeastern myotis (a state threatened species), was captured in the vicinity during the survey, none have been observed on the NWS and ONWS parcels. The eastern wood rat and the fox squirrel, both state species of concern, were confirmed as residents of NWSC.

A survey for the federally-listed endangered red-cockaded woodpecker (RCW) was conducted for NWSC in 2000. One RCW was located on NWSC and was banded during the survey. No

mating or nesting activities were observed. The dredge spoil areas do not provide wooded habitat appropriate for RCW nesting or feeding activities.

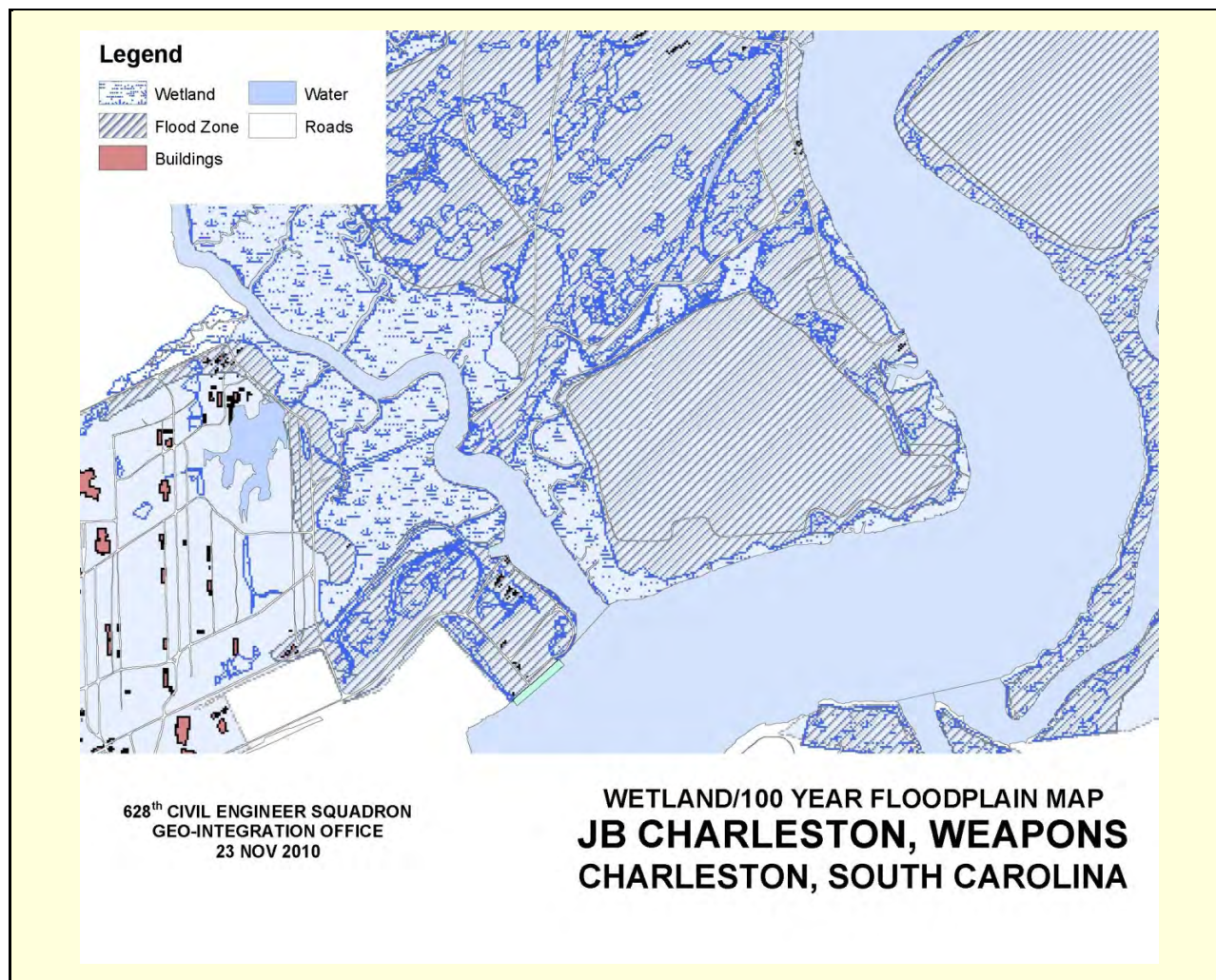
There are no areas designated as critical habitat for federally-listed threatened or endangered species.

Wetlands

The parcels are located on the west bank of the Cooper River, approximately 16 river miles from the Atlantic Ocean where it joins waters from other rivers to form the Charleston Harbor. Tidal wetlands in Charleston Harbor include marshes dominated by cordgrass (*Spartina alterniflora*) and black rush (*Juncus roemerianus*). High marsh areas are vegetated with salt grass (*Distichlis spicata*), salt meadow hay (*Spartina patens*), and sea oxeye (*Borrchia frutescens*), with scrub shrub wetlands dominated by salt marsh elder (*Iva frutescens*), wax myrtle (*Myrica cerifera*), and groundsel tree (*Baccharis halimifolia*). Common reed (*Phragmites australis*) appears in areas along the fringe of the high marsh (USACE 2009). Open water habitats range from small freshwater ponds to the estuarine waters of the Cooper River. Common vegetation in the freshwater habitats include, cattails (*Typha* spp.), bulrushes (*Scirpus* spp.), sedges (*Carex* spp), and mosses (*Sphagnum* spp).

The NWS and ONWS parcels lie within the 100 year flood plain (FEMA, Oct 2003). The 100-year flood plain varies from 8.5 to 10.5 feet above Mean Sea Level (MSL) on the former NWSC. Jurisdictional delineation of wetland boundaries at NWSC was performed in 1998 by the Natural Resources Conservation Service. Figure 3.2 depicts these wetlands as well as the 100-year floodplain.

Figure 3-2. Wetlands and Floodplain Map



3.3.2 ESSENTIAL FISH HABITAT

Section 305(b)(2) of the Magnuson-Stevens Fishery Conservation and Management Act, as amended, requires interagency coordination to further the conservation of federally managed fisheries and for each Federal agency that may adversely affect essential fish habitat (EFH) to consult with the National Marine Fisheries Service (NMFS) and identify EFH. The Act defines EFH as “those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity.” The definition for EFH may include habitat for an individual species or an assemblage of species, whichever is appropriate within each Fisheries Management Plan (FMP).

There is no EFH within the subject parcels. However, a description of the managed species in the Cooper River EFH is provided for consideration as these parcels are in the vicinity of the river.

Identification of Managed Species

Coastal marshes and tidal inlets are extremely important in the production of many commercially harvested finfish and shellfish. The Cooper River provides habitat for a diverse assemblage of estuarine-dependent fish and invertebrate species. Salt marsh and tidal flats are present in the

vicinity of the NWS and ONWS parcels, and the South Atlantic Fishery Management Council (SAFMC) identifies these habitats as EFH for white shrimp (*Litopenaeus setiferus*) and brown shrimp (*Farfantepenaeus aztecus*) due to the fact that shrimp experience high rates of growth and survival when concentrated in these habitats. For specific life stages of estuarine dependent and nearshore snapper-grouper species, essential fish habitat includes, but is not limited to, estuarine emergent vegetated wetlands (saltmarshes, brackish marsh), tidal creeks, estuarine scrub/shrub (mangrove fringe), oyster reefs and shell banks, and unconsolidated bottom.

Species under jurisdiction of the Mid Atlantic Fishery Management Council (MAFMC) also occur in the project area, including juvenile and adult summer flounder (*Paralichthys dentatus*) and juvenile and adult bluefish (*Pomatomus saltatrix*). MAFMC identifies estuarine waters as EFH for these species.

In addition to providing EFH for federally managed fishery species, the waters of the Cooper River, the tidal creeks connected to it, and the surrounding coastal marsh also provides nursery and forage habitat for other species, including black drum (*Pogonias cromis*), Atlantic menhaden (*Brevoortia tyrannus*), and blue crab (*Callinectes sapidus*), that serve as prey for other species (e.g., mackerels, snappers, and groupers) managed by SAFMC and for highly migratory species (e.g., billfishes and sharks) that are managed by NMFS. Juvenile and subadult red drum (*Sciaenops ocellatus*) inhabit the marsh and channels.

Penaeid Shrimp. For penaeid shrimp, which includes white shrimp and brown shrimp, EFH in inshore locations includes estuarine nursery areas, which include tidal freshwater (palustrine), estuarine, and marine emergent wetlands (e.g., intertidal marshes); tidal palustrine forested areas; tidal freshwater, estuarine, and marine submerged aquatic vegetation (e.g., seagrass); as well as subtidal and intertidal non-vegetated flats (SAFMC 1998). Perhaps the most important of these nursery grounds are estuarine tidal creeks and salt marshes, particularly *Spartina alterniflora*-dominated marsh areas, which are considered Essential Fish Habitat for these species (SAFMC 2010).

Snapper-Grouper Complex:

Summer Flounder. Adult and juvenile summer flounder typically inhabit shallow coastal and estuarine water during the warmer months and move offshore for the fall and winter (Packer et al., 1999). In addition, juveniles can also move into tidal freshwater and estuarine marshes dominated by *Spartina*, *Scirpus*, *Typha*, and *Juncus* (SAFMC 1998).

Bluefish. Bluefish enter estuarine waters from the pelagic juvenile stage. While it is not known if juveniles are estuarine-dependent, they do utilize estuarine waters as juveniles and as adults (Shepherd and Packer 2006), namely estuarine tidal creeks; marshes dominated by *Spartina*, *Scirpus*, and *Typha* (SAFMC 2009).

Black Drum and Atlantic Menhaden. Both black drum and Atlantic menhaden are estuarine-marine fishes that spawn in marine environments but move into tidal freshwater marshes (SAFMC 2009). Both species are found in marshes dominated by *Spartina* while Atlantic menhaden are also found in less saline environments, *Scirpus*- and *Typha*-dominated marshes (SAFMC 2009).

Blue Crab. Blue crabs occur in a range of estuarine habitats, from tidal freshwater marshes and ponds to intertidal flats and marshes dominated by *Spartina*, *Scirpus*, *Typha*, and *Juncus* (SAFMC 2009).

Red Drum. Red drum larvae congregate in estuarine wetlands, including flooded saltmarshes, brackish marshes and tidal creeks. Juveniles utilize estuarine backwaters as nursery areas (NMFS 2011). Both juveniles and adults are found in marshes, channels, and intertidal flats (SAFMC 2009).

3.4 NOISE

These parcels are subject to a variety of noise types typical to such industrial areas including, but not limited to, dock operations and watercraft navigating in the Cooper River. Additionally, there is flight noise from aircraft as the following are in close proximity (within a 15 mile radius): Charleston International Airport and JB CHS-Air.

Noise may be defined as any undesirable sound, regardless of its origin. Noise intrusion into a quiet environment would, in most cases, have greater impact than additional noise into an existing noisy environment. Cumulative noise levels, resulting from multiple single events, are used to characterize community noise effects from aircraft operations and are measured using the Day-Night Average A-weighted Sound Level (DNL) metric with the noise levels expressed in A-weighted decibels (dBA).

3.5 LAND USE

The dredge spoil areas comprise approximately 472 acres, of which the NWS and ONWS parcels comprise 435.9 and 36.2 acres, respectively. The NWS parcel actively receives dredge material. The ONWS parcel is not as frequently used but is available for occasional or incidental deposition.

The topography of Charleston is very low with many areas at sea level. The average elevation is approximately 6 meters above sea level.

4.0 ENVIRONMENTAL CONSEQUENCES

4.1 AIR QUALITY

4.1.1 PROPOSED ACTION

Under the proposed action, there would be no violation of the Clean Air Act as there would be no violation of the NAAQS.

The recommended ULV aerial dispersal rate for naled generates droplets which are between 10 and 40 microns. Depending on the climatological conditions, these droplets settle to the earth in a matter of a few hours. From the aircraft emissions, there would be temporary increases in volatile organic compounds and nitrous oxides within the proposed treatment area as a result of the proposed action. However, this activity would not exceed local standards for air emissions and would not result in nonconformance with the Clean Air Act and its amendments. It is recognized that ULV sprays can be inhaled by humans and other vertebrates. For this reason, base and surrounding communities residents would be notified of spray timing, in order to minimize undue inhalation exposure. Careful attention would also be paid by the applicators to avoid drift into non-target areas.

The spray droplets of the wettable powder formulation of *B.t.i.* at the recommended rate of 6 to 12 ounces in 1/4 to 10 gallons of water per acre, or Altosid at 1 fl oz per 5 gallons of water per acre, would settle to the surface within minutes of application, and would, therefore, only transiently affect the quality of the immediate air space.

In summary, the aerial spraying of naled-based Trumpet EC, *B.t.i.*, or Altosid, would only temporarily affect the local air quality. Both materials settle to the ground, water, or vegetative substrate, within hours, where they begin to biodegrade and hydrolyze.

4.1.2 NO ACTION ALTERNATIVE

Under the no action alternative, as with the proposed action, there would be no violation of the Clean Air Act as there would be no violation of the NAAQS. There would, in contrast, be no short term impact to air quality on NWSC as spraying would not occur there. The effects on air quality to the surrounding communities would remain the same as Charleston County would continue to spray along the banks of the Cooper River near and in those communities.

4.2 WATER QUALITY

4.2.1 PROPOSED ACTION

In the proposed concentration, naled-based Trumpet EC will have minimal impact on water quality in the area. Naled is nearly insoluble in water. Naled and its degradation products are transformed primarily by abiotic hydrolysis, indirect photolysis in water, and biodegradation. Naled and its degradation products dissipate rapidly under typical terrestrial, aquatic, and forestry field conditions, having half lives of less than 2 days. Rapid hydrolysis and biodegradation help decrease the concentration of naled that remains in the environment shortly after treatment and thus lower the amount available for runoff. When naled is present in the atmosphere, it exists primarily in the vapor phase, where it degrades by reacting with hydroxyl radicals. In atmospheric conditions, the estimated half-life of naled is 18 hours.

Naled degrades rapidly in aqueous media. Estimated half-lives were 96 hours at pH 5, 15.4 hours at pH 7, and 1.6 hours at pH 9. The photodegradation of naled by indirect photolysis under

environmental conditions will produce the byproduct dichlorvos. In soil, the degradation of naled is aided not only by microbial populations, but also by hydrolytic processes. The estimated half-life of naled, based on exponential-decay calculations in soil, is 1 day (ATSDR, 2005). It is therefore unlikely that naled could migrate through soil to the groundwater. Under normal conditions, most of the naled applied (and its major decomposition products) would be degraded within 24 hours. The material would be applied at the lowest effective concentration, minimizing drift from aerial application.

Although the *B.t.i.* active agent is stable in water for more than 30 days, it would gradually settle out and become enmeshed, embedded, or attached to bottom substrate. *B.t.i.* is a microbial pesticides used for black fly and mosquito control. It is a naturally occurring soil bacteria that is active against these dipteran insects. These bacteria must be eaten by the larvae and become activated in the gut of the larvae. *B.t.i.* is applied as a dormant spore form of the bacterium and is a toxin. The *B.t.i.* toxin disrupts gut activity in the mosquito but has no effect in other animals. It may also be consumed by other aquatic organisms thereby being a food source providing protein without ill effects. Water quality, would be unlikely to be negatively affected.

Altosid (methoprene) rapidly biodegrades in soil, with a soil half-life of 10 days. Its half-life in water is less than 1 day in sunlight and greater than 4 weeks in darkness. Methoprene rapidly degrades in plants, with a half-life of 1 to 2 days. If released to air, methoprene would exist in both the vapor and particulate phases in the ambient atmosphere. Vapor-phase methoprene degrades in the atmosphere by reaction with hydroxyl radicals and ozone; the estimated half-lives for these reactions in air are 1.5 hours and 48 minutes, respectively. Particulate-phase methoprene is removed from the atmosphere by wet and dry deposition. If released to soil, methoprene is expected to be immobile. If released into water, methoprene is expected to adsorb to suspended solids and sediment. The potential for bioconcentration in aquatic organisms is very high. Methoprene is only slightly toxic to fish but is considered toxic to freshwater and estuarine invertebrates (ATSDR, 2005).

4.2.2 NO ACTION ALTERNATIVE

The No Action alternative would not have any water quality impact. Under this Alternative, any concerns about the aerial application of insecticides and the effects that may result from such treatment on the environment, would be eliminated. The No Action Alternative would have no effect on water supply, ground water, or surface water.

4.3 BIOLOGICAL RESOURCES

4.3.1 PROPOSED ACTION

At the proposed rate of application, no evidence exists which suggests that naled-based Trumpet EC, *B.t.i.*, or methoprene-based Altosid would harm trees, plants or garden crops or that residues resulting from mosquito control would exceed established tolerances for raw agricultural commodities (USEPA 1983, 1990). At the prescribed rate, no phytotoxic activity has been documented that would suggest harm to plants.

The persistence of *B.t.i.* activity is usually no more than two days under typical mosquito abatement use conditions, so the effect on non-target midge (gnat) populations would be temporary. First through early fourth instar mosquito larvae of fresh and marsh mosquitoes would succumb within 24 hours of ingesting the *B.t.i.* proteinaceous parasporal particle. Some immature stages of midges would also be killed upon ingestion of the material. No adult non-

target insects and only a few species of non-target sub-adult diptera (flies and gnats) would be affected.

A summary of safety tests on vertebrate and invertebrate non-target organisms compiled by one *B.t.i.* manufacturer (Biochem Products) showed that, other than producing mortality in some species of flies and midges; no ill effects were detected in close to 100 different non-target invertebrates. Similar results were obtained by Garcia and others (1980).

A study examining the non-target effects of *B.t.i.* on stream invertebrates communities and fish (Merritt. 1989), found no significant effects. Another study (Lee and Scott, 1989) revealed that *B.t.i.* was less toxic to non-target fish (*Fundulus heteroclitus*) than four other chemical larvicides.

Based upon USEPA's scientific findings (USEPA, 1990), data gaps do exist in the ecological effects data base for *B.t.i.*, mainly relating to strain specificity. There are, however, no substantial environmental safety concerns and no substantive concerns regarding unreasonable adverse effects. Certain endangered lepidopteran (butterflies, skippers, moths) insect species can be affected by the kurstaki strain, but this strain differs from dipteran-specific israelensis strain.

Altosid acts in 2nd, 3rd, and 4th instar larvae to halt growth at the pupae stage (the pupae do not survive), the treated area would realize a reduction in the emerging adult population. Altosid's active ingredient is methoprene and when used in mosquito control programs does not pose unreasonable risks to wildlife or the environment. Toxicity of methoprene to birds and fish is low, and it is nontoxic to bees. Methoprene breaks down quickly in water and soil and would not leach into ground water. Methoprene mosquito control products present minimal acute and chronic risk to freshwater fish, freshwater invertebrates, and estuarine species (USEPA, 2007).

Naled used in mosquito control programs does not pose unreasonable risks to wildlife or the environment (USEPA, 2010). Naled degrades rapidly in the environment and it displays low toxicity to birds and mammals (USEPA, 2002). Smith (1987) summarized the persistence and hazard evaluation of naled on wildlife and concluded that naled has low environmental persistence, which may minimize prolonged exposure to wildlife. Additionally, no reported incidences of wildlife problems are attributable to naled, even though naled is commonly used in areas that provide wildlife habitat. It is pointed out, however, that wildlife mortalities in wetlands may be more difficult to detect than in agricultural areas.

Naled is considered toxic to bees. Droplets of the sprayed chemical are capable of contacting and killing foraging bees. However, the impact to bee populations would be minimized through several means: use of smaller droplets (so as not to settle on ground), applying at dusk when bees have stopped foraging, and notifying area citizens prior to application which would allow beekeepers to contain or relocate their bees.

Evaluation of Impacts on EFH Species

Section 305(b)(2) of the Magnuson-Stevens Fishery Conservation and Management Act, as amended, requires interagency coordination to further the conservation of federally managed fisheries and for each Federal agency that may adversely affect EFH to consult with the NMFS and identify EFH. An adverse affect to the EFH would be any affect that reduces EFH quantity or quality.

Essential habitat for several managed species occurs in the vicinity of the proposed action. These habitats include riverine habitats and tidal wetlands ranging in salinity and subsequently varying in dominant vegetation. None of these essential habitats are present directly on the NWS or

ONWS parcels, as the parcels do not contain any estuarine or riverine water. All water on the spoils comes from or precipitation.

The Air Force has determined there would be no adverse affect to the EFH from either *B.t.i.* or Altosid because there is not a complete pathway to surface water for either larvicide and therefore neither larvicide would reduce EFH quality or quantity. Both the NWS and ONWS parcels have a vegetated buffer and trench/weir/berm system to prevent runoff from the sites into surrounding surface water.

There is potential for adverse effects to aquatic invertebrates from repeated use of naled. The lowest estimate of the lethal concentration 50 (LC₅₀) of naled for aquatic invertebrates is grass shrimp at 9.3 parts per billion (ppb). Naled would be used rarely and only when there was strong evidence of failure of the larvicides to control the mosquito population on the parcels. While naled would only be released over the NWS and the ONWS parcels, drift may result in naled reaching the EFH. The concentration of naled at the Cooper River bank would be expected to be less than the LC₅₀ for grass shrimp.

In an aquatic dissipation study conducted in Florida and Mississippi, naled was applied at 0.4 pounds (4 ounces) per acre in five aerial applications over a two-week period to ponds. The chemical dissipated from pond water with a half-life of less than 1 day. The maximum concentration isolated at the Florida site was 18 ppm, and 6 ppm was isolated at the Mississippi site. The concentrations decreased with the depth of the water column. One day post-treatment, naled was less than 2 ppb at the Florida site and less than 1 ppb at the Mississippi site. The maximum concentration of the degradate dichlorvos measured at each site was 13 ppb in Florida and 14 ppb in Mississippi. Following the last application, dichlorvos was not detected (less than 1 ppb) after 7 days. Neither chemical was detected in the sediments (EPA, 2004).

The Air Force has determined there would be no adverse affect to the EFH from naled. The use of naled to control mosquito populations at the NWS and the ONWS parcels would be rare. While naled may drift over the EFH, any deposition of naled on the surface water would be at an extremely low concentration and because of the rapid degradation of naled and its degradation products, detectable concentrations in the waters of the EFH would be short-lived. Therefore, there would be no reduction in quantity or quality of the EFH of the Cooper River watershed.

Because the Air Force has determined that there is no adverse affect to the EFH, there is no need for consultation with NMFS under the Magnuson-Stevens Fishery Conservation and Management Act.

4.3.2 NO ACTION ALTERNATIVE

Under these circumstances, any concerns about the aerial application of insecticides and the effects that may result from such treatment on the environment, would be eliminated. Non-target insects, particularly other Diptera and Hymenoptera (e.g., Honeybees), would not be affected. Large-scale intervention in a potential mosquito-borne disease cycle would not take place. A noticeable decline in mosquito populations and a noticeable reduction in mosquito biting annoyance levels to the human population, other than those that might occur naturally, would not be realized. The late-fall egg base of certain mosquitoes would not be reduced which typically results in a large emergence in the spring of the following year.

4.4 NOISE

4.4.1 PROPOSED ACTION

The only source of noise associated with this proposed action would be that caused by the low level flying of aircraft during pesticide application. The impact should be minimal due to the short duration of the noise exposure and since advance notice of the operation would be given area personnel. Also, air traffic is commonplace in the vicinity (nearby watercraft noise and aircraft noise from JB CHS-Air and Charleston International Airport) and therefore a certain degree of acclimation exists among the vicinity's human and faunal population.

4.4.2 NO ACTION

Under this Alternative, any concerns would be eliminated since there is no aerial application. The No Action Alternative would have no effect on Noise.

4.5 LAND USE

4.5.1 PROPOSED ACTION

This Proposed Action would have no adverse effect on Land Use. The application of pesticides would not change the land use of the NWS or ONWS parcels as dredge spoil areas. The Proposed Action would not affect dredge disposal activities (e.g. limit depositing of sediment, shut down operations). Reduced mosquito populations would benefit the operations and activities on the parcels and adjacent areas.

4.5.2 NO ACTION ALTERNATIVE

This No Action Alternative would have no effect on Land Use. However, if the NWS and ONWS areas are not treated, then mosquito populations may become excessive and limit operations or outdoor activities in the vicinity.

4.6 HAZARDOUS MATERIAL/SOLID WASTE

4.6.1 PROPOSED ACTION

Under this alternative, any chemical usage would be tracked and excess chemicals would be disposed of in accordance with state and federal regulations by the Charleston County MCP.

4.6.2 NO ACTION ALTERNATIVE

The No Action Alternative does not include pesticide application. Therefore the No Action Alternative would slightly reduce the amount of hazardous material used and solid waste generated by the County.

5.0 CUMULATIVE IMPACTS

A “cumulative impact” is defined in 40 CFR 1508.7 as “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non- Federal) or person undertakes such other actions.” Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

Based on the findings of this EA, implementation of the Proposed Action would not result in significant direct or indirect impacts to any environmental, physical, cultural, or socioeconomic resource. The use of best management practices and protective measures during their implementation minimizes their potential to impact the environment.

No other projects, either ongoing or in planning, have been identified for the NWS or ONWS parcels that would pose cumulative impact concerns. Potential cumulative impacts to regional air quality would be short term and insignificant. The anticipated low levels of emission from the Proposed Action and future projects would not occur at the same time; therefore, no cumulative issues associated with air emissions would apply. Given the limited and short-term nature of the project, no cumulative impacts to surface water or ground-water quality would be anticipated.

The Proposed Action would not result in significant cumulative effects to native wildlife species. The County MCP identifies environmentally sensitive areas within the vicinity on their spray maps. Apiaries and sensitive individuals would be identified and public notifications would be released through the County’s Public Information Office prior to any aerial spraying.

No cumulative effects to the state’s Coastal Zone Management Program have been identified.

Under the No Action Alternative, Charleston County would continue to spray other areas along the banks of the Cooper River. However, as the NWS and ONWS parcels would no longer receive treatment, adult biting mosquitoes would adversely affect the military and contract personnel working in that area and would migrate onto other portions of JB CHS-WS and into the surrounding communities.

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9.0 ACRONYMS AND ABBREVIATIONS

AFB	Air Force Base
AFI	Air Force Instruction
AMC	Air Mobility Command
ATSDR	Agency for Toxic Substances and Disease Registry
<i>B.t.i.</i>	<i>Bacillus thuringiensis</i> variety <i>israelensis</i>
CAA	Clean Air Act
CDC	Center for Disease Control
CO ₂	Carbon Dioxide
CEQ	President’s Council on Environmental Quality
CFR	Code of Federal Regulations
CWA	Clean Water Act
CY	calendar year
CZMA	Coastal Zone Management Act
dBA	decibel A-weighted
DDVP	Dichlorvos (a metabolite and degradate of Naled)
DNL	Day-Night Average A-weighted Sound Level
DoD	Department of Defense
EA	Environmental Assessment
EEE	Eastern Equine Encephalitis
EFH	essential fish habitat
EIS	Environmental Impact Statement
EO	Executive Order
EPA	United States Environmental Protection Agency
ESA	Endangered Species Act
F	Fahrenheit
FAA	Federal Aviation Administration
FEMA	Federal Emergency Management Agency
FONSI	Finding of No Significant Impact
FWS	Fish and Wildlife Service
HAZMART	Hazardous Materials Pharmacy
HAZMAT	Hazardous Material
IGR	Insect Growth Regulator
IPM	Integrated Pest Management
ITU	International Toxic Units
JB CHS	Joint Base Charleston
JB CHS-Air	Joint Base Charleston Air Base
JB CHS-WS	Joint Base Charleston Weapons Station
LRC	Landing Rate Count
MASS	Modified Aerial Spray System
MCP	Mosquito Control Program
MSDS	Material Safety Data Sheet
MSL	Mean Sea Level
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NIOSH	National Institute of Occupational Safety and Health

NMFS	National Marine Fisheries Service
NWS	Naval Weapons Station (spoil area)
NWSC	Naval Weapons Station Charleston
ONWS	Old Naval Weapons Station (spoil area)
PAO	Public Affairs Office
PM	Particulate Matter
RCW	Red-Cockaded Woodpecker
RED	Re-registration Eligibility Decision
RCRA	Resources Conservation and Recovery Act
RTE	Rare, Threatened or Endangered
SCDNR	South Carolina Department of Natural Resources
SDWA	Safe Drinking Water Act
SHPO	State Historic Preservation Officer
SLE	St. Louis Encephalitis
<i>spp.</i>	species
SR	Special Review
ULV	Ultra Low Volume
US	United States
USAF	United States Air Force
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
WEE	Western Equine Encephalitis
WMA	Wildlife Management Area
WNV	West Nile Virus

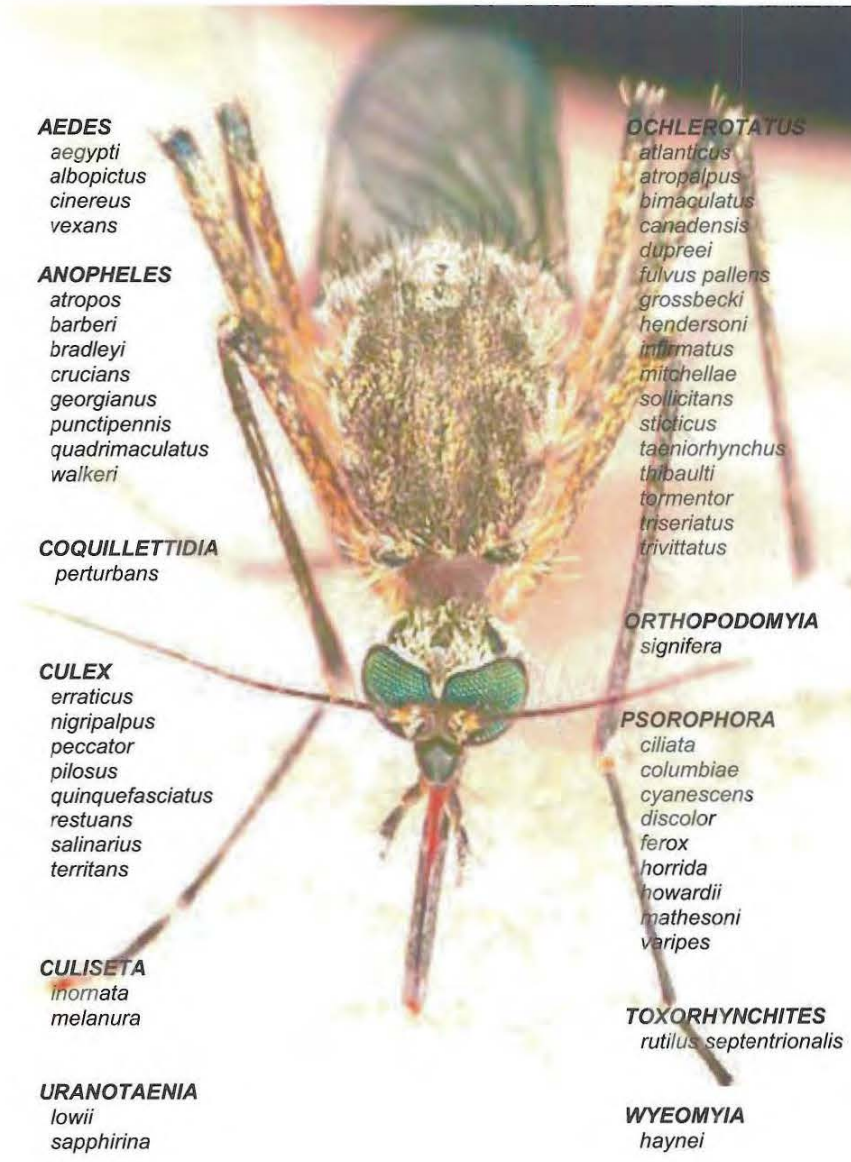
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APPENDIX A

Mosquito Species Found in Charleston County, SC

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Attachment 1. Mosquito Species of Charleston County, SC



AEDES

aegypti
albopictus
cinereus
vexans

ANOPHELES

atropos
barberi
bradleyi
crucians
georgianus
punctipennis
quadrimaculatus
walkeri

COQUILLETIDIA

perturbans

CULEX

erraticus
nigripalpus
peccator
pilosus
quinquefasciatus
restuans
salinarius
territans

CULISETA

inornata
melanura

URANOTAENIA

lowii
sapphirina

OCHLEROTATUS

atlanticus
atropalpus
bimaculatus
canadensis
dupreei
fulvus pallens
grossbecki
hendersoni
infirmatus
mitchellae
sollicitans
sticticus
taeniorhynchus
thibaulti
tormentor
triseriatus
trivittatus

ORTHOPODOMYIA

signifera

PSOROPHORA

ciliata
columbiae
cyanescens
discolor
ferox
horrida
howardii
mathesoni
varipes

TOXORHYNCHITES

rutilus septentrionalis

WYEOMYIA

haynei

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APPENDIX B

SPECIMEN LABELS

Altosid[®] Liquid Larvicide Concentrate (EPA Reg 2724-446)
VectoBac[®] 12AS (EPA Reg 73049-38)
Trumpet[®] EC (Emulsifiable Concentrate), (EPA Reg. No. 5481-481)

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Biological Larvicide

VectoBac[®] 12AS

Aqueous Suspension

Active Ingredient:

<i>Bacillus thuringiensis</i> , subsp. <i>israelensis</i> , strain AM 65-52, fermentation solids and solubles	11.61%
Other Ingredients	88.39%
Total	100.00%

Potency: 1200 International Toxic Units (ITU) per mg
(Equivalent to 4.84 billion ITU per gallon, 1.279 billion ITU per liter)

There is no direct relationship between intended activity (potency) and the Percent Active Ingredient by Weight.

EPA Reg. No. 73049-38

EPA Est. No. 33762-IA-001

List No. 5605

INDEX:

- 1.0 First Aid
- 2.0 Precautionary Statements
 - 2.1 Hazard to Humans (and Domestic Animals)
 - 2.2 Physical and Chemical Hazards
- 3.0 Directions for Use
 - 3.1 Chemigation
- 4.0 Storage and Disposal
- 5.0 Ground and Aerial Application
- 6.0 Application Directions
- 7.0 Nuisance Flies
- 8.0 Nuisance Aquatic Midges
- 9.0 Chemigation
 - 9.1 Rice-Flood (Basin) Chemigation
- 10.0 Small Quantity Dilution Rates
- 11.0 Notice to User

KEEP OUT OF REACH OF CHILDREN

CAUTION

1.0 FIRST AID	
If in eyes	<ul style="list-style-type: none"> • Hold eye open and rinse slowly and gently with water for 15-20 minutes. • Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. • Call a poison control center or doctor for treatment advice.
If on skin or clothing	<ul style="list-style-type: none"> • Take off contaminated clothing. • Rinse skin immediately with plenty of water for 15-20 minutes. • Call a poison control center or doctor for treatment advice.
HOT LINE NUMBER	
<p>Have the product container or label with you when calling a poison control center or doctor, or going for treatment. You may also contact 1-877-315-9819 (24 hours) for emergency medical treatment and/or transport emergency information. For all other information, call 1-800-323-9597.</p>	

2.0 PRECAUTIONARY STATEMENTS

2.1 HAZARD TO HUMANS (AND DOMESTIC ANIMALS)
CAUTION

Harmful if absorbed through skin. Causes moderate eye irritation. Avoid contact with skin, eyes, or clothing. Wash thoroughly with soap and water after handling. Remove contaminated clothing and wash contaminated clothing before reuse.

Mixer/loaders and applicators not in enclosed cabs or aircraft must wear a dust/mist filtering respirator meeting NIOSH standards of at least N-95, R-95, or P-95. Repeated exposure to high concentrations of microbial proteins can cause allergic sensitization.

2.2 Physical and Chemical Hazards

Diluted or undiluted VectoBac 12AS can cause corrosion if left in prolonged contact with aluminum spray system components. Rinse spray system with plenty of clean water after use. Care should be taken to prevent contact with aluminum aircraft surfaces, structural components and control systems. In case of contact, rinse thoroughly with plenty of water. Inspect aluminum aircraft components regularly for signs of corrosion.

3.0 DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a manner inconsistent with its labeling. Do not apply directly to finished drinking water reservoirs or drinking water receptacles when water is intended for human consumption.

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.

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 treatment coordinator are responsible for considering all these factors when making decisions.

3.1 Chemigation

Do not apply this product through any type of irrigation system unless labeling on chemigation is followed.

4.0 STORAGE AND DISPOSAL

Do not contaminate water, food, or feed by storage or disposal. **STORAGE:** Store in a cool, [less than 86° F (30° C)], dry place.

PESTICIDE DISPOSAL: Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility.

CONTAINER DISPOSAL: Triple rinse (or equivalent). Then puncture and dispose of in a sanitary landfill, or by incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke. Do not reuse container.

5.0 GROUND AND AERIAL APPLICATION

VectoBac 12AS may be applied in conventional ground or aerial application equipment with quantities of water sufficient to provide uniform coverage of the target area. The amount of water will depend on weather, spray equipment, and mosquito habitat characteristics. Do not mix more VectoBac 12AS than can be used in a 72-hour period.

CONTINUED



9.1 RICE-FLOOD (BASIN) CHEMIGATION

Systems using a gravity flow pesticide dispensing system must meter the pesticide into the water at the head of the field and downstream of a hydraulic discontinuity such as a drop structure or weir box to decrease potential for water source contamination from backflow if water flow stops.

VectoBac 12AS is metered or dripped into rice floodwater at application stations positioned at the point of introduction (levee cut) of water into each rice field or pan. Two to three pints of VectoBac 12AS are diluted in water to a final volume of 5 gallons. The diluted solution is contained in a 5 gallon container and metered or dispersed into the irrigation water using a constant flow device at the rate of 80 ml per minute. Introduction of the solution should begin when 1/3 to 1/2 of the pan or field is covered with floodwater. Delivery of the solution should continue for a period of approximately 4-1/2 hours. Floodwater depth should not exceed 10-12 inches to prevent excessive dilution of VectoBac 12AS which could result in reduced larval kill.

Agitation is not required during the period in which the VectoBac 12AS solution is being dispersed.

Application of VectoBac 12AS into rice floodwater is not permitted using a pressurized water and pesticide injection system.

10.0 SMALL QUANTITY DILUTION RATES

**Gallons Spray Solution/Acre
(Ounces Needed per Gallon of Spray)**

VectoBac 12AS

Rate in Pints

Per Acre	10 Gal/A	25 Gal/A	50 Gal/A
0.25 (4 oz)	0.4	0.16	0.08
0.5 (8 oz)	0.8	0.32	0.16
1.0 (16 oz)	1.6	0.64	0.32
2.0 (32 oz)	3.2	1.28	0.64

11.0 NOTICE TO USER

SELLER MAKES NO WARRANTY, EXPRESS OR IMPLIED, OF MERCHANTABILITY, FITNESS OR OTHERWISE CONCERNING USE OF THIS PRODUCT OTHER THAN AS INDICATED ON THE LABEL. USER ASSUMES ALL RISKS OF USE, STORAGE OR HANDLING NOT IN STRICT ACCORDANCE WITH ACCOMPANYING DIRECTIONS.

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Altosid[®]

LIQUID LARVICIDE CONCENTRATE

**PREVENTS ADULT MOSQUITO EMERGENCE
(INCLUDING THOSE WHICH MAY TRANSMIT WEST NILE VIRUS)**

SPECIMEN LABEL

ACTIVE INGREDIENT:		
(S)-Methoprene (CAS # 65733-16-6)	20%	
OTHER INGREDIENTS:	80%	
Total	100%	

Formulation contains 1.72 lb/gal (205.2 g/l) active ingredient

EPA Reg No. 2724-446

KEEP OUT OF REACH OF CHILDREN

CAUTION

SEE ADDITIONAL PRECAUTIONARY STATEMENTS

BECAUSE OF THE UNIQUE MODE OF ACTION OF A.L.L.[™], SUCCESSFUL USE REQUIRES FAMILIARITY WITH SPECIAL TECHNIQUES FOR APPLICATION TIMING AND TREATMENT EVALUATION. SEE **GUIDE TO PRODUCT APPLICATION** OR CONSULT LOCAL MOSQUITO ABATEMENT AGENCY.

PRECAUTIONARY STATEMENTS HAZARDS TO HUMANS AND DOMESTIC ANIMALS CAUTION

Causes moderate eye irritation. Harmful if absorbed through skin. Avoid contact with skin, eyes, or clothing. Wash thoroughly with soap and water after handling. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals.

FIRST AID

Call a poison control center or doctor immediately for treatment advice.

If in eyes • Hold eye open and rinse slowly and gently with water for 15-20 minutes. • Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye.

If on skin or clothing • Take off contaminated clothing. • Rinse skin immediately with plenty of water for 15-20 minutes.

Have the product container or label with you when calling a poison control center or doctor, or going for treatment. You may also contact 1-800-248-7763 for emergency medical treatment information.

ENVIRONMENTAL HAZARDS

Do not contaminate water when disposing of rinsate or equipment washwaters.

DIRECTIONS FOR USE

It is a violation of Federal Law to use this product in a manner inconsistent with its labeling.

CHEMIGATION

Refer to supplemental labeling entitled "**Guide to Product Application**" for use directions for chemigation. Do not apply this product through any irrigation system unless the supplemental labeling on chemigation is followed.

MIXING AND HANDLING INSTRUCTIONS

- SHAKE WELL BEFORE USING.** A.L.L. may separate on standing and must be thoroughly agitated prior to dilution.
- Do not mix with oil; use clean equipment.

- Partially fill spray tank with water; then add the labeled amount of **A.L.L.**, agitate, and complete filling. Mild agitation during application is desirable.
- Use spray solution within 48 hours; always agitate before spraying.

APPLICATIONS

A.L.L. must be applied to 2nd, 3rd, or 4th larval instars of floodwater mosquitoes to prevent adult emergence. Treated larvae continue normal development to the pupal stage where they die. This insect growth regulator **has no effect when applied to pupae or adult mosquitoes**. **A.L.L.** has sufficient field life to be effective at label rates when applied to larval stages under varying field conditions. For further information, see **Guide to Product Application**.

METHODS OF APPLICATION

AERIAL

Use the amount of **A.L.L.** listed below in sufficient water to give complete coverage. One-half to 5 gallons of spray solution per acre is usually satisfactory. Do not apply when weather conditions favor drift from areas treated.

GROUND

Determine the average spray volume used per acre by individual operators and/or specific equipment. Mix **A.L.L.** in the appropriate volume of water to give the rate per acre shown below.

APPLICATION RATE

Apply $\frac{3}{4}$ to 1 fl oz of **A.L.L.** per acre (55 to 73 ml/hectare) in water as directed.

APPLICATION SITES

PASTURES

A.L.L. may be applied after each flooding without removal of grazing livestock.

RICE

A.L.L. must be applied to 2nd, 3rd, and/or 4th instar larvae of mosquitoes found in rice, usually within 4 days after flooding. **A.L.L.** treatment may be repeated with each flooding.

INTERMITTENTLY FLOODED NONCROP AREAS

Apply **A.L.L.** as directed above when flooding may result in floodwater mosquito hatch. Typical sites include: freshwater swamps and marshes, salt marshes, woodland pools and meadows, dredging spoil sites, drainage areas, waste treatment and settling ponds, ditches and other natural and manmade depressions.

CROP AREAS

Apply **A.L.L.** to irrigated croplands after flooding to control mosquito emergence. Examples of such sites are: vineyards, rice fields (including wild rice), date palm orchards, fruit and nut orchards, and berry fields and bogs. Irrigated pastures may be treated after each flooding **without** removal of livestock.

DENSE VEGETATION OR CANOPY AREAS

Apply an **A.L.L.** sand mixture using standard granular dispersal equipment. For detailed preparation instructions, refer to **Guide to Product Application**.

TANK MIXING INSTRUCTIONS

A.L.L. may be tank mixed with liquid *Bacillus thuringiensis* variety *israeliensis* (*B.t.i.*) formulations. The ratio of *B.t.i.* to **A.L.L.** is to range from 24:1 to 50:1 (volume/volume). For example, to prepare a 50:1 tank mix, add 1 gallon of **A.L.L.** to 50 gallons of *B.t.i.* This tank mix can be applied to sites listed above at rates of 2 to 16 fluid ounces/acre (0.15–1.2 liters/hectare).

The user, at his discretion, can tank mix **A.L.L.** with an adulticide currently registered for use unless the product label prohibits such mixing. The resulting tank mixture must be used in accordance with the more restrictive label limitations and precautions.

STORAGE AND DISPOSAL

Do not contaminate water, food, or feed by storage or disposal.

STORAGE

Store in a cool place away from other pesticides, food, and feed. In case of leakage or spill, soak up with sand or another absorbent material.

PESTICIDE DISPOSAL

Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility.

CONTAINER DISPOSAL

Nonrefillable container. Do not reuse or refill this container. Clean container promptly after emptying. Triple rinse as follows. Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container $\frac{1}{4}$ full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times. Then offer for recycling, if available, or puncture and dispose of in a sanitary landfill, or by incineration, or if allowed by state and local authorities, by burning. If burned, stay out of smoke.

Seller makes no warranty, expressed or implied, concerning the use of this product other than indicated on the label. Buyer assumes all risks of use and handling of this material when such use and handling are contrary to label instructions.

Always read the label before using the product.

For information, call 1-800-248-7763

www.altosid.com

Wellmark International
1501 East Woodfield Road 200W
Schaumburg, Illinois 60173



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September 2009
Schaumburg, IL

RESTRICTED USE PESTICIDE
DUE TO EYE AND SKIN CORROSIVITY HAZARD
 For retail sale to and use only by Certified Applicators, or persons under their direct supervision, and only for those uses covered by the Certified Applicators Certification.



INSECTICIDE

FOR USE ONLY BY FEDERAL, STATE, TRIBAL, OR LOCAL GOVERNMENT OFFICIALS RESPONSIBLE FOR PUBLIC HEALTH OR VECTOR CONTROL, OR BY 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, NOT FOR USE IN AND AROUND THE HOME BY HOMEOWNERS OR PROFESSIONAL APPLICATORS.

ACTIVE INGREDIENT:

Naled (1,2-dibromo-2,2-dichloroethyl dimethyl phosphate) 78.0%

INERT INGREDIENTS: 22.0%

TOTAL 100.0%

Contains 10.8 pounds Naled per gallon.

Contains petroleum distillates

KEEP OUT OF REACH OF CHILDREN DANGER / PELIGRO

Si usted no entiende la etiqueta, busque a alguien para que se la explique a usted en detalle. (If you do not understand the label, find someone to explain it to you in detail.)

FIRST AID Organophosphate	
If in eyes:	<ul style="list-style-type: none"> • Hold eye open and rinse slowly and gently from the side of the eye with water for 15-20 minutes. • Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. • Call a poison control center or doctor for treatment advice.
If on skin or clothing:	<ul style="list-style-type: none"> • Take off contaminated clothing. • Rinse skin immediately with plenty of water for 15-20 minutes. • Call a poison control center or doctor for treatment advice.
If Swallowed:	<ul style="list-style-type: none"> • Call a poison control center or doctor immediately for treatment advice. • Have person sip a glass of water if able to swallow. • Do not induce vomiting unless told to do so by a poison control center or doctor. • Do not give anything by mouth to an unconscious person.
If Inhaled:	<ul style="list-style-type: none"> • Move person to fresh air. • If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth unless individual is contaminated with product. • Call a poison control center or doctor for further treatment advice.

EMERGENCY INFORMATION

Have the product container or label with you when calling a poison control center or doctor, or going for treatment.

FOR THE FOLLOWING EMERGENCIES, PHONE 24 HOURS A DAY:

Transportation Only: CHEMTREC.....1-800-424-9300

All Other: AMVAC.....1-323-264-3910

NOTE TO PHYSICIAN

Naled is an Organophosphate cholinesterase inhibitor. Contains petroleum distillates. Measurement of blood cholinesterase activity may be useful in monitoring exposure. If signs of cholinesterase inhibition appear, atropine sulfate is antidotal. 2-PAM (Protopam) is also antidotal and may be used in conjunction with atropine, but should not be used alone. Probable mucosal damage may contraindicate the use of gastric lavage. May pose an aspiration pneumonia hazard.

PRECAUTIONARY STATEMENTS

HAZARDS TO HUMANS AND DOMESTIC ANIMALS

DANGER. CORROSIVE. Causes irreversible eye and skin damage. Causes skin burns. May be fatal if swallowed. Harmful if inhaled or absorbed through the skin. Do not get in eyes, on skin, or on clothing. Do not breathe the vapor or spray mist. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals.

PERSONAL PROTECTIVE EQUIPMENT (PPE)

Some materials that are chemical-resistant to this product are Barrier laminate, Butyl Rubber, Nitrile Rubber, and Viton.

EPA REG. NO. 5481-481

EPA EST. NO. 5481-CA-1

EPA EST. NO. 5481-AL-1

NET CONTENTS:

AS MARKED ON CONTAINER



4100 E. Washington Blvd.
 Los Angeles, CA 90023, USA

1-323-264-3910 • www.amvac-chemical.com

Mixers, loaders, and other handlers must wear:

- Protective eye wear (goggles, face shield, or safety glasses)
- Long-sleeved shirt and long pants
- Socks plus shoes
- Chemical-resistant gloves (barrier laminate, butyl rubber, nitrile rubber, or viton, selection category E) and apron when mixing or loading

See engineering controls for additional requirements.

In addition, mixers and loaders must:

- Have immediately available for use in an emergency, such as a broken package, spill, or equipment breakdown the PPE specified above for handlers engaged in those activities for which use of an engineering control is not possible

Mixers, loaders, applicators and other handlers engaged in those handler activities for which use of an engineering control is not possible, such as cleaning up a spill or leak and cleaning or repairing contaminated equipment, must wear:

- Protective eye wear (goggles, face shield, or safety glasses)
- Coveralls over long-sleeve shirt and long pants
- Chemical-resistant gloves
- Chemical-resistant footwear plus socks
- Chemical-resistant apron if exposed to the concentrate
- Chemical-resistant headgear for overhead exposure
- A respirator with an organic-vapor removing cartridge with a prefilter approved for pesticides (MSHA/NIOSH approval number prefix TC-23G), or a canister approved for pesticides (MSHA/NIOSH approval number prefix TC-14G), or a NIOSH-approved respirator with an organic vapor (OV) cartridge or canister with any R, P, or HE prefilter. Please note that N designation for respirator filters does not apply when application is made with oils.

USER SAFETY REQUIREMENTS

- Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables exist, use detergent and hot water.
- Keep and wash PPE separately from other laundry. Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this product's concentrate. Do not reuse them.

ENGINEERING CONTROLS

- Mixers and loaders supporting aerial or mechanical ground applications must use a closed system designed by the manufacturer to enclose the pesticide to prevent it from contacting handler or other people AND the system must be functioning properly and must be used and maintained in accordance with the manufacturer's written operating instructions.
- The system must be capable of removing the pesticide from the shipping container and transferring it into mixing tanks and/or application equipment.
- At any disconnect point, the system must be equipped with a dry disconnect or dry couple shut-off device that is warranted by the manufacturer to minimize drippage to not more than 2 mL per disconnect point.

Applicators must:

- Use an enclosed cab/cockpit. Wearing specified PPE (e.g.: chemical resistant gloves) within an enclosed cab/cockpit is not required.
- Be provided and have immediately available for use in case of an emergency repair of the application equipment, the PPE specified in the PPE section of this labeling for handlers engaged in those activities for which use of an engineering control is not possible.
- Take off any PPE that was contaminated before reentering the cab/cockpit.
- Store all such PPE in a closed, chemical-resistant container, such as a plastic bag, to prevent contamination of the inside of the cab/cockpit.

In addition, motorized ground-equipment applicators must:

- Use an enclosed cab with a nonporous barrier that totally surrounds the occupant and prevents contact with pesticides outside the cab. The cab must either have a properly functioning ventilation system that is used and maintained according to the manufacturer's written operating instructions and is declared in writing by the manufacturer or by a governmental agency to provide at least as much protection as the type of respirator listed in the PPE section above or the occupant must wear a respirator as specified in the PPE section above.

11640-4

User Safety Recommendations

Users should:

- Wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet.
- Remove clothing/PPE immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.
- Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

It is recommended that any worker displaying clinical signs of cholinesterase-inhibition, such as headaches, nausea, and dizziness have an immediate physical examination including appropriate cholinesterase measurements. If initial examination was not conducted by a board-certified person who is certified in occupational health, then a separate examination should be conducted within 24 hours by a person so certified.

ENVIRONMENTAL HAZARDS

This pesticide is toxic to fish, aquatic invertebrates, and wildlife. Runoff from treated areas or deposition of spray droplets into a body of water may be hazardous to fish and aquatic invertebrates. Before making the first application in a season, consult with the primary State agency responsible for regulating the pesticides to determine if permits are required or regulatory mandates exist. 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 contaminate bodies of water when disposing of equipment washwaters or rinsate.

This product is highly toxic to bees exposed to direct treatment on blooming crops or weeds. 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 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 tribe during a natural disaster recovery effort.

DIRECTIONS FOR USE

Before making the first application of the season, consult with the primary State agency responsible for regulating the use of pesticides to determine if permits are required or regulatory mandates exist.

It is a violation of Federal Law to use this product in a manner inconsistent with its labeling.

READ ENTIRE LABEL. USE STRICTLY IN ACCORDANCE WITH PRECAUTIONARY STATEMENTS AND DIRECTIONS, AND WITH APPLICABLE STATE AND FEDERAL REGULATIONS.

TANK MIXES

NOTICE: Tank mixing or use of this product with any other product shall be the exclusive risk of user, applicator and/or application advisor. Read and follow the entire label of each product to be used in the tank mix with this product.

TRUMPET EC is a special formulation for use undiluted to be applied for the control of mosquitoes, flies and certain other nuisance insects.

APPLICATION RESTRICTIONS

For application by, or under the supervision of, personnel certified/trained in public health pest control or mosquito control. For each application, a record must be kept of:

- Date, time and areas where application occurred
- Type and size of spray nozzle used
- Dilution and application rate
- Speed of application vehicle (whether air or ground)
- A description of insecticide delivery system used for the specific application
- Climate factors (e.g., ambient temperature, wind speed/direction) as determined using a reliable means
- Employees involved in mixing, loading and applying TRUMPET EC

These records must be kept by the responsible public agency or their designee for a minimum of two years using storage methods that will allow the records to be easily retrieved.

Any system used to apply this product must be capable of providing the correct droplet size as specified below. Likewise, all applications must use the correct droplet size as specified below. Careful attention to directions concerning nozzles, nozzle positioning, air speed and droplet size is essential to avoid unwanted effects. Under-atomization produces large droplets that will quickly fall to the ground, while over-atomization produces finer droplets which either evaporate, dissipate, or drift in an unanticipated manner. Correct droplet size is critical to ensure effective mosquito control.

The entire spray system must be inspected before each operation to correct any leaks or obstructions, to detect whether the nozzle, hoses, or other parts are worn and need replacement, to ensure that the flow is properly calibrated and to determine that adequate pressure is being maintained. Adequate cleaning and maintenance of unit must be performed to ensure that the entire system is operating properly. Spray system components essential for correct droplet size must be cleaned or replaced as needed to ensure correct droplet size.

Spray during periods when ground level wind speed is equal to or greater than 1 mph. Apply when thermal activity is low. Do not apply when ambient temperature is less than 50°F.

Do not apply when it is raining in the treatment area.

Treatment of a site must be based on pest surveillance results. Do not treat any site more than 1 time per day. Do not treat any site with more than 2 fl. oz. of undiluted TRUMPET EC per acre within a 7 day period and the amount of undiluted TRUMPET EC applied to any site should not exceed 127 fl. oz. (10.73 pounds per acre of ailed a.i./acre) per year. More frequent treatments may be made to prevent or control a threat to public and/or animal health 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 tribe during a natural disaster recovery effort.

Ground-Based Application:

Spray equipment must be adjusted so that the volume median diameter (VMD) is less than 40 microns (Dv 0.5 < 40 µm) and that 90% of the spray is contained in droplets smaller than 75 microns (Dv 0.9 < 75 µm). Directions from the equipment manufacturer or vendor, pesticide registrant, or a test facility using a 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.

Aerial Application:

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 non-rotary 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.

OPERATIONAL USE INSTRUCTIONS

- All equipment used in the mixing or application (by ground or air) of TRUMPET EC must be constructed of corrosion-resistant materials. Stainless steel, bronze, brass, fiberglass, polypropylene and rigid PVC have all proven to be adequately resistant to the effects of TRUMPET EC when properly maintained and inspected.
- Use of Teflon or Viton seals is recommended. Even when these materials are used to construct a spray system, a careful maintenance program involving flushing, cleansing and constant inspection must be followed. Avoid use of steel or galvanized steel.
- Strain TRUMPET EC as it is being loaded. Use a 100 mesh stainless steel or nylon screen. If product crystallization occurs, warm at 70°F until crystals disappear.
- Flushing the system following application is required. Use water to thoroughly flush the entire spray system following application of TRUMPET EC.
- TRUMPET EC must be applied using the correct droplet size. Over-atomization produces finer droplets which either evaporate or dissipate too quickly and become unavailable for mosquito contact. The spread factor for TRUMPET EC on silicone or Teflon-coated slides is 0.54 and 0.7, respectively. If applied incorrectly, TRUMPET EC will spot certain automobile paint finishes. Careful attention to recommendations concerning nozzles, nozzle positioning, air speed and droplet size is essential to avoid paint spotting.

ADULT MOSQUITO CONTROL

Adult Mosquito Control in Residential Areas, Municipalities, Tidal Marshes, Swamps, Woodlands, and Agricultural Areas (when applied in wide-area public pest control programs sponsored by governmental entities): It is not necessary to avoid farm buildings, dairy barns, pastures, feed or forage areas. Use in agricultural areas must be in a manner as to ensure that residues do not exceed the established federal tolerance for the active ingredient in or on raw agricultural commodities resulting from use for wide area pest control. Treat shrubbery and vegetation where mosquitoes may be present. Shrubby and vegetation around stagnant pools, marshy areas, swamps, residential areas, municipalities, woodlands, pastures, farm buildings and feedlots may be treated.

Ultra Low Volume (ULV) Aerial Application: Apply 0.6 to 1.2 fl. oz. of undiluted product per acre (equivalent to 0.05 to 0.1 lb. a.i./acre). Use the 1.2 fl. oz. rate where heavy vegetation exists; i.e., woodlands, etc.

Ultra Low Volume (ULV) Ground Application: Apply TRUMPET EC undiluted at a rate of 0.75 fl. oz. per minute at 5 mph; 1.5 fl. oz. per minute at 10 mph; and 2.2 fl. oz. per minute at 15 mph, applying a 300 ft. swath. These flow rates are equivalent to 0.02 lb. active per acre. In conditions of high pest pressure and/or heavy foliage, a maximum of 0.1 lb. active per acre may be applied.

Vehicles used to apply TRUMPET EC must be kept closed during application (air-conditioned) and equipped with an automatic flow control device. Consult equipment manufacturers for specific recommendations.

HOUSEFLIES, GNATS, CERTAIN OTHER NUISANCE INSECTS AND SUPPRESSION OF BLACKFLIES

Small Flying Moths, Flies (including but not limited to Crane Flies, Adult Stable Flies, Dog Flies, Biting Flies, Filth Flies), Midges in Residential Areas, Municipalities, Tidal Marshes, Swamps, Woodlands, and Agricultural Areas (when applied in wide-area public pest control programs sponsored by governmental entities): It is not necessary to avoid farm buildings, dairy barns, and feed or forage areas.

Ultra Low Volume (ULV) Aerial Application: Apply 1.2 fl. oz. of undiluted TRUMPET EC per acre (equivalent to 0.1 lb. a.i./acre).

SUPPRESSION OF DEER FLIES AND OTHER TABANIDS

Deer Flies in Residential Areas, Municipalities, Tidal Marshes, Swamps, Woodlands, and Agricultural Areas (when applied in wide-area public pest control programs sponsored by governmental entities): It is not necessary to avoid farm buildings, dairy barns, and feed or forage areas.

Ultra Low Volume (ULV) Aerial Application: Apply 1.2 fl. oz. of undiluted TRUMPET EC per acre (equivalent to 0.1 lb. a.i./acre).

STORAGE AND DISPOSAL

PROHIBITIONS: Do not contaminate water, food or feed by storage, disposal or cleaning of equipment. Open dumping is prohibited.

STORAGE: Keep pesticides in original container. Do not put concentrate into, or dilute into food or drink containers. For help with any spill, leak, fire or exposure involving this material, call day or night 1-323-264-3910.

PESTICIDE DISPOSAL: This product is acutely hazardous. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of Federal Law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

CONTAINER REUSE:

RETURNABLE CONTAINER: This container is a dedicated, single-product returnable container. Return empty container to seller at location designated by seller as a collection point. Do not break seals, add anything to container or open container after use. Do not rinse or contaminate empty container. Do not dispose of untempered empty container or use it for any other purposes. Any evidence of broken seals or other tampering or adding anything to the container renders it unfit for return. In such case, it is the obligation of the holder of the container to dispose of it properly.

It is required that this product be used in a CLOSED SYSTEM. This container may require a tank adapter. For questions regarding tank adapters, call AMVAC Customer Service at 1-888-462-6822 (1-888-GO-AMVAC).

LIMITED WARRANTY AND DISCLAIMER

The manufacturer warrants (a) that this product conforms to the chemical description on the label; (b) that this product is reasonably fit for the purposes set forth in the directions for use, subject to the inherent risks referred to herein, when it is used in accordance with such directions; and (c) that the directions, warnings, and other statements on this label are based upon responsible experts' evaluations of reasonable tests of effectiveness, of toxicity to laboratory animals and to plants and residues on food crops, and upon reports of field experience. Tests have not been made on all varieties of food crops and plants, or in all states or under all conditions.

TO THE EXTENT CONSISTENT WITH APPLICABLE LAW, THERE ARE NO EXPRESS WARRANTIES OTHER THAN THOSE SET FORTH HEREIN. THE MANUFACTURER NEITHER MAKES NOR INTENDS, NOR DOES IT AUTHORIZE ANY AGENT OR REPRESENTATIVE, TO MAKE ANY OTHER WARRANTIES, EXPRESS OR IMPLIED, AND IT EXPRESSLY EXCLUDES AND DISCLAIMS ALL IMPLIED WARRANTIES OF MERCHANTABILITY OF FITNESS FOR A PARTICULAR PURPOSE, OR ANY WARRANTY OF QUALITY OR PERFORMANCE. THIS WARRANTY DOES NOT EXTEND TO, AND THE BUYER SHALL BE SOLELY RESPONSIBLE FOR, ANY AND ALL LOSS OR DAMAGE WHICH RESULTS FROM THE USE OF THIS PRODUCT IN ANY MANNER WHICH IS INCONSISTENT WITH THE LABEL DIRECTIONS, WARNINGS OR CAUTIONS.

TO THE EXTENT CONSISTENT WITH APPLICABLE LAW, BUYER'S EXCLUSIVE REMEDY AND MANUFACTURER'S OR SELLER'S EXCLUSIVE LIABILITY FOR ANY AND ALL CLAIMS, LOSSES, DAMAGES, OR INJURIES RESULTING FROM THE USE OR HANDLING OF THIS PRODUCT, WHETHER OR NOT BASED IN CONTRACT, NEGLIGENCE, STRICT LIABILITY IN TORT OR OTHERWISE, SHALL BE LIMITED, AT THE MANUFACTURER'S OPTION, TO REPLACEMENT OF, OR THE REPAYMENT OF THE PURCHASE PRICE FOR, THE QUANTITY OF PRODUCT WITH RESPECT TO WHICH DAMAGES ARE CLAIMED. IN NO EVENT SHALL MANUFACTURER OR SELLER BE LIABLE FOR SPECIAL, INDIRECT OR CONSEQUENTIAL DAMAGES RESULTING FROM THE USE OR HANDLING OF THIS PRODUCT.

AMVAC offers this product, and Buyer accepts it, subject to the foregoing Limited Warranty which may be varied only by agreement in writing signed by an authorized representative of AMVAC. Trumpet® is a registered trademark of Amvac Chemical Corporation.

Amvac Chemical Corporation
4100 E. Washington Blvd.
Los Angeles, CA 90023 U.S.A.
1-323-264-3910
www.amvac-chemical.com

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APPENDIX C

PUBLIC INVOLVEMENT AND AGENCY RESPONSES
NOTICE OF AVAILABILITY
DISTRIBUTION LIST
RESPONSES FROM REGULATORY AGENCIES (attached herein)
NATIVE AMERICAN TRIBAL CORRESPONDENCE (attached herein)

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AFFIDAVIT
OF
PUBLICATION

The Post and Courier

State of South Carolina

County of Charleston

Personally appeared before me
the undersigned advertising Clerk of the
above indicated newspaper published
in the City of Charleston, County and
State aforesaid, who, being duly sworn,
says that the advertisement of

(copy attached)

appeared in the issues of said newspaper

on the following day(s): _____

March 4, 2011

Subscribed and sworn to
before me this 22nd day

of March

A.D. 20 11

Keisha Eds
(Advertising clerk)

Sherry Dule
NOTARY PUBLIC,
My Commission expires October 10, 2013

DEPARTMENT OF DEFENSE DEPARTMENT OF THE AIR FORCE

NOTICE OF AVAILABILITY OF A DRAFT ENVIRONMENTAL ASSESSMENT AND DRAFT FINDING OF NO SIGNIFICANT IMPACT (FONSI) FOR MOSQUITO CONTROL AT JOINT BASE CHARLESTON-WEAPONS STATION, CHARLESTON, SOUTH CAROLINA

Pursuant to Council on Environmental Quality regulations (40 CFR Parts 1500-1508) implementing the procedural provisions of the National Environmental Policy Act, the United States Air Force gives notice that an Environmental Assessment (EA) has been prepared addressing mosquito control at two dredge spoil areas known as the Naval Weapons Station (NWS) spoil area and the Old Naval Weapons Station (ONWS) spoil area at Joint Base Charleston - Weapons Station (JB CHS-WS), Charleston, South Carolina.

Purpose of and Need for Action

The purpose is to reduce mosquito populations at the NWS and ONWS parcels which are located along the Cooper River near the Charleston - Berkeley County line, comprising approximately 472 acres. As the NWS and ONWS dredge spoil areas are recognized breeding grounds for mosquitoes, there is a need to reduce the threat of a mosquito-borne disease outbreak and provide for functional and effective environment for outdoor activities in support of the Joint Base Charleston (JB CHS) mission as well as the adjacent civilian communities.

Proposed Action

Under the proposed action, JB CHS would manage mosquito populations on these two parcels by participating in Charleston County Public Works Department's Mosquito Control Program. The County uses standard surveillance techniques to determine where mosquito hot spots are located within the county and to ensure only problem areas are treated when necessary. The County typically treats dredge spoil areas by aerial application of pesticides and has done so in these areas since the late 1980s. Public notifications are made by the County prior to any aerial spraying. The County's Mosquito Control Program would ensure proper application of pesticides as determined by label recommendations, implement Best Management Practices, and coordinate activities with the JB CHS Installation Pest Manager and the JB CHS Public Affairs Office.

Alternatives Considered

In addition to the Proposed Action, as described above, the Code of Federal Regulations 32 CFR 989.14 (d) requires the analysis of a No-Action alternative. Under the No-Action alternative, no mosquito control would be provided on the NWS or ONWS dredge spoil areas. JB CHS WS would not

Three alternatives were considered but eliminated from further study during the assessment process because they either did not support mission activities or were not feasible for other reasons. Eliminated alternatives include:

1. JB CHS WS could conduct its own ground-based chemical insecticide treatment on the NWS and ONWS parcels.
2. JB CHS WS could arrange for the 757th Airlift Squadron to conduct aerial chemical insecticide treatment over the two parcels (while the County completes its portions of the Cooper River treatment area).
3. JB CHS WS could mechanically manipulate marshland and wetland breeding areas through drainage or open marsh management activities.

How to Get More Information and Provide Comments

The unsigned draft FONSI and a copy of the draft EA are available at the Dorchester Road Branch of the Charleston County Public Library.

Comments should be submitted in writing on or before 19 March 2011. To submit comments or for questions regarding the EA contact:

Joe Camp
628 CES/CEAO
100 W. Stewart Avenue
Charleston, SC 29404-4827
Phone: 843-963-4125
Email: afoee.tdxnepa@mailbox@us.af.mil

C22-488594

DISTRIBUTION LIST

Federal Agency Contacts

Mr. Jay Herrington
Field Supervisor
U.S. Fish and Wildlife Service
176 Croghan Spur Road, Suite 200
Charleston, SC 29407

Ms. Robin Socha
U.S. Army Corps of Engineers
Charleston District
Regulatory Division
69-A Hagood Avenue
Charleston, SC 29403-5107

Mr. Preston Brownel
National Oceanic and Atmospheric Administration,
National Marine Fisheries Service
219 Fort Johnson Road
Charleston, SC 29412

State and Local Agency Contacts

South Carolina State Clearinghouse
Office of State Budget
1201 Main Street, Suite 950
Columbia, SC 29201

Regional Director
Region 7 Environmental Quality Control Office
South Carolina Department of Health and Environmental Control
1362 McMillan Avenue, Suite 300
Charleston, SC 29405

Ms. Christine Sanford-Coker
Regional Director
Region 7 Environmental Quality Control Office
South Carolina Department of Health and Environmental Control
1362 McMillan Avenue, Suite 300
Charleston, SC 29405

Mr. Bob Perry
Environmental Coordinator
South Carolina Department of Natural Resources
PO Box 167
Columbia, SC 29202

DEVIERHEENEY, CAROL L GS-13 USAF DoD AFCEE/TDX

From: Wilson, Caroline D. [cwilson@SCDAH.STATE.SC.US]
Sent: Monday, March 28, 2011 1:41 PM
To: AFCEE/TDX NEPA Mailbox
Subject: Mosquito Control at Joint Base Charleston

Mr. Camp:

We received the draft environmental assessment for the above referenced project. Due to the fact that this project involves the control of mosquitoes via pesticides, we concur with the assessment that no historic properties will be affected.

Thank you,

Caroline Dover Wilson
Review and Compliance Coordinator
South Carolina Dept. of Archives and History
8301 Parklane Road
Columbia, SC 29223
(803) 896-6169
Fax: (803) 896-6167

STATUS UPDATE for the week of March 28th: We have reviewed and sent letters for projects received through March 5th.

PLEASE NOTE: We CANNOT accept Section 106 forms via e-mail, unless requested. Please send us hard copies using certified mail or UPS/Fed-Ex to ensure your project package has arrived. Thank you for your understanding.**

DEVIERHEENEY, CAROL L GS-13 USAF DoD AFCEE/TDX

From: Priscilla Wendt [WendtP@dnr.sc.gov]
Sent: Friday, March 18, 2011 5:06 PM
To: AFCEE/TDX NEPA Mailbox
Cc: SC DHEC Erin Owen; SC FWS Karen Mcgee; Jaclyn Daly; Hightower, Chuck; Lord, Bob; Susan Davis; Bob Perry
Subject: USAF Charleston Mosquito Control Draft EA - SCDNR comments
Attachments: image001.jpg; Joint_Base_Charleston_Weapons_MosquitoControl_EA.docx

Please see SCDNR's comments attached.

Priscilla Wendt

SC Department of Natural Resources

Office of Environmental Programs/ MRD

P.O. Box 12559

Charleston, SC 29422

Phone: 843-953-9305

Fax: 843-953-9399

E-mail: wendtp@dnr.sc.gov

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South Carolina Department of Natural Resources



PO Box 12559
Charleston, SC 29422
843.953.9305 Office
843.953.9399 Fax
WendtP@dnr.sc.gov

John E. Frampton
Director
Robert D. Perry
Director, Office of
Environmental Programs

March 18, 2011

Mr. Joe Camp
628 CES/CEAO
100 W. Stewart Avenue
Charleston, SC 29404-4827

RE: Draft Environmental Assessment of Mosquito Control at Joint Base Charleston - Weapons Station, SC

Dear Mr. Camp:

The South Carolina Department of Natural Resources (SCDNR) has reviewed the Draft Environmental Assessment (EA) referenced above. The EA describes the US Air Force proposal to control mosquito populations in two dredge spoil disposal areas on the Joint Base Charleston - Weapons Station by continuing to participate in the Charleston County Public Works Department's Mosquito Control Program. No change is proposed in the products applied or the method of application (aerial spraying) to achieve mosquito control in these areas.

The SCDNR acknowledges that mosquitoes are efficient vectors of several diseases (including West Nile Virus and Eastern Equine Encephalitis), and can pose a significant health risk to humans, as well as domestic animals and wildlife. The SCDNR also recognizes that the Charleston County Mosquito Control Program (CCMCP) uses the same products as those described in the EA to control larval and adult mosquitoes in other dredge spoil disposal areas, as well as in residential areas throughout Charleston County. Provided the licensed pesticide applicators employed by CCMCP continue to follow all label directions and adhere to the most stringent Best Management Practices for aerial spraying, the SCDNR believes that the proposed action will not significantly affect surface water quality, nor will it pose an unacceptable risk to aquatic or terrestrial species or their habitats. Therefore, the SCDNR concurs with the Draft Finding of No Significant Impact (FONSI).

Sincerely,

Priscilla H. Wendt

Priscilla H. Wendt
Office of Environmental Programs/ MRD

cc: SCDHEC-EQC
NOAA-NMFS
USEPA
USFWS



DEPARTMENT OF THE AIR FORCE
AIR FORCE CENTER FOR ENGINEERING AND THE ENVIRONMENT
LACKLAND AIR FORCE BASE TEXAS

AFCEE/TD
2261 Hughes Ave Ste 155
Lackland AFB, TX 78236-9853

RECEIVED
3-04-11

Glenna Wallace, Chief
Eastern Shawnee Tribe of Oklahoma
P.O. Box 350
Seneca, MO 64865

Having reviewed this proposal, the Eastern Shawnee Tribal Cultural Preservation Department recommends the implementation of this project.


Robin Dushane
Cultural Preservation Dir.
culturalpreservation@estoo.net
918 666 2435 x 247

3 March 2011

Subject: Draft Environmental Assessment of Mosquito Control at Joint Base Charleston - Weapons Station, South Carolina

Dear Chief Wallace:

The USAF has prepared a draft environmental assessment (EA) for a proposal to manage mosquito populations on Joint Base Charleston-Weapons Station (JB CHS-WS) dredge spoil areas by participating in the Charleston County Public Works Department's Mosquito Control Program.

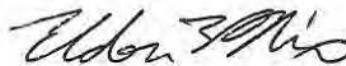
These parcels, comprising 472 acres, are located along the Cooper River near the Charleston - Berkeley County line. Dredge spoil areas are recognized breeding grounds for mosquitoes, and the County typically treats these areas by aerial application of pesticides.

The draft EA was prepared in accordance with the National Environmental Policy Act of 1969, as amended. A compact disk (CD), with the draft EA and unsigned Finding of No Significant Impact (FONSI), is enclosed for your convenience. These documents also are available at the Dorchester Road Branch of the Charleston County Public Library, Charleston, South Carolina.

Your comments are requested in accordance with Executive Order 12372, Intergovernmental Review of Federal Programs. The comment period closes on March 19, 2011. If you have any questions, please feel free to contact:

Joe Camp
628 CES/CEAO
100 W. Stewart Avenue
Charleston SC 29404-4827
Phone: 843-963-4125
Email: afcee.tdxnepa.mailbox@us.af.mil

Sincerely



ELDON E. HIX
Chief, Technical Division



United States Department of the Interior



FISH AND WILDLIFE SERVICE

176 Croghan Spur Road, Suite 200
Charleston, South Carolina 29407

March 7, 2011

Mr. Joe Camp
628 CES/CEAP
100 W. Stewart Avenue
Charleston, SC 29404-4827

Re: Draft Environmental Assessment of Mosquito Control at Joint Base Charleston
FWS Log No. 42410-2011-CPA-0083

Dear Mr. Camp:

The U.S. Fish and Wildlife Service (Service) has received the draft Environmental Assessment (EA) on the proposed mosquito management in dredge spoil areas near the Joint Base Charleston-Weapons Station. This EA describes alternatives to control mosquito populations as a part of the Charleston County Public Works Department Mosquito Control Program. The EA was prepared in accordance with the National Environmental Policy Act of 1969, as amended.

It is our opinion that the proposed action is not likely to adversely affect resources under the jurisdiction of the Service that are currently protected by the Endangered Species Act, 1973 (Act). Please note that obligations under section 7 of the Act must be reconsidered if: (1) new information reveals impacts of this identified action may affect any listed species or critical habitat in a manner not previously considered, (2) this action is subsequently modified in a manner which was not considered in this assessment, or (3) a new species is listed or critical habitat is designated that may be affected by the identified action.

If you have any questions concerning the Service's determination please contact the project manager, Mark Caldwell. He may be reached at the Service's South Carolina field office, (843) 727-4707 ext. 215.

Sincerely,

Jay B. Herrington
Field Supervisor

JBH/MAC/km



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE

Southeast Regional Office
263 13th Avenue South
St. Petersburg, Florida 33701-5505
(727) 824-5317; FAX (727) 824-5300
<http://sero.nmfs.noaa.gov/>

March 10, 2011

F/SER47:JD/pw

(Sent via Electronic Mail)

J. Dale Clark, P.E.
Chief, Environmental Planning Center of Excellence
AFCEE/TDX
2261 Hughes Avenue, Ste 155
Lackland AFB, Texas 78236

Attention: Joe Camp

Dear Mr. Clark:

NOAA's National Marine Fisheries Service (NMFS) submits the following comments in response to the letter from the U.S. Air Force (USAF) dated March 3, 2011, announcing the public comment period for the *Draft Environmental Assessment (EA) of Mosquito Control at Joint Base Charleston-Weapons Station (JB-CHS-WS), South Carolina*. The draft EA does not include a determination by USAF as to the expected effects of the proposed action on essential fish habitat (EFH) or federally managed fishery species. As the nation's federal trustee for the conservation and management of marine, estuarine, and anadromous fishery resources, the following comments and recommendations are provided pursuant to authorities of the Fish and Wildlife Coordination Act and the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act).

Proposed Project Description

USAF is proposing to continue participation in the Charleston County Public Works Department's Mosquito Control Program by spraying 472 acres of dredge spoil areas with mosquito control pesticides. To manage mosquitoes in their larval stages, the County would use a microbial larvicide, known as *Bacillus thuringiensis* var. *israelensis* (*B.t.i*), or Altosid® Liquid, an insect growth regulator (IGR). In addition, a Naled-based adulticide is proposed for aerial application to perform adult mosquito control. Helicopters or fixed-wing aircraft would release pesticides at an elevation of 100 to 300 feet. For adult mosquito control, spray would be applied during periods of high mosquito activity before sunset if weather permits.

Essential Fish Habitat

The areas targeted for mosquito control are positioned along the Cooper River. Despite significant development along its shoreline, the Cooper River provides habitat for a diverse assemblage of estuarine-dependent fish and invertebrate species. Salt marsh and tidal flats are present in the area, and the South Atlantic Fishery Management Council (SAFMC) identifies these habitats as EFH for white shrimp (*Litopenaeus setiferus*) and brown shrimp (*Farfantepenaeus aztecus*) because shrimp experience high rates of growth and survival when concentrated in these habitats. Species under jurisdiction of the Mid



Atlantic Fishery Management Council (MAFMC) also occur in the project area, including juvenile and adult summer flounder (*Paralichthys dentatus*) and juvenile and adult bluefish (*Pomatomus saltatrix*). MAFMC identifies estuarine waters as EFH for these species. SAFMC provides detailed information on types and locations of EFH in the *Fishery Ecosystem Plan of the South Atlantic*, which is available at www.safmc.net, and in the comprehensive amendment that applies to all fishery management plans prepared by SAFMC; MAFMC provides similar information in each fishery management plan.

In addition to providing EFH for federally managed fishery species, the waters of the Cooper River, the tidal creeks connected to it, and the surrounding coastal marsh also provides nursery and forage habitat for other species, including black drum (*Pogonias cromis*), Atlantic menhaden (*Brevoortia tyrannus*), and blue crab (*Callinectes sapidus*), that serve as prey for other species (e.g., mackerels, snappers, and groupers) managed by SAFMC and for highly migratory species (e.g., billfishes and sharks) that are managed by NMFS. Juvenile and subadult red drum (*Sciaenops ocellatus*) also inhabit the marsh and channels adjacent to the areas proposed for mosquito control.

Recommendations

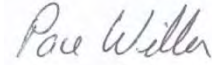
Alternatives Analysis: NMFS believes the alternative analysis could be improved. At present, the only alternative that does not include pesticide application is the “no action” alternative. In our view, this does not provide the range of alternatives required under NEPA. Notably, the Alternative Analysis should further investigate decreasing suitable habitat for mosquitoes. The draft EA states that “draining or altering wetlands, other than those areas that are already covered by permits to maintain existing mosquito and drainage ditches, risks violation of Section 404 of the Clean Water Act.” It may be possible that, in consultation with resource agencies, a work plan could be developed to manage the disposal areas in manners that provide practicable, effective, and environmentally friendly alternative to spraying. USAF should also consider temporal, spatial, and weather-related spraying limitations may minimize impacts to the affected environment, in particular, EFH and NOAA trust resources.

Environmental Consequences: The draft EA does not fully analyze the environmental impacts from the proposed action. The “No Impact” determination appears to be based off the amount of pesticides being used; however, the amount that could be released, either directly or indirectly, into the Cooper River is not provided nor is a temporal or spatial spraying frequency identified. The reports from the Environmental Protection Agency that are referenced in the draft EA claim minimal environmental harm only if the chemical dispersant instructions are followed. For example, the Naled label specifically states that the chemical should not be released into the water or intertidal areas below the high water mark and should not be applied for 24 hours following rainfall or irrigation or where rainfall is forecasted within 24 hours following application. These important application caveats are not addressed in the draft EA. The impacts on EFH and aquatic life (considering life stage) from pesticide application with respect to proximity to the Cooper River, wind conditions favoring drift, and rainfall/runoff need to be investigated. Fully analyzing the environmental impacts from the alternatives, including those to aquatic resources, must be completed to better understand the effects of the proposed action.

EFH Assessment: Section 305(b)(2) of the Magnuson-Stevens Act requires each Federal agency to consult with NMFS with respect to any action authorized, funded, or undertaken, or proposed to be authorized, funded, or undertaken, by such agency that may adversely affect EFH. The mandatory contents of an EFH assessment are listed at 50 CFR 600.920(e)(3): (i) a description of the action, (ii) an analysis of the potential adverse effects of the action on EFH and the managed species, (iii) the federal agency’s conclusions regarding the effects of the action on EFH, and (iv) proposed mitigation (when mitigation is applicable). The draft EA does not include an EFH assessment. NMFS recommends one be included in the final EA; for expediency the EFH assessment should focus on the species listed above.

We appreciate the opportunity to provide these comments. Please direct related correspondence to the attention of Ms. Jaclyn Daly at our Charleston Area Office. She may be reached at (843) 762-8610 or by e-mail at Jaclyn.Daly@noaa.gov.

Sincerely,



/ for

Miles M. Croom
Assistant Regional Administrator
Conservation Division

Habitat

cc:

DoD, afcee.tdxnepa.mailbox@us.af.mil
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DEVIERHEENEY, CAROL L GS-13 USAF DoD AFCEE/TDX

From: Jaclyn Daly [Jaclyn.Daly@noaa.gov]
Sent: Tuesday, March 29, 2011 11:27 AM
To: DEVIERHEENEY, CAROL L GS-13 USAF DoD AFCEE/TDX
Cc: Susan Walker
Subject: Re: USAF Charleston Mosquito Control Draft EA; NMFS comments

Hi Carol,

Thank you for considering our comments so thoroughly. We will be happy to review the final EA and assist with any EFH assessment questions you may have.

-Jaclyn

On 3/29/2011 12:04 PM, DEVIERHEENEY, CAROL L GS-13 USAF DoD AFCEE/TDX

wrote:

> Jaclyn,

>

> Thank you so much for your assistance. We appreciated the opportunity to discuss NMFS's concerns. We will make the updates to the EA to include the EFH description and explain the AF decision for no effect. Also, I will advise JB Charleston of the need to update their Integrated Natural Resource Management Plan (INRMP) to address the EFH.

>

> Thanks again,

>

> ~Carol

>

> // SIGNED //

> Carol L. Devier-Heeney

> AFCEE/TDX

> DSN 969-9289, Comm 210-395-9289

> carol.devierheeney.1@us.af.mil

>

>

> -----Original Message-----

> From: Jaclyn Daly [<mailto:Jaclyn.Daly@noaa.gov>]

> Sent: Tuesday, March 29, 2011 10:46 AM

> To: DEVIERHEENEY, CAROL L GS-13 USAF DoD AFCEE/TDX

> Subject: Re: USAF Charleston Mosquito Control Draft EA; NMFS comments

>

> Hi Carol,

>

> This link should be helpful:

> <http://www.habitat.noaa.gov/pdf/preparingefhassessments.pdf>

>

> -Jaclyn

>

> On 3/28/2011 1:51 PM, DEVIERHEENEY, CAROL L GS-13 USAF DoD AFCEE/TDX wrote:

>> Ms. Daly,

>>

>> Would you be available to discuss NMFS's comments to the Draft EA? I was hoping to talk with you about how to move forward. If today is not suitable, please advise of another day/time.

>>

>> Thank you so much,

>>

>> ~Carol

>>
>> //SIGNED//
>> Carol L. Devier-Heeney, GS-13, DAF
>> Physical Scientist AFCEE/TDX
>> Phone: (210) 395-9289 or (DSN) 969-9289
>> E-mail: Carol.DevierHeeney.1@us.af.mil

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