ENVIRONMENTAL ASSESSMENT FOR PROPOSED AIR INSTALLATION COMPATIBLE USE ZONE LAND ACQUISITION AT BEAUFORT, SOUTH CAROLINA

Prepared for

Marine Corps Air Station Beaufort

Prepared by

J. M. Waller® Associates, Inc.

June 2011

FINDING OF NO SIGNIFICANT IMPACT FOR AN ENVIRONMENTAL ASSESSMENT FOR PROPOSED AIR INSTALLATION COMPATIBLE USE ZONE LAND ACQUISITION AT BEAUFORT, SOUTH CAROLINA

Agency:	Department of Defense Department of the Navy
Lead Agency for the EA:	United States Marine Corps Installations East (US MCIEAST)
Proponent	Marine Corps Air Station (MCAS) Beaufort
Title of Proposed Action:	Air Installation Compatible Use Zone (AICUZ) Land Acquisition for Marine Corps Air Station (MCAS) Beaufort
Affected Jurisdiction:	Beaufort, Beaufort County, South Carolina (SC)
Designation:	Environmental Assessment Finding of No Significant Impact (FONSI)

Pursuant to the National Environmental Policy Act (NEPA) of 1969, as amended (42 US Code § 4321 *et seq.*); the Council on Environmental Quality (CEQ) implementing regulations (40 Code of Federal Regulations §§ 1500-1508); and US Marine Corps (USMC) procedures for implementing NEPA, as described in Marine Corps Order (MCO) P5090.2A, Environmental Compliance and Protection Manual, and Department of Defense *Instruction (DoDI) 4715.3, Section 4.1.4*, and Chief of Naval Operations Instruction 5090.1C, the Department of the Navy (DoN) gives notice that an Environmental Assessment (EA) has been prepared to analyze the potential impacts of actions associated with the acquisition of up to 807.56 acres of land located within and adjacent to the Air Installation Compatible Use Zone (AICUZ) footprint of MCAS Beaufort. Based on the findings of this EA, an Environmental Impact Statement (EIS) is not required.

PROPOSED ACTION

The United States Marine Corps Air Station (MCAS) Beaufort located at Beaufort, South Carolina (SC) proposes to acquire real estate interests in several parcels of private land totaling up to 807.56 acres in Beaufort County, SC using either fee simple acquisition or purchase of restrictive easements.

EXISTING CONDITIONS

The mission of the Air Station requires the acquisition of sufficient real estate interests surrounding MCAS Beaufort in order to protect the health, safety, and welfare of civilians and military personnel by discouraging land uses that are incompatible with aircraft operations while also protecting USMC installation investments by safeguarding the operational capabilities of the installation from some amount of encroachment.

MCAS Beaufort currently owns all four of the airfield clear zones surrounding the Station, most of Accident Potential Zone (APZ) 1 on the approach and departure ends of the primary runway OS/23, and a portion of the APZ 2's Field Carrier Landing Practice (FCLP) flight tracks. The once profitable agricultural industry in Beaufort County has been overtaken by retirement development resulting in conversion of large farms to suburbs. Farm lands located within the AICUZ footprint have been converted to development. Beaufort County is one of the South's fastest growing counties for population growth, primarily because of development occurring south of the Broad River, clustered along the U.S. Highway 278 corridor. Encroachment is a growing concern in the areas of public safety and noise impacts from flight training and operations. Environmental constraints and incompatible

development around military installations can conflict with operational and training requirements. These conflicts can impact the Marine Corps' ability to maintain the required high status of readiness, by restricting training operations. Current zoning ordinances provide some protection from encroachment, but zoning has previously been appealed administratively and in court. By permanently limiting adjacent land uses that are incompatible with aircraft operations, mission readiness and future mission requirements for effective training capabilities can be met.

The Proposed Action is needed to prevent encroachment, and maintain the operational integrity of MCAS Beaufort. The need to achieve the highest levels of combat readiness and maintain rigorous and realistic training, testing and operational programs, which often involves intensive land use, requires encroachment be kept to a minimum. It is the intent of MCAS Beaufort to leave the property proposed in this acquisition action, in its current undeveloped state. The acquisition of interests on these parcels of land ensures compatible land uses and minimizes the threat of unexpected litigation brought by future land owners.

PROPOSED ACTION AND ALTERNATIVES CONSIDERED

During the development of this EA, three alternatives were considered as described below:

Alternative 1: Acquisition of Real Estate Interests - The Proposed Action

Under the Proposed Action, the acquisition of real estate interests in several parcels totaling up to 807.56 acres using either fee simple acquisition or purchase of restrictive easements, will prevent encroachment and maintain the operational integrity of MCAS Beaufort by permanently limiting adjacent land uses that are incompatible with aircraft operations. The acquisition of lands or development rights is the most effective way of preventing incompatible development. Alternative 1 focuses on land parcels located in Accident Potential Zones (APZ) I and II, Noise Zones (NZ) I and II, and parcels within the immediate vicinity. These zones are inclusive of F/A-18 Field Carrier Landing Practice (FCLP) flight tracks and approach and departure flight tracks. The Proposed Action fully supports the purpose and need of the proposed project. Implementation of the Proposed Action would neither have short-term nor long-term impacts above environmental significance thresholds. Impacts on geologic resources due to development of soils, and water resources due to an increase in impervious surface area would not occur. Air quality impacts would be negligible as any construction activities that may occur in the future would be minor. Impacts to noise, cultural and biological resources, and traffic would be negligible to beneficial as the property is allowed to return to its natural state. Land use and hazardous waste management impacts would be negligible. Long-term impacts to utilities would be negligible. Finally, impacts to socioeconomics would be minor, since a small amount of farming or industrial type activities take place on a few parcels.

Alternative 2: Employ Local Cooperative Efforts

Under this alternative, MCAS Beaufort would employ cooperative efforts with local jurisdictions to limit land use in the vicinity of the installation incompatible with aircraft operations. MCAS Beaufort would seek to restrict development rights on the subject properties using cooperative agreements to restrict land use. MCAS Beaufort would work with local governmental authorities to promote regulatory controls to avoid conflicts between incompatible growth and military use similar to the existing regional Airport Overlay District (AOD) ordinance.

Alternative 3: The No Action Alternative

Under this alternative, no property interests would be acquired by MCAS Beaufort and additional administrative options would have to be instituted to provide for the health, safety, and welfare of civilians and military personnel in the area. Under the No Action Alternative, impacts to water resources, cultural and biological resources, air quality,

traffic, or infrastructure may be expected if the subject properties are developed. Impacts to geologic, noise, land use, and health and safety might occur as well.

If the current undeveloped lands located in the APZs and FCLP are not purchased or permanently controlled to prevent incompatible development, the lands will likely be developed. Development can cause negative impacts on aircraft operations. Incompatible development below flight tracks also places civilian populations in harm's way, jeopardizing health, safety and welfare of civilians. Noise complaints and litigation would escalate proportionally with the onset of uncontrolled and incompatible development.

FINDING

Based on the analysis presented in the EA, the DoN finds that implementation of the Proposed Action will not significantly impact the quality of the human or natural environment or generate significant controversy. The EA prepared by the DoN addressing this action is on file and interested parties may obtain a copy from: Commanding Officer at P.O. Box 55001, community Plans & Liaison Office, Attn: Alice Howard, Building 601, Room 212, MCAS Beaufort, SC 29904-5001, Phone: 843-228-7558.

9 June 2011

Date

Colonel Brian C. Murtha
Commanding Officer, MCAS Beaufort
Beaufort, South Carolina

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Prepared for

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June 2011

ENVIRONMENTAL ASSESSMENT FOR PROPOSED AIR INSTALLATION COMPATIBLE USE ZONE LAND ACQUISITION AT BEAUFORT, SOUTH CAROLINA

Lead Agency for the EA:	United States Marine Corps Installations East (US MCIEAST)
Title of Proposed Action:	Air Installation Compatible Use Zone (AICUZ) Land Acquisition for Marine Corps Air Station (MCAS) Beaufort
Affected Jurisdiction:	Beaufort, Beaufort County, South Carolina (SC)
Designation:	Environmental Assessment
Prepared by:	J. M. Waller® Associates, Inc.
Point of Contact:	Attn: Mr. William A. Drawdy, US Marine Corps (USMC) Natural Resource/Environmental Affairs Officer NREAO, P.O. Box 55001, MCAS Beaufort, SC 29904-5001 Phone: 843.228.7370/DSN: 335.7370

ABSTRACT

This Environmental Assessment (EA) has been prepared to analyze the potential impacts of actions associated with the acquisition of real estate interests in several parcels totaling up to 807.56 acres of land located within, and adjacent to the Air Installation Compatible Use Zone (AICUZ) footprint of MCAS Beaufort. The Proposed Action is needed to prevent encroachment and maintain the operational integrity of MCAS Beaufort, by permanently limiting adjacent land uses that are incompatible with aircraft operations. Encroachment around military installations, including ranges and military operational areas is a growing concern in regard to public safety and noise disturbance stemming from flight training and operations. The need to achieve the highest levels of combat readiness and maintain rigorous and realistic training, testing, and operational programs, which often involves intensive land use, requires that encroachment be kept to a minimum. Encroachment pressures include private development, environmental restrictions, and competition for resources (waterfront, airspace, radio frequencies, etc.) that impede the ability to train.

Under the Proposed Action, the acquisition of sufficient real estate interests surrounding MCAS Beaufort would occur to protect the health, safety, and welfare of civilians and military personnel by discouraging land uses that are incompatible with aircraft operations, while also protecting Marine Corps installation investments by safeguarding the operational capabilities of the installation from encroachment. The acquisition of interests on these parcels of land is needed to ensure compatible land uses and minimize the threat of negative impacts caused by encroachment. The Proposed Action, alternatives to the Proposed Action, and the No Action Alternative have been carried forward for analysis in this EA.

This EA has been prepared in accordance with the National Environmental Policy Act (NEPA) of 1969, as amended (42 US Code § 4321 *et seq*.); the Council on Environmental Quality (CEQ) implementing regulations (40 Code of Federal Regulations §§ 1500-1508); and Title 38 CFR – Book I, Part 26.1 - 26.9, procedures for implementing NEPA as described in Chief of Naval Operations Instruction 5090.1C and Marine Corps Order P5090.2A, Environmental Compliance and Protection Manual, and Department of Defense *Instruction (DoDI) 4715.3, Section 4.1.4.* Potential environmental and human resource impacts have been analyzed for 20 resources. Sustainability and greening, utilities and infrastructure, roadways and traffic, environmental justice, and aesthetics, and visual resources were not fully analyzed as they were considered to have negligible impact on the Proposed Action.

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ACRONYMS

°F	Fahrenheit
ac	acres
ACM	asbestos containing material
AGL	above ground level
AICUZ	Air Installation Compatible Use Zone
AOC	area of concern
AOD	Airport Overlay District
AOI	area of interest
APE	area of potential effect
APZ	Accident Potential Zones
AQCR	Air Quality Control Region
BASH	Bird/Wildlife Aircraft Strike Hazard
BCSC	Beaufort County, South Carolina
BMP	best management practices
CAA	Clean Air Act
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response Compensation & Liability Act
CFR	Code of Federal Regulations
CO	carbon monoxide
CWA	Clean Water Act
CZMA	Coastal Zone Management Act
DNL	Day-Night Average Sound Level
dB	decibel
dBA	A-weighted
DoD	Department of Defense
DoDI	Department of Defense Instruction
DoN	Department of the Navy
EA	Environmental Assessment
ECP	Encroachment Control Plan
EIS	Environmental Impact Statement
ECP	Encroachment Control Plan
EO	Executive Order
EPA	Environmental Protection Agency
EPCRA	Emergency Planning and Community Right-to-Know Act
ESA	Endangered Species Act
FAA	Federal Aviation Administration
FEMA	Federal Emergency Management Agency
FCLP	Field Carrier Landing Practice
ft	foot/feet
GAPC	Geographic Areas of Particular Concern
GCA	ground controlled approach
GHG	Greenhouse gases
GSE	ground support equipment
GSE	ground support equipment
INRMP	Integrated Natural Resource Management Plan
JHC	Joint Hazardous Material Minimization Center
JSF	Joint Strike Fighter
LBP	lead based paint
mi	miles
MABS	Marine Air Base Squadron
MAG	Marine Aircraft Group
MBTA	Migratory Bird Treaty Act
MCAS	Marine Corp Air Station
MCCS	Marine Corps Community Services
MCIEAST	Marine Corps Installations East
MCO	Marine Corps Order
MHP	Mobile Home Park
MILCON	Military Construction
MOA	Military Operating Area
msl	mean sea level
NAAQS	National Ambient Air Quality Standards
NAS	Naval Air Station
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NO_2	nitrogen dioxide
NREAO	Natural Resources and Environmental Affairs Office
NRHP	National Register of Historic Places
NZ	Noise Zone
O_3	ozone
OPNAVIST	Office of the Chief of Naval Operations Instruction
PC	Prior-Converted
PM_{10}	particulate matter ≤ 10 microns in diameter
POL	petroleum, oils, and lubricants
POV	personally owned vehicles
RCRA	Resource Conservation and Recovery Act
SC	South Carolina
SCCMA	South Carolina Coastal Management Act
SCDHEC	South Carolina Department of Health and Environmental Control
SCFC	South Carolina Forestry Commission
SDZ	surface danger zones
SO_2	sulfur dioxide
T&E	Threatened and Endangered
TSCA	Toxic Substances Control Act
TSP	total suspended particulates
US	United States
USACE	US Army Corps of Engineers
USC	US Code
USDA	US Department of Agriculture
USFWS	US Fish and Wildlife Service
USMC	US Marine Corps
$\mu g/m^3$	micrograms per cubic meter

EXECUTIVE SUMMARY

INTRODUCTION

The United States Marine Corps Air Station (MCAS) Beaufort located at Beaufort, South Carolina (SC) proposes to acquire real estate interests in several parcels of private land totaling up to 807.56 acres in Beaufort County, SC using either fee simple acquisition or purchase of restrictive easements.

This Environmental Assessment (EA) has been prepared to analyze the potential impacts of actions associated with the acquisition of land located within, and adjacent to the Air Installation Compatible Use Zone (AICUZ) footprint of MCAS Beaufort. This EA has been prepared in compliance with the National Environmental Policy Act (NEPA) of 1969, as amended (42 US Code § 4321 *et seq*.); the Council on Environmental Quality (CEQ) implementing regulations (40 Code of Federal Regulations §§ 1500-1508); and US Marine Corps (USMC) procedures for implementing NEPA, as described in as described in Chief of Naval Operations Instruction 5090.1C and Marine Corps Order (MCO) P5090.2A, Environmental Compliance and Protection Manual, and Department of Defense *Instruction (DoDI) 4715.3, Section 4.1.4*. This EA documents the purpose and need of the Proposed Action by providing a detailed description of the affected environment, actual and potential cumulative effects, and beneficial and adverse effects of the Proposed Action and alternatives.

This study includes measures to prevent and/or reduce environmental impacts associated with the Proposed Action. This study compares the Proposed Action and alternatives in terms of environmental effect based on these actions and the level of mission effectiveness in regard to DoD Instruction (DoDI) 4165.57, which *…"sets forth Department of Defense policy on achieving compatible use of public and private lands in the vicinity of military airfields to provide for safety of flight and to assure that people and facilities are not concentrated in areas susceptible to aircraft accidents; and places desirable restrictions on land use to assure its compatibility with the characteristics, including noise, of air installations operations…"* It also *"provides policy on the extent of Government interest in real property within these zones that may be retained or acquired to protect the operational capability of active military airfields."* This EA addresses the potential impacts of land acquisition in Beaufort, SC. Only those resources potentially impacted by the Proposed Action are addressed in this EA.

PURPOSE OF AND NEED FOR ACTION

The Proposed Action is needed to prevent encroachment, and maintain the operational integrity of MCAS Beaufort. The need to achieve the highest levels of combat readiness and maintain rigorous and realistic training, testing and operational programs, which often involves intensive land use, requires encroachment be kept to a minimum. Encroachment pressures include private development, environmental restrictions, and competition for resources (waterfront, airspace, radio frequencies, etc.) that impede the ability to train.

Under the Proposed Action, the acquisition of sufficient real estate interests surrounding MCAS Beaufort would occur to protect the health, safety, and welfare of civilians and military personnel by discouraging land uses that are incompatible with aircraft operations. The Proposed Action also protects USMC installation investments by safeguarding the operational capabilities of the installation from some amount of encroachment.

The once profitable agricultural industry in Beaufort County has been overtaken by retirement development resulting in conversion of large farms to suburbs. Farm lands located within the AICUZ footprint have been converted to development. Beaufort County is one of the South's fastest growing counties for population growth, primarily

because of development occurring south of the Broad River, clustered along the U.S. Highway 278 corridor (Wikipedia 2011). Encroachment is a growing concern in the areas of public safety and noise impacts from flight training and operations. Environmental constraints and incompatible development around military installations can conflict with operational and training requirements. These conflicts can impact the Marine Corps' ability to maintain the required high status of readiness, by restricting training operations. Current zoning ordinances provide some protection from encroachment, but zoning has previously been appealed administratively and in court. By permanently limiting adjacent land uses that are incompatible with aircraft operations, mission readiness and future mission requirements for effective training capabilities can be met.

PROPOSED ACTION AND ALTERNATIVES CONSIDERED

The USMC Beaufort proposes to acquire up to 807.56 acres in real estate interests of minimally improved agricultural and silvicultural lands, and areas of limited residential or commercial development.

Alternative 1: Acquisition of Real Estate Interests - The Proposed Action

Under the Proposed Action, the acquisition of real estate interests in several parcels totaling up to 807.56 acres using either fee simple acquisition or purchase of restrictive easements, will prevent encroachment and maintain the operational integrity of MCAS Beaufort by permanently limiting adjacent land uses that are incompatible with aircraft operations. The acquisition of lands or development rights is the most effective way of preventing incompatible development. Alternative 1 focuses on land parcels located in Accident Potential Zones (APZ) I and II, Noise Zones (NZ) I and II, and parcels within the immediate vicinity. These zones are inclusive of F/A-18 Field Carrier Landing Practice (FCLP) flight tracks and approach and departure flight tracks. The Proposed Action fully supports the purpose and need of the proposed project. Implementation of the Proposed Action would neither have short-term nor long-term impacts above environmental significance thresholds. Impacts on geologic resources due to development of soils, and water resources due to an increase in impervious surface area would not occur. Air quality impacts would be negligible as any construction activities that may occur in the future would be minor. Impacts to noise, cultural and biological resources, and traffic would be negligible to beneficial as the property is allowed to return to its natural state. Land use and hazardous waste management impacts would be negligible. Long-term impacts to utilities would be negligible. Finally, impacts to socioeconomics would be minor, since a small amount of farming or industrial type activities take place on a few parcels.

Alternative 2: Employ Local Cooperative Efforts

Under this alternative, MCAS Beaufort would employ cooperative efforts with local jurisdictions to limit land use in the vicinity of the installation incompatible with aircraft operations. MCAS Beaufort would seek to restrict development rights on the subject properties using cooperative agreements to restrict land use. MCAS Beaufort would work with local governmental authorities to promote regulatory controls to avoid conflicts between incompatible growth and military use similar to the existing regional Airport Overlay District (AOD) ordinance.

Alternative 3: The No Action Alternative

Under this alternative, no property interests would be acquired by MCAS Beaufort and additional administrative options would have to be instituted to provide for the health, safety, and welfare of civilians and military personnel in the area. Under the No Action Alternative, impacts to water resources, cultural and biological resources, air quality, traffic, or infrastructure may be expected if the subject properties are developed. Impacts to geologic, noise, land use, and health and safety might occur as well.

If the current undeveloped lands located in the APZs and FCLP are not purchased or permanently controlled to prevent incompatible development, the lands will likely be developed. Development can cause negative impacts on aircraft operations. Incompatible development below flight tracks also places civilian populations in harm's way, jeopardizing health, safety and welfare of civilians. Noise complaints and litigation would escalate proportionally with the onset of uncontrolled and incompatible development.

AFFECTED ENVIRONMENT AND CONSEQUENCES

Environmental consequences associated with implementation of the Proposed Action and alternatives were evaluated for 20 resources. However, not all resources that were analyzed in this EA are expected to be impacted, or impacts are expected to be negligible for all alternatives analyzed. Table ES-1 presents the resource categories of those resources expected to be impacted and the anticipated impacts for all alternatives. Sustainability and greening, utilities and infrastructure, roadways and traffic, environmental justice and aesthetics, and visual resources would not be affected irreversibly due to the Proposed Action, and will not need further evaluation.

Table ES-1 Comparison of Potential Environmental Consequences

Resource Area	Alternative 1 Proposed Action	Alternative 2 Cooperative Efforts	Alternative 3 No Action Alternative
Land Use			
Geological Resources			
Hydrology and Groundwater			
Surface Waters & Waters of the U.S.			
Floodplains & Wetlands			
Coastal Consistency			
Vegetation			
Wildlife & Aquatic Resources			
Threatened & Endangered Species			
Cultural Resources			
Air Quality			
Noise			
Hazardous Materials & Waste			
Health & Safety			
Socioeconomics			

Positive Impact
Negligible Impact
Minor Impact
Moderate Impact
Adverse Impact

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1.0 CHAPTER

PURPOSE AND NEED FOR PROPOSED ACTION

1.1 INTRODUCTION

The United States Marine Corps (USMC) located at Marine Corps Air Station (MCAS) Beaufort, South Carolina (SC) proposes to acquire real estate interests in several parcels of private land totaling up to 807.56 acres in Beaufort County, using either fee simple acquisition or purchase of restrictive easements. This Environmental Assessment (EA) documents the purpose and need for the Proposed Action, providing a detailed description of the affected environment, actual and potential cumulative effects, and beneficial and adverse effects of the Proposed Action and alternatives. The action proponent is the USMC, with the proposed land acquisition consisting of land parcels located in Accident Potential Zones (APZ) I and II, Noise Zones (NZ) II and III, and parcels within the immediate vicinity as shown in Figure 1.1-1. This EA has been prepared in compliance with:

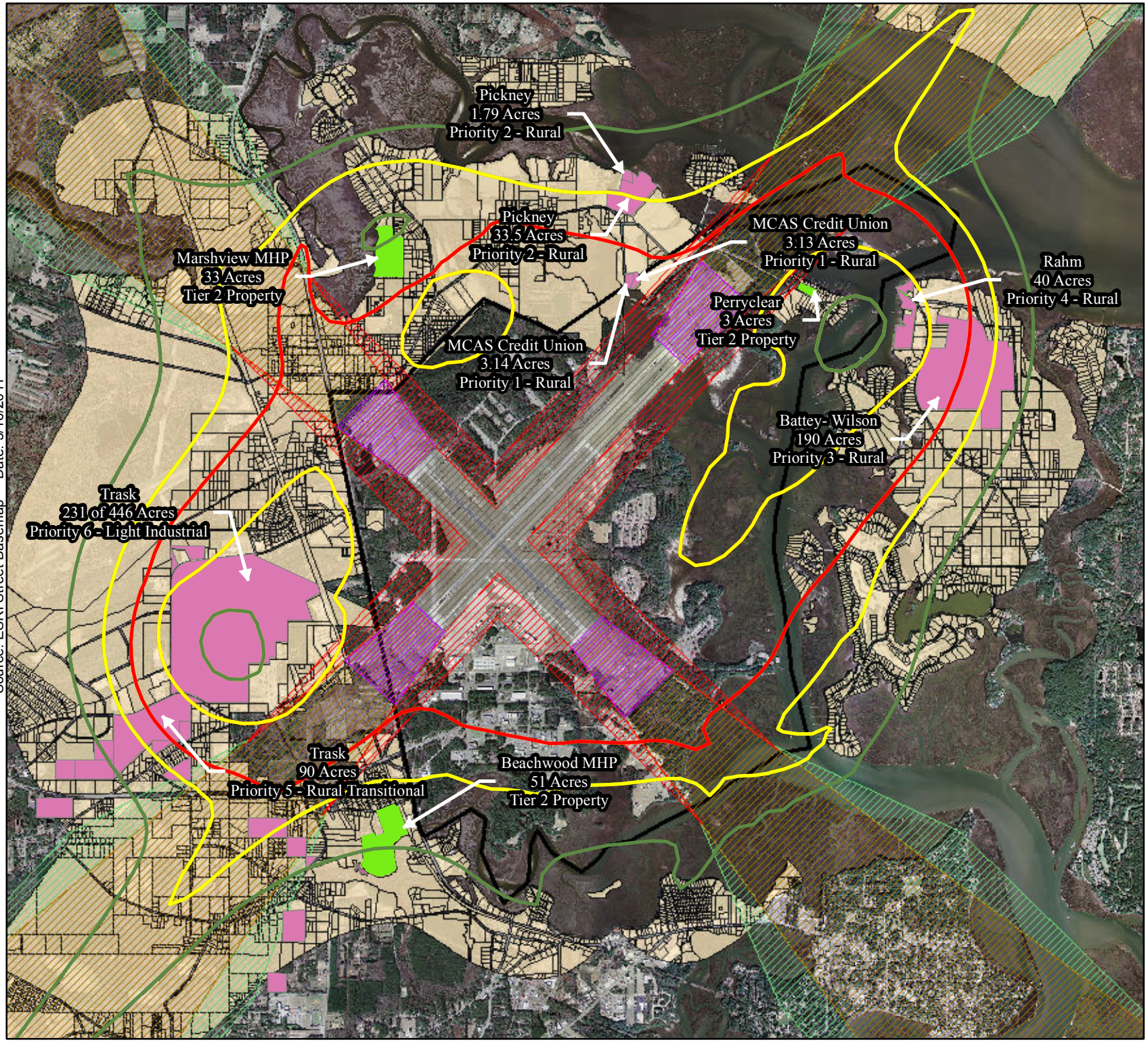
- National Environmental Policy Act (NEPA) of 1969 (42 US Code [USC] § 4321 et seq.);
- Council of Environmental Quality (CEQ) Regulations for Implementing the Procedural Provisions of NEPA (40 Code of Federal Regulations [CFR] §§ 1500-1508); and
- USMC procedures for implementing NEPA, as described in Marine Corps Order (MCO) P5090.2A, Environmental Compliance and Protection Manual, and Department of Defense *Instruction (DoDI) 4715.3, Section 4.1.4*.

1.2 PURPOSE AND NEED

Encroachment around military installations, including ranges and operation areas, is a growing military and public safety concern. The Marine Corps' definition of encroachment contained in MCO 11011.22A, *Encroachment Control*, states:

"Encroachment is any action planned or executed in the vicinity of a Marine Corps installation's normal area of operations which inhibits, curtails, or possesses the potential to impede Marine Corps interest. Further, encroachment is not limited to the immediate civilian community. Although physical development in conflict with military operations is the most often cited source of encroachment, the actions of more removed entities, such as counties, states, and other federal agencies which determine land use and occupancy, are equal potential sources."

The mission of the Air Station requires sufficient land surrounding the Air Station, to protect the health, safety, and welfare of civilians and military personnel. This is achieved by discouraging land uses that are incompatible with aircraft operations.



MCAS Beaufort
MILCON P-433

MCAS Beaufort
Environmental Assessment
Beaufort County
Beaufort, South Carolina

Figure 1.1-1

Legend

- MILCON P-433
- P433 Tier 2 Properties
- Installation Area
- 1500 ft AOI*

Noise Zones

- 75 DNL
- 70 DNL
- 65 DNL

APZ Zones*

- APZ-2
- APZ-1
- CZ
- RZ

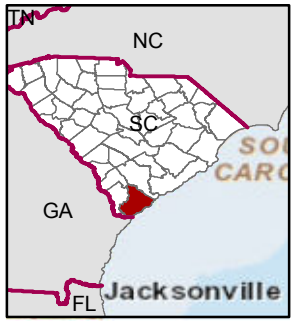
Approach/Departure Zones*

- Type III Clear Zone
- Transition Zone
- 50 to 1 Approach/Departure SFC
- Landing Zone
- Horizontal Approach/Departure
- Approach/Departure Transitional SFC

N
W E
S

0 0.5 1 Miles

NAD83 SC State Plane Ft



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Managing encroachment also acts to protect Marine Corps Installations East (MCIEAST) investments by safeguarding the operational capabilities of the installation encroachment over-burden. The purpose of the Proposed Action is to minimize encroachment around MCAS Beaufort. The need for the Proposed Action is to preserve readiness, meet future mission requirements, and provide effective training capabilities.

Encroachment pressures that impede the ability to train include private development, environmental restrictions and competition for resources (waterfront, airspace, radio frequencies, etc.). These constraints may cause the loss of training areas required by the Marine Corps to maintain readiness. Such encroachments are a serious threat to Marine Corps combat readiness. It is essential that there be a strong ordinance capable of protecting the Air Installation Compatible Use Zone (AICUZ) footprints from incompatible development. Encroachment around MCAS Beaufort continues to increase. Resort development has driven other development in the area. Beaufort County remains one of the top five counties in South Carolina for population growth. This development is not compatible with military aircraft operations.

In 2006, Beaufort area local governments adopted the Airport Overlay District (AOD) which incorporated an AICUZ footprint zoning ordinance (City of Beaufort, Article 6, Section 6.7), to restrict future incompatible development from aircraft noise and accident potential within sensitive areas. However, restrictions made by zoning are limited in scope and the restrictions are not permanent. To achieve the highest levels of combat readiness, the Marine Corps must maintain rigorous and realistic training, testing, and operational programs, which often involve intensive land use. By keeping encroachment to a minimum, future mission requirements and provisions for effective training capabilities can be met. The acquisition of real estate interests in several parcels totaling up to 807.56 acres will prevent encroachment and maintain the operational integrity of MCAS Beaufort, by permanently limiting adjacent land uses that are incompatible with aircraft operations. The acquisition of interests on these parcels of land will ensure compatible land uses, and minimize the threat of lawsuits by future land owners.

The overall objectives of the Proposed Action are:

(1) Prevent future incompatible development in AICUZ NZ and APZ (in compliance with DoD Instruction [DoDI] 4165.57);

(2) Sustain the high level of community support for MCAS Beaufort;

(3) Improve and institutionalize MCAS Beaufort encroachment management (in accordance with MCO 11011.22A);

(4) Link state military assistance priorities with MCAS Beaufort encroachment management needs;

(5) Protect critical airspace, Military Operating Areas (MOAs), and training routes;

(6) Integrate Marine Corps land use with regional ecosystem goals;

(7) Preserve and enhance the natural resources of regional importance; and

(8) Maintain and improve surface water quality and protect/preserve wetlands (in compliance with Clean Water Act [CWA], and Coastal Zone Management Act [CZMA]).

In the Final Report, *Prototyping an Encroachment Control Plan for the US Marine Corps,* specific steps were analyzed regarding public safety and encroachment concerns, where upon one or more of the following goals was met and/or sought, regarding the Proposed Action to address the objectives listed above:

- Identify and prioritize incompatible parcels within the AICUZ footprint;
- Purchase parcels meeting prioritization criteria;
- Purchase development rights and/or rezone remaining parcels in AICUZ footprint ;
- Institute an installation encroachment management committee;
- Create a community outreach plan;
- Require military impact analysis on all development project applications in Beaufort communities; and
- Institute a development forum with the development community.

1.3 AGENCY COORDINATION AND REGULATORY COMPLIANCE

Various federal and state laws, rules, regulations, and policies are pertinent to implementation of the Proposed Action. A description of the Proposed Actions' consistency with these policies and regulations, as well as regulatory agencies responsible for their implementation, is presented in Chapter 5 of this EA.

1.4 PUBLIC INVOLVEMENT

As mandated by 40 CFR, 1501.4(b): "The agency shall involve environmental agencies, applicants, and the public, to the extent practicable, in preparing assessments required by Section 1508.9(a)(1)," the MCAS Beaufort is undertaking this EA, and public involvement is required as part of the analysis process. For this EA, public involvement includes notifying local, state, and federal agencies, elected officials, and the public about the Proposed Action and alternatives; presenting the potential impacts that could occur due to the Proposed Action and alternatives; soliciting agency and public comments and issues with the EA analyses; and ultimately informing the public of USMC conclusions and findings.

1.5 COMPLIANCE REQUIREMENTS

Under the Proposed Action, the following permits and plans would be required for compliance with applicable regulations:

- CZMA of 1972, Section 307 stipulates that federal projects that affect lands, waters, or natural resources of a state's coastal zone must be 'consistent to the maximum extent practicable, with the enforceable policies' of that state's federally approved coastal management plan (16 USC §1456).
- South Carolina Coastal Management Act (SCCMA) of 1977 establishes a cooperative program of coastal area management between local and state governments, and addresses the protection of historical and archaeological properties as well as other environmental issues. It also develops a regulatory system to manage development in critical areas, which include coastal waters, tidelands, and beach/dune systems.
- A variety of other ministerial permits and approvals from state and local agencies may be needed for future projects or for project execution. Appropriate permits will be obtained as required.

CHAPTER 2.0

PROPOSED ACTION AND ALTERNATIVES

2.1 PROPOSED ACTION LOCATION

Beaufort County lies within the southeastern part of South Carolina in the Atlantic Lower Coastal Plain. The Proposed Action site is located within several parcels of private land totaling up to 807.56 acres that surrounds MCAS Beaufort property in Beaufort County, SC. The MCAS Beaufort is approximately 60 miles southwest of Charleston, SC, and 40 miles northeast of Savannah, Georgia (Figure 2.1-1). MCAS Beaufort includes the main airfield complex, associated operational facilities, and installation housing areas.

An additional 438 acres of land is located outside of the perimeter fence of the Main Station. Most of these lands are west of US Highway 21 or northeast of the runways. The remaining 1,100 acres is comprised of the Laurel Bay family housing area, located 3 miles west of the Air Station. Laurel Bay contains approximately 1,500 family quarters, community support facilities, two primary schools (Pre-K to 2nd), three DoD elementary schools, one intermediate middle school (grades 3-8), and a recreation center. Most of the adjacent property around the main Air Station is zoned as light industrial, agricultural and silvicultural fields, and undeveloped land consisting of limited residential and forested habitat (MCAS 2006a). The Proposed Action evaluated in this EA lies on approximately 807.56 acres of private land parcels dispersed around the Air Station in areas located in APZs I and II, NZs II and III, and parcels within the immediate vicinity as shown in Figure 1.1-1.

2.2 ALERNATIVE 1: THE PROPOSED ACTION

The USMC proposes to permanently limit adjacent land uses that are incompatible with aircraft operations. This would be accomplished by acquiring real estate interests using either fee simple acquisition or purchase of restrictive easements in several parcels totaling approximately up to 807.56 acres of private land. This is needed to prevent encroachment, and prevent community actions that may encumber installation missions. Land parcels have been prioritized to facilitate the purchase of sensitive and large parcels first to preclude incompatible development such as hotels, residential resorts and multi-family housing. This EA has been prepared to analyze the potential impacts of actions associated with the property acquisition.

Under the Proposed Action the USMC would fulfill its mission to maintain the operational integrity of MCAS Beaufort by permanently limiting adjacent land uses that are incompatible with pilot training and aircraft operations. The USMC mission requires sufficient compatible land use surrounding the Air Station to protect the health, safety and welfare of civilians and military personnel. The acquisition of real estate interests on parcels of land within APZs ensures land use compatibility by pre-empting land uses that are discordant with aircraft operations.

Site Vicinity Map of MCAS Beaufort

MCAS Beaufort
Environmental Assessment
Beaufort County
Beaufort, South Carolina

Figure 2.1-1

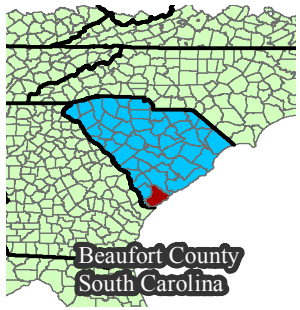
Legend

Project Boundary

N
W E
S

0 0.5 1 Miles

NAD83 SC State Plane Ft



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Source: ESRI Topo Basemap Date: 4/14/2011

A detailed description of the Proposed Action real estate elements including noise level for each property/area (noise impacts discussed in Ch. 3 and 4 of this EA), is provided in Section 2.2.1. A summary of the approximate size of the project elements is provided in Table 2.2-1.

Table 2.2-1 Approximate Size of Project Elements

Element		Area
Property	Number Of Properties	Acre(s)
Priority 1		
MCAS Credit Union Property	2	6.27
Pinckney Property	1	35.29
Battey-Wilson Property	1	190
Rahm Property	1	40
Trask Property #1	1	90
Trask Property #2	1	231*
Total		592.56
Tier 2		
Marshview MHP Property	1	33
Perryclear Property	3	3
Beechwood MHP Property	1	51
Total		87

*Trask Property #2 consists of purchase of 231 acres of a larger 446 acre tract.

2.2.1 Detailed Description of the Proposed Action

Currently identified parcels for acquisition in this EA total 592.56 acres of the allotted 807.56 acre budget. The parcel priority list was approved by MCAS Beaufort Commanding Officer, Colonel Snyder, on 22 July 2010. The parcels were selected based on the following criteria: NZ levels; APZs; safety; and inclusion in previous military construction (MILCON) projects that were excluded due to costs exceeding funding capacity. Other reasons that MILCON project exclusion would apply included current zoning classification, development potential, proximity to MCAS Beaufort and surrounding lands already under easement, and projected impacts of the Joint Strike Fighter (JSF) basing. Priority properties are those that MCAS Beaufort will endeavor to acquire using either fee simple purchase or purchase of restrictive easements. Tier 2 properties are those of interest that MCAS Beaufort would endeavor to acquire via the same methods, if the priority property purchases are not successful, or if any of the Tier 2 properties would be allowed for purchase.

2.2.1.1 Priority 1: MCAS Credit Union Properties

The MCAS Credit Union land acquisition consists of two water front parcels totaling 6.27 acres (R100 016 000 0311 0000; R100 016 000 0186 0000), at 3.13 acres and 3.14 acres, respectively. These properties are located in close proximity to MCAS Beaufort, directly north of the Air Station and west of Runway 05/23, and are both surrounded by property that was recently acquired through MILCON P424 (hence forth P424). There has been no agricultural use

identified for these properties. These properties are directly adjacent to each other in APZ I and NZ II, with a noise level within the 75 Day-Night Average Sound Level (DNL) range. The property is owned by a local bank as a result of foreclosure. The current zoning for the property is rural, allowing for a density of 1 dwelling unit per 3 acres.

Additionally, the parcels are located in an area that is projected to have an increase in noise levels resulting from the basing of the JSF. Acquisition of this property is important for consistency in the encroachment protection strategy by avoiding "doughnut holes" for property that is within a high noise area, and is contiguous to existing protected property.

2.2.1.2 Priority 2: Pinckney Property

The Pinckney land acquisition consists of two property locations totaling 35.29 acres (R100 016 000 0159 0000; R100 016 000 0150 000) at 33.5 acres and 1.79 acres, respectively, owned by Mrs. Louis Pinckney, and located directly north of the Air Station and to the northwest of Runway 05/23. It was on the original land acquisition list for P424, but could not be executed due to costs exceeding funding. It is contiguous to land that was recently acquired through P424. Agricultural use has been associated with this property. This property is located just outside of APZ I and between NZs I and II. The noise level for this area is within the 70-75 DNL range, within an area that is projected to have an increase in noise from the JSF. The current zoning is rural with an allowable density of 1 dwelling unit per 3 acres. Acquisition of this property is important for consistency in the encroachment protection strategy by avoiding "doughnut holes" for property that is within high noise area and is contiguous to existing protected property.

2.2.1.3 Priority 3: Battey-Wilson Property

The Battey-Wilson land acquisition consists of one property location (R200 004 000 005A 0000) at 190 acres on Lady's Island, owned by Colden R. Battey and Arthur T. Wilson. The land is located to the northeast of the Air Station and to the northeast of Runway 05/23. Agricultural use has been associated with this property. This property is located within APZ II and between NZs I and II, with a noise level within the 65-75 DNL range. This site was also in P424, but not executed due to costs exceeding funding. This property is currently zoned rural with an allowable density of 1 dwelling unit per 3 acres. The owner has refused efforts in the past to partner with the Beaufort County Rural and Critical Lands Program that would protect certain properties. The property is also located in close proximity to the proposed Northern Regional Bypass that would link Highway 21 to Lady's Island, without having to drive through downtown Beaufort. Should this project occur, development pressure will increase at this site.

2.2.1.4 Priority 4: Rahm Property

The Rahm land acquisition consists of 40 acres of waterfront property (R200 001 000 0001 0000), on Lady's Island and is owned by Hattie Rahm. The property is located to the northeast of the Air Station and to the northeast of Runway 05/23. Agricultural use has been associated with this property. This property is located within APZ II and NZ II. The noise level for this area is within the 70 DNL range. The property is currently zoned rural, with an allowable density of 1 dwelling unit per 3 acres. The property was also listed in the previous P424 project but could not be executed due to costs exceeding funds. The property is located in a fast growing area, and the waterfront access makes it even more desirable. Additionally, Lady's Island produces the majority of noise complaints for MCAS Beaufort and is an encroachment threat to the base.

2.2.1.5 Priority 5: Trask Property #1

The Trask land acquisition consists of 90 acres of property (R100 025 000 099A 0000), owned by Harold E. Trask and family. The property is located to the southwest of the Air Station and to the southwest of Runway 05/23.

Agricultural use has been associated with this property. This property is located within APZ II and between NZs I and 2. The noise level for this area is within the 65-75 DNL range. This parcel is currently zoned rural with a transitional overlay. The zoning allows for development under the traditional rural zoning density of 1 dwelling unit per 3 acres, but will allow for a much high suburban density of 2 dwelling units per acre, if the required support infrastructure is put in place. Sewer and water is readily available for this parcel. The location, size and zoning of this parcel made it rank first by MCAS Beaufort Command for acquisition in the list of Trask Properties.

2.2.1.6 Priority 6: Trask Property #2

The second Trask land acquisition consists of 231 acres of property (R100 020 000 119A 0000), which is a portion of a larger 446 acre tract of land adjacent to the Priority 5 parcel, also owned by the Trask family. It is located to the west of the Air Station and to the southwest of Runway 05/23. Agricultural use has been associated with this property. This property is located within APZ II and between NZs I and II with a noise level within the 65-75 DNL range. The current zoning of this land is light industrial. While there are many light industrial uses that are compatible with the AICUZ, the zoning also allows uses which are not desirable for the station, such as high density commercial or mixed use residential. The acquisition approach to this property would entail obtaining a restrictive easement that would still allow compatible light industrial uses, but would restrict residential and commercial uses that are not compatible.

2.2.1.7 Tier 2: Marshview Mobile Home Park (MHP) Property

The Marshview MHP land acquisition consists of one 33 acre property (R100 015 000 0089 0000), located northwest of the Air Station and west of Runway 05/23, within a rural area. There has been no agricultural use identified with this property. This property is located within APZ II and between NZs I and II. The noise level for this area is within the 65-70 DNL range.

2.2.1.8 Tier 2: Perryclear Property

The Perryclear land acquisition consists of three property locations (R100 022 000 0026 0000; R100 022 000 0029 0000; R100 022 000 0034 0000) at 1 acre each, located directly northeast of the Air Station and east of Runway 05/23, within a rural area. There has been no agricultural use identified with these properties. These properties are directly adjacent to each other in APZ II and NZ II. The noise level for this area is within the 65-70 DNL range.

2.2.1.9 Tier 2: Beechwood MHP Property

The Beachwood MHP land acquisition consists of one property location (R100 025 000 022F 0000) of 51 acres, located to the southwest of the Air Station and to the southeast of Runway 05/23, within property that is considered rural. There has been no agricultural use identified with this property. This property is located just outside of the transition zone and in NZ II. The noise level for this area is within the 65-70 DNL range.

2.3 ALTERNATIVES 2 AND 3

Alternatives to the Proposed Action must be considered in accordance with NEPA, CEQ regulations for implementing NEPA, Title 40 CFR Sections 1500-1508, and USMC procedures for implementing NEPA, as described in MCO P5090.2A. Only those alternatives determined to be reasonable relative to their ability to fulfill the purpose and need for the Proposed Action require detailed analysis. Table 2.3-1 provides the site selection criteria that meet the needs of the Proposed Action, by analyzing mission objectives in relation to any resources that may be affected.

Table 2.3-1 Narrowing Criteria for MCAS Beaufort AICUZ Land Acquisition

Criteria	Minimum
Training	Must not adversely impact USMC mission essential training.
Operational	Must provide the necessary area for military operational capabilities.
Land Use	Must be consistent with land use zones and zoning requirements.
Environmental	Must minimize impact on existing environmental resources including biological, cultural, air, geologic and hydrologic resources.
Objectives	Meets project objectives described in Section 1.3 of this EA.

2.3.1 Alternative 2: Employ Local Cooperative Efforts

Under Alternative 2 MCAS Beaufort would employ cooperative efforts between the installation and local jurisdictions to limit land use in the vicinity of the installation that are incompatible with aircraft operations. MCAS Beaufort would seek to restrict development rights on the subject properties through land use controls with local governmental authorities in Beaufort County. MCAS Beaufort would continue to work with local governmental authorities to promote regulatory controls to avoid conflicts between incompatible growth and military use, similar to the existing regional AOD ordinance described in Section 1.2. Only real property interests ensure that permanent compatible land uses would occur.

2.3.2 Alternative 3: The No Action Alternative

The No Action Alternative would be to continue operations without further land acquisition. Under the No Action Alternative encroachment would persist, thus continuing land uses that are incompatible with aircraft operations. The military operational capabilities would continue to be at risk, thus reducing effective training capabilities and future mission requirements. The health, safety, and welfare of affected military personnel and the public in the areas under analysis would be at risk under this alternative.

2.4 COMPARISON OF ALTERNATIVES

The Proposed Action and Alternative 2 meet the minimum requirements contained in Table 2.3-1. The CEQ regulations require an analysis of the No Action Alternative for all actions. Table 2.4-1 presents a comparison of the potential environmental consequences resulting from implementation of the Proposed Action (Alternative 1), Alternative 2, and No Action Alternative (Alternative 3).

Table 2.4-1 Comparison of Potential Environmental Consequences

Resource Area	Alternative 1 Proposed Action	Alternative 2 Cooperative Efforts	Alternative 3 No Action Alternative
Land Use			
Geological Resources			
Hydrology and Groundwater			
Surface Waters & Waters of the U.S.			
Floodplains & Wetlands			
Coastal Consistency			
Vegetation			
Wildlife & Aquatic Resources			
Threatened & Endangered Species			
Cultural Resources			
Air Quality			
Noise			
Hazardous Materials & Waste			
Health & Safety			
Socioeconomics			

Positive Impact
Negligible Impact
Minor Impact
Moderate Impact
Adverse Impact

3.0 CHAPTER

AFFECTED ENVIRONMENT

3.1 SCOPE OF ANALYSIS AND ANALYTICAL APPROACH

This chapter includes a description of existing environmental conditions within the Proposed Action area of MCAS Beaufort in Beaufort, SC. Information presented in this chapter serves as baseline data to identify and evaluate any potential impacts that could result from implementation of the Proposed Action or alternatives. Impacts evaluated are presented in Chapter 4 of this EA. NEPA, CEQ regulations, and USMC procedures for implementing NEPA specify that an EA focus only on those resource areas potentially subject to impacts from the Proposed Action and alternatives. In addition, the level of analysis should be commensurate with the anticipated level of impact. The affected environment is described for land use, geological, biological, water, air quality, cultural, noise, utilities and infrastructure, roadways and traffic, socioeconomics, environmental justice, and human health and safety resources.

3.1.1 Resources Evaluated But Not Carried Forward

As stated in 40 CFR 1500.1(b), "…NEPA documents must concentrate on the issues that are significant to the action in question, rather than amassing needless detail." Accordingly, potential impacts on several environmental resource areas were initially considered but determined not to be significant to all alternatives. In these instances, either the environmental resources were not present within the Proposed Action area or the Proposed Action would have a negligible impact on these environmental resources. Sustainability and greening, utilities and infrastructure, roadways and traffic, environmental justice and aesthetics and visual resources would not be affected irreversibly and will not need further evaluation. A brief explanation of the reasons these resources would not need further evaluation in this EA is provided below.

Sustainability and Greening- Executive Order (*EO)* 13423 (June 2007) *Strengthening Federal Environmental, Energy, and Transportation Management,* the requirements set forth under EO 13423 and the Sustainable Buildings Business Practice Policy Memorandum (November 7, 2007), dictate that all federal buildings are required to reduce their energy use by 3% annually through 2015, or by 30% by 2015. It is not anticipated that the Proposed Action would require construction or facility operations and maintenance elements. As such, no further evaluation is needed for this resource.

Utilities and Infrastructure- There are no elements of the Proposed Action that would contribute to or create changes to utilities or infrastructure. No further evaluation is needed for this resource.

Roadways and Traffic- There are no elements of the Proposed Action that would contribute to or create changes to roadways and traffic, as the Proposed Action does not require construction or facility operations. Those properties purchased in fee would be closed to the public, thus decreasing traffic to these areas. No further evaluation is needed for this resource.

Environmental Justice- EO 12898, Federal Actions to Address Environmental Justice in Minority and Low-Income Populations was issued to focus the attention of federal agencies on human health and environmental conditions in minority and low-income populations. This EO was implemented to ensure that if there were disproportionately high and adverse human health or environmental effects of federal actions on these populations, those effects would be identified and addressed. Acquisition of properties or those with restrictive easements surrounding MCAS Beaufort would not affect low-income or minority populations. E.O. 13045, *Protection of Children from Environmental Health Risks and Safety Risks* requires that federal agencies identify and assess environmental health and safety risks that might disproportionately affect children. The Proposed Action would not pose any adverse or disproportionate environmental health risks or safety risks to children living in the vicinity, and the population is limited to the hand-full of residents in these homes. No further evaluation is needed for this resource.

Aesthetics and Visual Resources- There are no elements of the Proposed Action that would contribute to or create changes to visually sensitive features. No further evaluation is needed for this resource.

3.1.2 Resources Evaluated and Carried Forward

A total of 20 resources were evaluated for potential impacts and 15 were carried forward for further analysis. This analysis considered the elements of the Proposed Action that would potentially impact a resource. Consideration was given to each resource and it was noted if the resource would be impacted. A description of each resource analyzed follows below.

3.2 LAND USE

3.2.1 Definition of Resource

Land use is defined as the natural conditions or human-modified activities occurring at a particular location. Human-modified land use categories include residential, commercial, industrial, transportation, communications and utilities, agricultural, institutional, recreational, and other developed use areas. Management plans, policies, ordinances, and regulations determine the type and extent of land use allowed in specific areas, and is often intended to protect specially designated or environmentally sensitive areas. The attributes of land use addressed in this EA include general land use patterns, land ownership, and special use areas. Land use components take into consideration other resource areas that may include noise, socioeconomics, cultural and natural resources, and recreational activity resources. The impact analysis for land use in this EA focuses on those areas affected by natural resource elements, safety, and military training and airfield operations.

3.2.2 Existing Conditions

3.2.2.1 Area Description of MCAS Beaufort

At MCAS Beaufort, aircraft operations constitute the largest land use activity, consisting of two cross-runways, parking aprons, taxiways, and associated Clear Zones and APZs. The majority of development at the Air Station has occurred in the core area, south of the cross-runway configuration. The core area has a mixture of land uses, which include aircraft operations, training, and maintenance, or utility uses adjacent to Runway 5/32. Much of the

remaining core area is occupied by medical, supply, or storage, administrative, community, personnel housing, or recreational land use (MCAS 2010).

3.2.2.2 Previous Historic Air Station Land Use

Prior to its acquisition by the military, the area now enclosed in MCAS Beaufort was a commercial airfield owned by Beaufort County. As a result of expanded military production, the United States required additional Atlantic Coast shore facilities for naval aircraft, which led the Commander of the Navy to approve the Beaufort County site on September 13, 1942, for the creation of a naval air station. Originally 1,357 acres, Naval Air Station (NAS) Beaufort was commissioned on June 15, 1943. NAS Beaufort became expendable at the close of World War II, and on April 1, 1946, the station was disestablished.

In 1954, the federal government reacquired the property and an additional 800 acres to develop an auxiliary landing field for MCAS Cherry Point, North Carolina. The Chief of Naval Operations designated the former NAS a Marine Corps Auxiliary Landing Field on January 1, 1955, and placed it under the administrative control of MCAS Cherry Point. The Beaufort facilities were elevated to the status of Marine Corps Auxiliary Air Station on June 30, 1955. At the conclusion of the Cold War in 1991, MCAS Beaufort had expanded from an initial 1,357 acres to more than 6,520 acres of land.

3.2.2.3 Military Operations

The mission of MCAS Beaufort is to provide support as an operation base for Marine Aircraft Group (MAG)-31. Continuous training is the focus of the seven F/A-18 Hornet fighter-attack squadrons. One Navy F/A-18 squadron also calls MCAS Beaufort home including other major tenant Fleet Marine Force units for combat services and support (MCAS 2007).

3.2.2.4 Airfield Operations

MCAS Beaufort has two runways for arrival and departure of air traffic. The primary runway is Runway 5/23; Runway 14/32 is the secondary crosswind runway. Primary Runway 5/23 supports 75 to 80% of flight operations. MCAS Beaufort provides airport control tower services to all aircraft operating below 2,500 feet (ft) above ground level (AGL), within a 5 mile (mi) radius of the Air Station. Approach and departure control and enroute services are provided to aircraft operating within the airspace delegated to MCAS Beaufort by the Federal Aviation Administration (FAA). The total annual aircraft operations fluctuate in response to the dynamic nature of influencing factors such as deployments, training requirements, and special exercises. The majority of baseline operations at MCAS Beaufort are pattern operations, which includes touch-and-go, Field Carrier Landing Practice (FCLP), and ground-controlled approach (GCA) patterns.

3.2.2.5 Adjacent Land Uses

The majority of Beaufort County's surface area is composed of tidal wetlands or open-water. Currently, about 9% of the county territory is developed, with another 33% of the total territory classified as "undeveloped." Some surrounding land uses include single-family residential, forested/natural, and agricultural. Land use along the major transportation corridors is primarily commercial. The land west of MCAS Beaufort, along and west of US Highway 21, is dominated by Beaufort County's principal industrial park (MCAS 2010).

3.2.2.6 Proposed Action Site

The Proposed Action sites would follow the land designations based on the criteria described in Section 3.2.2.7.

3.2.2.7 Land Use Plan Designations

Military aircraft operations and over flights have been continuous since 1961, and the MCAS Beaufort AICUZ safety footprint is part of the existing land use pattern in Beaufort County. The Air Station broadly participates in and influences local zoning, planning, and conservation efforts (MCAS 2010). The following objectives are considered vital to the accomplishment of effective resource management, and land use planning:

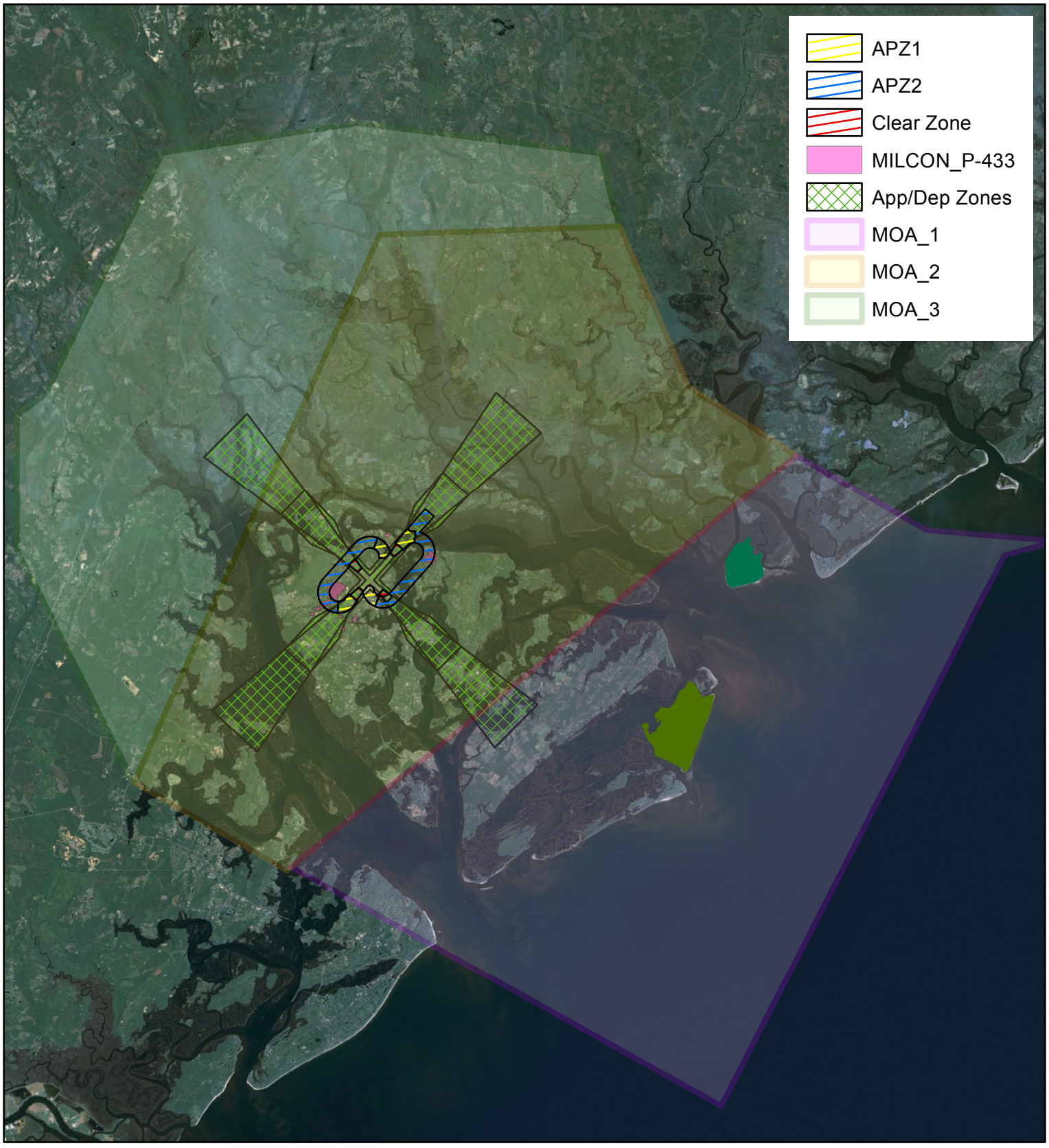
- Provide a long-range vision reflecting appropriate station infrastructure investment;
- Identify the installation's capacity to support new missions and growth;
- Incorporate all DoD planning criteria when considering land use and facility development, including Range Management Plans, encroachment studies, Integrated Natural Resource Management Plans (INRMP), and AICUZ;
- Optimize land and facility utilization;
- Identify potential land available for expansion;
- Identify significant problem areas that impact mission accomplishment and development initiatives; and
- Provide insight to address long-range development concerns.

All missions overland in the vicinity of MCAS Beaufort are confined to three adjoining MOAs (Figure 3.2-1) with strict operating procedures. MCAS Beaufort lies in the center of the MOAs. Beaufort MOA 2 overlays the Installation, and extends northeast to the town of Jacksonboro, and southwest to southern Beaufort County. This MOA is bordered on the southeast by the Beaufort MOA 1 and on the northwest by the Beaufort MOA 3. Figure 3.2-1 shows adjacent lands surrounding MCAS Beaufort, including the real estate interest parcels that lie within MOA 2 (MCAS 2003).

3.2.2.8 Land Use Plan

To determine land use compatibility for NZs and APZs, MCIEAST examined existing and planned land uses near the Installation. Land use compatibility analysis includes an evaluation of existing land uses. To assess existing land use compatibility with aircraft operations at MCAS Beaufort, NZs and APZs were overlaid on Beaufort County's existing land use map. Of the developed properties, residential land use comprises approximately 66% of the total existing land use area within MCAS Beaufort's noise contours, accounting for the majority of the incompatible lands (MCAS 2003). As shown in Figure 3.2-2, all of the Clear Zones are contained on MCAS Beaufort property. Both APZ I and APZ II extend beyond the Air Station into adjacent communities, with APZ II extending northeast into the Coosaw River and all Proposed Action properties lie within AOIs (MCAS 2010). APZ and Clear Zones are further defined in Section 3.10.2.1 to address land use compatibility in relation to potential hazards, with the following management objectives identified to address encroachment (Marstel-Day, 2005):

- Prevent future incompatible development in AICUZ NZs and APZ;
- Sustain a high level of community support for MCAS Beaufort;
- Improve and institutionalize MCAS encroachment management;
- Link state military assistance priorities with MCAS encroachment management needs; and
- Protect critical airspace, MOAs and training routes.



N
W E
S

0 1.5 3 6 9 12
Miles

Military Operating Areas

Figure 3.2-1

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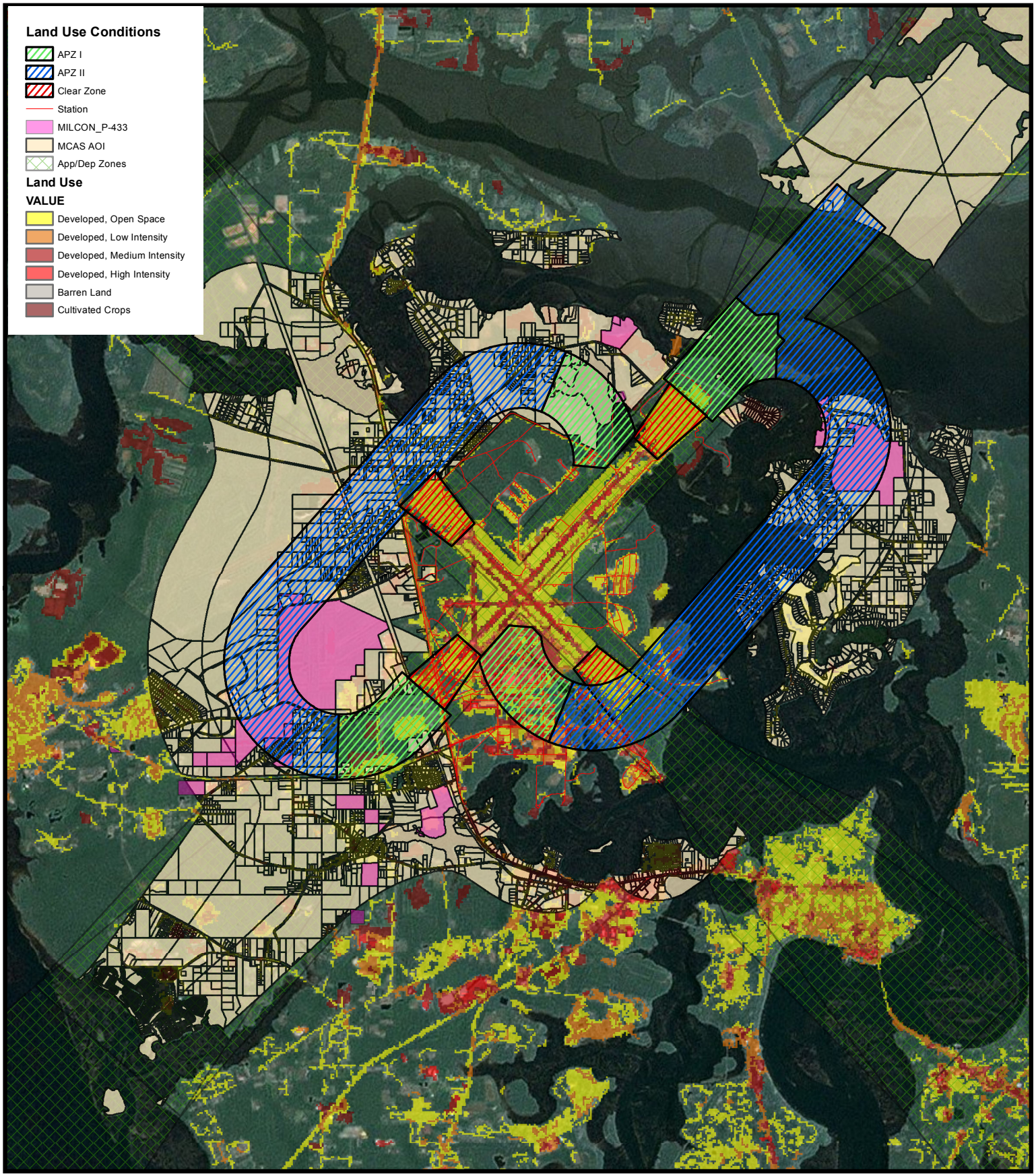

Land Use Conditions

Figure 3.2-2

N
W E
S

0 0.3 0.6 1.2 1.8 2.4 Miles

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3.3 GEOLOGICAL RESOURCES

3.3.1 Definition of Resource

Geological Resources are generally defined as the geology, soils, and topography of a given area. The geology of an area includes bedrock materials, mineral deposits, and fossil remains. The principal geologic factors influencing the stability of structures are soil stability and seismic properties. Soil refers to unconsolidated earthen materials overlying bedrock or other parent material. Soil structure, elasticity, strength, shrink-swell potential, liquefaction potential, and erodibility all determine the ability for the ground to support structures and facilities. Soils are typically described in terms of their type, slope, physical characteristics, and relative compatibility or limitations with regard to particular construction activities and types of land use.

Topography is typically described with respect to the elevation, slope, aspect, and surface features found within a given area. Long-term geological, seismic, erosional, and depositional processes typically influence the topographic relief of an area. The Alquist-Priolo Special Studies Zone Act of 1972 prohibits the construction of structures for human occupancy within 50 ft of an active fault.

3.3.2 Existing Conditions

3.3.2.1 Regional Geologic Conditions

Beaufort County is located in the Atlantic Coastal Plain portion of South Carolina. The Atlantic Coastal Plain consists of mostly seaward tilting marine sedimentary rocks, formed from ocean sediments deposited during the Late Cretaceous Period to present time. Most of the surface and near surface sediment deposits consist of limestone, shell, sand, and clay.

Proposed Action Site

3.3.2.2 Topography

MCAS Beaufort lies on parts of the Talbot and Pamlico terraces that are composed of unconsolidated marine sediments. The land is generally flat with broad ridges and shallow valleys. Land elevations at MCAS Beaufort range from mean sea level (msl) near the Broad and Beaufort Rivers to 37 ft msl (MCAS 2010).

3.3.2.3 Soils

Soil types for the Proposed Action areas consist of poorly drained soils, suitable for agriculture only through artificial drainage (e.g. via ditches and underground pipes). Specifically, MCAS Credit Union property consists of Coosaw loamy fine sand and Argent clay loam; Pickney property consists of Williman loamy fine sands; Battey-Wilson property consists of Coosaw loamy fine sand, Williman loamy fine sands, Yemassee loamy fine sand, Seabrook fine sand, Murad fine sand and Deloss fine sandy loam; Rahm property consists of Coosaw loamy fine sand and Williman loamy fine sands; Trask properties 1 and 2 consist of Ridgeland fine sand, Seabrook fine sand, Rosedhu fine sand, Deloss fine sandy loam, Baratari fine sand and Borrow pits; Marshview MHP property consists of Wando fine sand; Perryclear property consists of Coosaw loamy find sand and Bohicket association; and Beechwood MHP property consists of Seabrook fine sand, water; Yemassee loamy fine sand, Seewee fine sand and Capers association (USDA 2010).

3.3.2.4 Seismicity

MCAS Beaufort has a slight risk of being exposed to the impacts of an earthquake because of the proximity to the Charleston Seismic Area. No major earthquakes have occurred near MCAS Beaufort to date.

3.3.2.5 Mineral Resources

It is currently unknown if any mineral resources lie within the Proposed Action properties.

3.4 WATER RESOURCES

3.4.1 Definition of Resource

Water resources include surface and subsurface water and floodplains. Surface water includes all lakes, ponds, rivers, streams, impoundments, and wetlands within a defined area or watershed. Wetlands generally include swamps, marshes, bogs, and similar areas, which serve as a transition between terrestrial habitats and aquatic habitats. Floodplains are low, relatively flat areas that adjoin inland and coastal waters. Stormwater runoff is precipitation that falls onto surfaces, such as roofs, streets, or ground. Subsurface water, commonly referred to as ground water, is typically found in certain areas known as aquifers, whereupon these water resources are potentially available for consumption. Aquifers are areas of mostly high porosity soil where water can be stored between soil particles and within soil pore spaces.

The CWA of 1972 is the primary federal law that protects the nation's waters, including lakes, rivers, aquifers, and coastal areas. The primary objective of the CWA is to restore and maintain the integrity of the nation's waters. Jurisdictional Waters of the United States are regulated resources, and are subject to federal authority under Section 404 of the CWA. This term is broadly defined to include navigable waters (including intermittent streams), impoundments, tributary streams, and wetlands. Areas meeting the Waters of the United States definition are under the jurisdiction of the US Army Corps of Engineers (USACE).

3.4.2 Existing Conditions

Proposed Action Site

3.4.2.1 Hydrology

The Main Station, Laurel Bay and much of the surrounding areas abut substantial tidal marshes and rivers. The Environmental Protection Agency (EPA) classifies the watershed health at "3," which is described as having a less serious problem and low vulnerability to stressors such as pollutant loadings. No Section 303d listed waters abut the Installation. However, the Beaufort River, at channel marker 231, has been listed as Section 303d water for low dissolved oxygen. This location is downstream of the Main Station near the town of Beaufort. No Clean Water Action Plan under the CWA is required for the waters around MCAS (MCAS 2009).

3.4.2.2 Watershed and Drainage Characteristics

A total of 49 stormwater drainage basins are located throughout MCAS Beaufort. There are two manmade ponds and three major stormwater retention basins managed at MCAS Beaufort with many other smaller basins and swales throughout the Air Station (MCAS 2010). Waters within the surrounding area drain into Port Royal Sound and St. Helena Sound. All of these lands and waters are in the Broad-St. Helena Watershed (MCAS 2009).

3.4.2.3 Floodplains

The Federal Emergency Management Agency (FEMA) defines floodplains as areas subject to a 1% or greater chance of flooding in any given year. Floodplains are low, relatively flat areas adjoining inland and coastal waters. Extensive floodplain areas exist in the area because of its slight elevation above sea level and the relatively flat topographic relief of the land surface (MCAS 2009). All of the properties have been identified as being located within

the 100-year floodplain and are subject to flooding by storm surge with a Category 1 hurricane or greater (MCAS 2010).

3.4.2.4 Wetlands

Wetlands are considered transitional zones between terrestrial and aquatic environments. These areas are characterized by physical, chemical, and biological features indicative of hydric conditions. Wetlands serve as a valuable resource for groundwater recharge within the region, and are currently regulated by the USACE under Section 404 of the CWA of 1972. EO 11990, *Protection of Wetlands*, directs federal agencies to take action to minimize the destruction, loss, or degradation of wetlands on their property, and mandates review of proposed actions on wetlands through procedures established by NEPA. It requires that federal agencies establish and implement procedures to minimize development in wetlands. Wetlands generally include swamps, marshes, bogs, and similar areas.

The Main Installation of MCAS Beaufort was found to contain 187.64 acres of wetlands, specifically with 137.65 acres of federal jurisdictional wetlands. The remaining 49.99 acres are considered non-jurisdictional wetlands. Of the 137.65 acres of jurisdictional areas, 18.20 acres are considered to be jurisdictional borrow pits. Most of the wetlands associated with Laurel Bay Housing Area consist of critical areas associated with the Broad River. The remaining wetlands consist of 6.87 acres of jurisdictional freshwater areas connected to the critical areas of the Broad River. Agricultural Out-lease properties located between the Main Installation and Laurel Bay Housing area consist of agricultural fields with areas that are considered to be Prior-Converted (PC). PC areas are historic wetlands that have been converted to upland areas through ditching and draining activities to allow for past agricultural uses. Eight different wetland habitat types were identified within these areas and are listed below (MCAS 2006b).

Non-Alluvial Swamp Forest (80.74 ac)

Pocosin (52.92 ac)

Maritime Wetland Forest (9.00 ac)

Small Stream Forest (26.39 ac)

Depression Meadow (7.31 ac)

Critical Area [Salt Marsh/Salt Shrub Thicket] (21.35 ac)

Jurisdictional Pond (10.63 ac)

Upland Borrow Pit (11.65 ac)

3.4.3 Water Quality

Proposed Action Site

3.4.3.1 Surface Water

The only permanent freshwater on the Installation consists of two managed ponds and two stormwater retention basins. With the exception of these small manmade ponds, all surface freshwater on the Installation is intermittent in nature even though some streams and ponds only go dry during extreme drought. The surrounding areas drain into the Coosaw River and/or Beaufort River, which ultimately drains into Port Royal Sound.

3.4.3.2 Groundwater

Two groundwater aquifers are present in the region: a shallow unconfined aquifer and a deep confined aquifer (Floridian Aquifer). The rate of groundwater flow in the shallow aquifer generally ranges from 0.2 to 1.2 ft per day. This aquifer is the most important source of groundwater in the low country of South Carolina, with the surrounding area around MCAS Beaufort identified as a recharge zone (MCAS 2010).

3.4.4 Coastal Consistency

The CZMA requires that a federal agency (when it proposes any activity inside or outside of the coastal zone that will have any reasonably foreseeable effect on any coastal uses or natural resources within the coastal zone) provide the State of South Carolina with a Consistency Determination. In accordance with Section 307 of the CZMA, MCAS Beaufort has the opportunity to demonstrate how the Proposed Action and alternatives comply, to the maximum extent practicable, with the enforceable policies of the state's approved coastal management program. Section 923.21 of the Coastal Zone Management Development and Approval Regulations defines the federal requirements for Geographic Areas of Particular Concern (GAPCs). Special management consideration will be given to those areas designated as GAPCs through the process of issuance of permits in the critical areas, and review and certification of permits in the coastal zone. A project would be strongly discouraged or the permit conditioned if the project would interrupt, disturb or otherwise significantly impact the priority uses of the designated area. A Negative Determination would be prepared for a proposed activity that does not have the potential to affect the state's coastal zone or any of the coastal resources (SCDHEC 2010).

3.5 BIOLOGICAL RESOURCES

3.5.1 Definition of Resource

Biological resources include native or naturalized plant and animal species, and the habitats within which they occur. Plant associations are referred to generally as vegetation, and animal species are referred to generally as wildlife. Habitat can be defined as the resources and conditions present in an area that support a plant or animal. Although the existence and preservation of biological resources are intrinsically valuable, these resources also provide aesthetic, recreational, and socioeconomic values to society. For the purpose of this EA, these resources focus on species or vegetation types that are important to the function of the surrounding ecosystem, are of societal importance, or are protected under federal or state laws or statutes. These resources are divided into three categories: vegetation, wildlife, and special-status species, the latter including state and federally listed threatened or endangered species, and other sensitive species.

3.5.2 Existing Conditions

The description of existing conditions applies to the surrounding area, (i.e., areas directly or indirectly affected by the Proposed Action).

Proposed Action Site

3.5.2.1 Vegetation

Managed pine forest is the dominant habitat found on the Installation and surrounding areas, referred to as either pine flatwoods or pine savannah. The general area surrounding the subject property consists of agricultural and forested rural property containing a mix of agricultural and rural private residential uses. The agricultural property is not currently used for crop production, but is tilled periodically to control unwanted vegetation growth. Other areas that are not currently tilled are comprised of a mixed pine-hardwood stands.

Invasive Species

Species can be categorized as invasive, exotic, and native, and/or native and invasive. Invasive species are alien species whose introduction does, or is likely to, cause economic or environmental harm or harm to human health. In natural areas, the definition of invasive species is expanded to include aggressive plants that produce a significant change in terms of composition, structure, or ecosystem functions. An exotic species is defined as a non-indigenous

or non-native species that was either purposefully or accidentally introduced into an area outside its natural range. Table 3.5-1 identifies species that occur on or near MCAS Beaufort and surrounding areas, and are considered exotic or invasive (MCAS 2006a).

3.5.2.2 Wildlife

Wildlife includes all native and naturalized invertebrate and vertebrate species of animals. This section focuses on common and typical species, as well as those of general interest and importance to the ecosystem. Special-status species are discussed in more detail in Section 3.5.2.3. Nearly all of the bird species that occur are protected under the Migratory Bird Treaty Act (MBTA), and are given special consideration under EO 13186, Migratory Bird Conservation.

Table 3.5-1 Invasive Species

Mimosa (*Albizia julibrissin*)	Common reed (*Phragmites australis*)	Chinaberry (*Melia azedarach L.*)	Wisteria (*Wisteria floribunda*)
Giant Cane (*Arundo donax*)	Saltcedar (*Tamarisk sp.*)- a large shrub or small tree	Camportree (*Cinamomum campora L.*)	
Chinese tallow or popcorn tree (*Sapium sebiferum*)	Misc. aquatic weeds (*Eichhornia spp.* and *Alternanthera spp.*	Thorny Olive (*Elaegnus pungens*)	
Chinese privet (*Ligustrum sinese*)	Rattlebox (*Sesbania punicea*)- a deciduous shrub or small tree	Nandina (Nandina domestica)	

Terrestrial Wildlife

The diversity of habitats found within MCAS Beaufort supports a wide variety of terrestrial wildlife. The most common large mammal on the Installation and surrounding area is the white-tailed deer. Natural resource management actions at MCAS Beaufort directly benefit the military mission through efforts such as reduction of deer-aircraft strikes through intensive deer herd management, providing enhanced access to forested areas with forestry roads, and providing improved training areas. MCAS Beaufort manages approximately 2,000 acres of forestland. Common amphibians found in the area include slimy, dwarf, and mole salamanders; green tree frogs; spring peepers; ornate chorus frogs; Southern, Eastern spadefoot, and Eastern narrowmouth toads; and Southern leopard frogs. Common reptiles include turtles; green anoles; Southeastern five-lined, broad head, and ground skinks; Eastern glass lizards; black racers; and banded water snakes (MCAS 2009).

Birds

MCAS Beaufort contains habitat that supports a wide variety of migratory birds because of its coastal position as a major migratory route, and includes species such as shorebirds, waterfowl, wading and diving birds, and generalist water birds (i.e., gulls). Species occurrence varies greatly with differing habitat types and season (MCAS 2010).

BASH

Under the Bird/Wildlife Aircraft Strike Hazard (BASH), MCAS Beaufort has an active BASH program and Bird Hazard Working Group. This group is tasked with collecting, compiling and reviewing data on bird strikes; identifying and recommending actions to reduce hazards; recommending changes in operational procedures; preparing informational programs for aircrews; and serving as a point of contact for off-Station BASH. Special purpose permits may be requested and issued that allow for the relocation or transport of migratory birds for management purposes.

3.5.2.3 Special-Status Species

The INRMP for MCAS Beaufort lists 64 special-status species that occur or could potentially occur on the Air Station or in the surrounding waters. Only five threatened and endangered (T&E) species have been confirmed on the Station. They include the American alligator, which is only listed due to its similarity of appearance to other crocodilians, and is fairly common in the permanent and semi-permanent freshwater wetlands in the area, and the wood stork and bald eagle (delisted). Also included is the southeastern myotis which has been captured at Laurel Bay by a state biologist and one federally listed plant species, Pondberry, which grows in colonies at the upper edge of frequently flooded areas of pine flatwoods and identified at three distinct locations (MCAS 2009).

3.6 CULTURAL RESOURCES

3.6.1 Definition of Resource

Cultural Resources include prehistoric resources, traditional cultural places (or properties), and historic resources. Prehistoric resources are physical properties resulting from human activities that predate written records and are generally identified as archaeological sites. Traditional and cultural places are tangible places that are important in maintaining the cultural identity of a community or group. Historic resources include resources that postdate the advent of written records in a region. Historic properties are significant cultural resources that meet one or more criteria for eligibility for nomination of the resource to the National Register of Historic Places (NRHP). The National Historic Preservation Act (NHPA) requires federal agencies to consider the preservation of historic and prehistoric resources. Section 106 of the NHPA mandates that all federal agencies take into account the effects of their undertakings (actions) on historic/prehistoric resources, and to afford the Advisory Council on Historic Preservation a reasonable opportunity to review and comment on any action that may affect properties that are listed, or are eligible for listing in the NRHP.

3.6.2 Existing Conditions

3.6.2.1 Prehistory

The prehistory of the Coastal Plain region can be divided into three major periods of occupation: Paleo-Indian, Archaic and Woodland (Early, Middle and Late). For the Coastal Plain region, the lack of identified Paleo-Indian sites in this region is probably the result of rising sea levels, submerging many sites in riverine basins and offshore locales. Settlement models propose two site types of subsistence: regional residential bases (where subsistence patterns were based spatially and temporally according to productivity decline, and characterized by frequent short distance residential moves and frequent relocation) and locations (based on aquatic resources [Burtchard 2007)]).

3.6.2.2 History

As early as 1514, initial European exploration of the coastal Southeast involved Spanish forays into lands that would become South Carolina, Georgia, and Florida. During Queen Anne's War (1702-1713), the European population around Port Royal grew and a small community was founded in 1711. The settlement was named Beaufort after Henry Somerset, the Duke of Beaufort, one of the proprietors. During the 18th century, large plantations were established on Port Royal and the neighboring Sea Islands. The Civil War erupted in April 1861 with the bombardment of Fort Sumter in Charleston Harbor by Confederate forces, and in November 1861, federal forces captured and subsequently occupied the Sea Islands around Port Royal Sound. The Civil War virtually destroyed the antebellum economic system.

Prior to its acquisition by the military, the area now enclosed in MCAS Beaufort was a commercial airfield owned by Beaufort County. NAS Beaufort was commissioned in 1943. The Beaufort facilities were elevated to the status of Marine Corps Auxiliary Air Station on June 30, 1955. During the 1960s and early 1970s, additional operational, maintenance, and community support facilities were constructed both within the main air station complex and at Laurel Bay. MCAS Beaufort expanded from its initial 1,357 acres to enclose more than 6,520 acres of land.

3.6.2.3 Cultural Resources in the Area of Potential Effect (APE)

No federal action has occurred or is expected to occur on the subject property that would require compliance with historic preservation regulations. Any Proposed Action to develop the subject parcel will warrant consideration of potential historic property impacts and the undertaking of cultural resources investigations.

Federally Recognized Tribes

Several federal laws and regulations exist that require consultation with federally recognized tribes. The Presidential Memorandum on Government-to-Government Relations with Native American tribal governments, signed on April 29, 1994, directed executive branch departments and agencies to coordinate and consult with American Indian tribes at the appropriate levels through established tribal government procedures. A number of federally recognized tribes have historical, or ancestral, ties to the area that is now MCAS Beaufort, Laurel Bay and Townsend Bombing Range and are listed below (MCAS 2007):

- Catawba Tribe of South Carolina;
- Cherokee Nation of Oklahoma;
- United Keetoowah Band of Cherokee Indians of Oklahoma;
- Chickasaw Nation of Oklahoma;
- Alabama-Quassarte Tribal Town of Creek Nation of Oklahoma;
- Kialegee Tribal Town of the Creek Indian Nation of Oklahoma;
- Choctaw Nation of Oklahoma;
- Muskogee (Creek) Nation of Oklahoma;
- Poarch Band of Creek Indian of Oklahoma;
- Thlopthlocco Tribal Town of the Creek Nation of Oklahoma;
- Shawnee Tribe;
- Seminole Tribe of Florida, Dania, Big Cypress and Brighton Reservations;
- Absentee-Shawnee Tribe of Indians of Oklahoma;
- Eastern Shawnee Tribe of Oklahoma; and
- Tuscarora Nation of New York

3.7 AIR QUALITY

The South Carolina Department of Health and Environmental Control (SCDHEC) are responsible for monitoring air quality and reporting to the EPA. The EPA designates all areas of the United States in terms of having air quality better (attainment) or worse than (nonattainment) National Ambient Air Quality Standards (NAAQS). Emission thresholds associated with the Clean Air Act (CAA) conformity requirements are the primary means of assessing the air quality impacts associated with implementation of a Proposed Action. The Air Quality Control Region (AQCR) for MCAS Beaufort is the Savannah, GA–Beaufort SC Interstate AQCR (40 CFR Part 81.113), and includes the South Carolina counties of Beaufort, Colleton, Hampton, and Jasper; and the Georgia counties of Bryan, Bulloch, Candler, Chatham, Effingham, Evans, Liberty, and Tattnall.

Federal agencies are addressing greenhouse gas (GHG) emissions by reductions mandated in federal laws and EOs. In an effort to reduce energy consumption, reduce dependence on petroleum, and increase the use of renewable energy resources in accordance with the goals set by EO 13514 and the Energy Policy Act of 2005, the

Marine Corps has implemented a number of renewable energy projects and continues to promote and install new renewable energy projects (Federal Register 2009).

In addition, on October 30, 2009, the EPA published 40 CFR Part 98, which requires mandatory reporting of GHGs from large GHG emitters, fossil fuel suppliers, and industrial gas suppliers. The affected environment comprises the counties in which emissions would be generated from activities associated with aircraft operations and maintenance, demolition/construction, and vehicle commuting.

3.7.1 Definition of Resource

3.7.1.1 Air Quality Standards

Air quality is defined as the ambient air concentrations of specific criteria pollutants determined by the EPA to be of concern to the health and welfare of the general public. These criteria pollutants include ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulate matter less than or equal to 10 microns in diameter (PM_{10}), and lead. Both South Carolina and the federal government have established NAAQS for these criteria pollutants.

3.7.2 Existing Conditions

Proposed Action Site

3.7.2.1 Climate

The average maximum annual temperature in Beaufort, SC is 76.3 degrees Fahrenheit (°F), and the average minimum annual temperature is 56.7°F. January is the coldest month with an average maximum temperature of 60.7°F and average minimum temperature of 39.9°F. July is the warmest month with an average daily maximum temperature of 90.3°F. There is no wet or dry season, and no month averages less than 2 inches of precipitation anywhere in South Carolina (MCAS 2010).

3.7.2.2 Emissions

Emissions are often characterized as being "primary" or "secondary" pollutants. Fine particulate matter refers to particulate matter with an aerodynamic diameter of 2.5 microns or less ($PM_{2.5}$) and arises from a variety of fugitive sources. Mobile sources, ground support equipment (GSE), and personally owned vehicles (POVs) would be the primary sources contributing to pollutant emissions. Since these properties are expected to be managed areas returning to a natural state, the only emission sources would be those resulting from land management of the properties such as a prescribed burn or from motor vehicles. All prescribed burns have been set in accordance with established guidance established by the South Carolina Forestry Commission (SCFC) to alleviate both air quality and safety concerns. Motor vehicles would be a very minor mobile source since vehicle traffic on the properties would be infrequent, and only to the extent as to be able to monitor the natural resource.

3.7.2.3 Regional Conditions

Presently, the regulatory area around MCAS Beaufort is in attainment for all NAAQS pollutants, and therefore, *de minimis* does not apply. These standards identify the maximum allowable concentrations of criteria pollutants that are considered safe to protect human health and welfare. The SCDHEC has similar ambient air quality standards as the NAAQS except for total suspended particulates [TSP] (also referred to as Particulate Matter) and gaseous fluorides, expressed as hydrogen fluoride. Table 3.7-1 provides the air quality standards for these two pollutants not to be exceed more than once per year.

3.7-1 South Carolina Ambient Air Quality Standards

Pollutant[a]	Averaging Time	Primary
TSP	Annual Geometric Mean	75 micrograms per cubic meter (µg/m^3)
Hydrogen fluoride	12 Hours	3.7 µg/m^3
	24 Hours	2.9 µg/m^3
	1 Week	1.6 µg/m^3
	1 Month	0.8 µg/m^3

3.8 NOISE

3.8.1 Definition of Resource

This section is a general discussion of the noise metrics associated with the Proposed Action and alternatives. Noise is considered to be unwanted sound that interferes with normal activities or otherwise diminishes the quality of the environment. When describing sound and its effect on a human population, A-weighted (dBA) sound levels are typically used to account for the response of the human ear. The decibel (dB) is used to measure sound level; a sound level of 0 dB is approximately the threshold of human hearing, and is barely audible under extremely quiet listening conditions. Normal speech has a sound level of approximately 60 dB; sound levels above 120 dB begin to be felt inside the human ear as discomfort.

Although exposure to very high noise levels can cause hearing loss, the principal human response to noise is annoyance. The response of different individuals to noise events varies. Response is influenced by several factors: the type of noise, perceived importance of the noise, its appropriateness in the setting, time of day, type of activity during which the noise occurs, and sensitivity of the individual. The Federal government supports conditions free from noise that threaten human health and welfare and the environment.

3.8.2 Existing Conditions

It is the Marine Corps policy to adhere to all FAA regulations and Office of the Chief of Naval Operations Instructions (OPNAVINST) regarding minimum safe altitudes and noise abatement. Marine Corps personnel are sensitive to the effects of noise on the Air Station and surrounding communities, and continue to take all steps necessary to reduce aircraft noise impacts on the general population.

Noise inquiries are received by MCAS Beaufort's Public Affairs Office where they are logged, and information is collected from the caller concerning the time and location of the inquiry. MCAS Beaufort analyzes the inquiry by reviewing the information with Station Air Traffic Control, to determine if there is a correlation between operations originating from MCAS Beaufort and the geographic area. The noise environment in the vicinity of the subject properties are primarily affected by flight operations at MCAS Beaufort.

In 2007, five inquiries were received, in 2008 and 2009, 18 inquiries were received each year, and in 2010, 58 inquiries were received. The baseline noise environment used for MCAS Beaufort modeling are those recorded in the February 2003 AICUZ Report, and were further analyzed in the JSF EIS. Under baseline conditions, 1,786 acres supporting low density residential areas (i.e., sensitive land uses) are found within NZ III. Low density residential land uses would be considered incompatible under the AICUZ Program guidelines. No other major sources of noise are known in the vicinity beyond typical suburban residential noises (MCAS 2010). As previously identified in Section 2.2.1, all properties are located within NZs I and II with a DNL range between 65 and 75. Based on noise compatible land use guidelines from AICUZ Program Procedures for DoN (OPNAVIST 11010.36C and MCO 11010.16), noise impacts within most of the Proposed Action properties have a moderate impact, requiring some land use controls.

Other noises generated in the vicinity of both tracts under consideration occur predominately from motor vehicles, farming, timber harvesting, and recreational use of the properties, which is typical given the local surrounding environment.

3.9 HAZARDOUS MATERIALS AND WASTE

3.9.1 Definition of Resource

3.9.1.1 Hazardous Materials and Waste

Hazardous materials are chemical substances that pose a substantial hazard to human health or the environment. In general, these materials pose hazards because of their quantity, concentration, physical, chemical, or infectious characteristics. The Resource Conservation and Recovery Act (RCRA) 42 USC 6903[5] defines a hazardous waste as a solid waste, or combination of solid waste, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may: 1) cause, or significantly contribute to, an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness; or 2) pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, disposed of, or otherwise managed.

Hazardous substances are regulated under several federal programs administered by the EPA, including the Comprehensive Environmental Response Compensation and Liability Act (CERCLA), Emergency Planning and Community Right-to-Know Act (EPCRA), Toxic Substances Control Act (TSCA), and RCRA. DoD installations are required to comply with these laws along with other applicable federal, state, and DoD regulations, as well as with relevant EOs.

3.9.1.2 Toxic Substances

The promulgation of TSCA (40 CFR Parts 700-766) represented an effort by the Federal government to address chemical substances and mixtures that may present unreasonable risk of personal injury or health of the environment. Toxic chemical substances regulated by EPA under TSCA include asbestos and lead, which are evaluated in the most common forms found in buildings, namely asbestos-containing materials (ACM) and lead-based paint (LBP). It is currently not known if any ACMs or LBPs exist within the property structures or grounds.

3.9.2 Existing Conditions

3.9.2.1 Hazardous Materials and Wastes

MCAS Beaufort has procedures in place for purchasing, receiving, use, reuse, recycling, and final disposal of hazardous materials used on the installations. Hazardous wastes are managed through the Joint Hazardous Material Minimization Center (JHC) Natural Resources and Environmental Affairs Office (NREAO), in accordance with the Air Stations' RCRA Part B/Subpart X permit from the EPA. Common hazardous materials include petroleum, oils and lubricants (POLs), solvents and thinners, caustic cleaning compounds and surfactants, antifreeze, acids and corrosives, adhesives, paints (including enamels, lacquers, and polyurethane coatings), fungicides, and batteries. Hazardous materials are purchased, stored, managed, used, and disposed of in compliance with applicable health, safety, and environmental regulations and in such a manner as to minimize the potential for spills and impacts to the land and existing facilities.

3.9.2.2 Contaminated Sites

Proposed Action Site

It is currently unknown if any identified hazardous wastes or contaminated sites exist within the Proposed Action properties. An Environmental Condition of Property (ECP) assessment will be conducted as appropriate at each site, to identify any potential hazards.

3.10 HUMAN HEALTH AND SAFETY

3.10.1 Definition of Resource

Health and safety includes consideration of any activities, occurrences, or operations that have the potential to affect the well-being, safety, or health of workers or members of the general public. Risks to human health are evaluated for normal operations, facility accidents, surface danger zones (SDZ) associated with small arms training ranges, construction activity hazards, and off-duty recreational activities. For worker safety, the boundary of the immediate work location defines the region of influence. This would limit the area of concern (AOC) to a very small area that would never extend beyond the boundaries of the DoD installation, lands or range. For visitor safety, the location is defined within the same space confines for the associated project. The AOC would vary depending on the nature of the operation, but may extend for many miles from the source of the hazard. This EA focuses on worst-case accident scenarios.

3.10.2 Existing Conditions

3.10.2.1 Baseline Conditions at MCAS Beaufort

Emergency and Mishap Response: MCAS Beaufort maintains detailed emergency and mishap response plans to react to an aircraft accident. These plans assign agency responsibilities and prescribe functional activities necessary to react to major mishaps, whether on or off station. Response would normally occur in two phases. The initial response focuses on rescue, evacuation, fire suppression, safety, elimination of explosive devices, ensuring security of the area, and other actions immediately necessary to prevent loss of life or further property damage. The Proposed Action areas would provide a buffer between the APZ and surrounding public lands. Most of the surrounding properties sit within the APZs as shown in Figure 1.1-1.

Accident Potential Zones: APZs were developed to identify areas of accident potential. Studies have shown that most aircraft mishaps occur on, or near, the runway or along the centerline of the runway, diminishing in likelihood with distance. APZs do not reflect the possibility of an accident, just the area where one has a high likelihood of occurring should one occur. Land use compatibility and general guidance from AICUZ Program Procedures for DoN (OPNAVIST 11010.36C and MCO 11010.16) define specific areas surrounding the Air Station to address human health and safety of military personnel and the public. APZs are divided into 3 zones:

- Clear Zones – Extends 3,000 feet beyond the runway with highest potential for accidents, and should remain undeveloped;
- APZ I – Extends 5,000 feet beyond the Clear Zone, with the next highest potential for accidents relative to the clear zone; and
- APZ II – Extends 7,000 feet beyond APZ I, which has a measurable potential for aircraft accidents relative to the clear zone.

Permanent structures are incompatible in the Clear Zone and residential development is discouraged in the APZs. Structural limitations are dictated through application of "imaginary surfaces criteria" specified in applicable FAA and Navy orders. In general, no above ground structures are permitted in the primary surface and Clear Zone areas. Certain land uses (i.e. noise sensitive) are also incompatible within both the Clear Zone and APZs.

Bird/Wildlife Aircraft Strike Hazards (BASH): The intent of the MCAS Beaufort BASH Reduction Plan is to reduce BASH issues at the Air Station by creating an integrated hazard abatement program through awareness, avoidance, monitoring, and actively controlling bird and animal population movements. Procedures outlined in the BASH Plan include monitoring the airfield for bird and wildlife activity, issuing bird hazard warnings, initiating bird avoidance procedures when potentially hazardous bird activities are reported, and submitting BASH reports for all incidents.

3.10.2.2 Proposed Action Site

Recreational Activities: Much of the property is currently vacant, and is either current or former agriculturally cultivated property. No known recreational activities take place on the property with the possible exception of hunting. Since the properties are anticipated to return to their natural state, the properties would support recreational hunting. The hunting program is managed by the MCAS NREAO, and it would be expected that any recreational hunting would also continue to be managed by NREAO.

3.11 SOCIOECONOMICS

3.11.1 Definition of Resource

Socioeconomics describes the basic attributes and resources associated with the human environment, particularly population, housing, and economic activity. Economic activity typically encompasses employment, personal income, and industrial growth. The project area for socioeconomics is defined as the area in which the principal effects arising from implementation of the alternatives are likely to occur. Each alternative has the potential to cause socioeconomic impacts to the communities around the Air Station through various changes. The region of influence for socioeconomics includes those cities and counties impacted by service industries, tourism and employment revenue as well as in communities where personnel increases or decreases would occur from the Proposed Action.

3.11.2 Existing Conditions

The economic base of Beaufort County is largely dependent on the military, service industries, tourism, and the retirement and vacation home industry. The Beaufort County Comprehensive Plan notes that MCAS Beaufort is one of the top employers in the area with the military contributing to over 50% of the economy north of the Broad River. MCAS Beaufort is a major contributor to the health of the region's economy, providing tens of millions of dollars in FY09 toward construction programs ($33 million), salaries to military and civilian personnel ($485 million), and for purchase of utilities, contributions, health care and supplies ($118 million) in the Beaufort area and statewide, to name a few.

3.11.2.1 Demographics

In FY08 MCAS Beaufort employed 4,190 military personnel (all services) and 583 civilian personnel. Total dependents associated with these personnel are estimated at 11,455 (using an average accompaniment factor of 2.4). Between 1990 and 2000 the population for the City of Beaufort and Beaufort County significantly increased by 33.6% and 39.9%, respectively (Table 3.11-1). The population of the City, and County of Beaufort and the state increased by 11.99%, 28.3% and 1.4% respectively, from 2000 to 2010. The population of the City of Beaufort and Beaufort County is expected to continue to grow through 2020, at a rate of 9.9% and 19.3% respectively.

3.11-1 Beaufort Regional Population Trends

Geographic Area	1990	2000	Percent Change (1990-2000)	2010	Percent Change (2000-2010)	July 2020 Projected Population	Projected Percent Change (2010-2020)
City of Beaufort	9,576	12,789	33.6	14,317	11.99	15,736	9.9
Beaufort County	86,425	120,937	39.9	155,215	28.3	185,220	19.3
South Carolina	3,486,703	4,012,703	15.1	4,561,242	1.4	5,020,400	10.1

Source: US Census Bureau 2010a; City of Beaufort Comprehensive Plan Update

In comparison, the state population is expected to increase by 10.1% during the same time frame (US Census Bureau 2010).

3.11.2.1 Economic Characteristics

The MCAS Beaufort had an estimated $186.2 million direct economic impact to the regional area in 2009. Construction contracts and materials, supplies and services totaled $115.4 million, of which $24.2 million went to top ten companies in South Carolina. Additionally, more than $6.5 million was provided for encroachment and environment protection projects. This results in further indirect economic benefits to the region as dollars move through the economy.

3.11.2.2 Employment Sectors

In 2000 and 2008, the largest employment sector in Beaufort County was the educational services, health care, and social assistance sector, which represented 17.0% of the civilian labor force. From 2000 to 2008 the labor force in Beaufort County within the Armed Forces decreased from 9.5% to 6.3%, respectively. In 2000, the Armed Forces represented 20.1 % of the labor force in the City of Beaufort. The affected environment had a higher percentage of the labor force in the Armed Forces than the state (1.2% and 1.0% in 2000 and 2008, respectively). In 2008, MCAS Beaufort employed 4,190 military and 583 civilian personnel. In 2009, MCAS Beaufort employed 4,047 military and 667 civilian personnel.

3.11.2.3 Income and Unemployment

Table 3.11-2 presents median household income and unemployment rates for the City of Beaufort, Beaufort County, and South Carolina. In 2000 and 2008, Beaufort County had a greater median household income than the state as a whole. The median household income for the City of Beaufort was lower than the state and Beaufort County in 2000. From 2000 to 2008, both Beaufort County and the state median household income increased by 16% and 17%, respectively. The FY09 economic impact for Beaufort County provided more than $249,630,650 toward active and retired military salaries, and more than $236,014,639 toward civilian salaries.

In 2000, the City of Beaufort had a higher unemployment rate of those 16 years and older in the civilian workforce than Beaufort County and South Carolina as a whole. In 2000, Beaufort County had a lower unemployment rate at 2.2% than the state at 5.9%. The current average seasonally unadjusted unemployment rate for Beaufort County is 3.6% while that for the state is 8.4%.

3.11-2 Income and Unemployment Rates

Geographic Area	Median Household Income		Unemployment Rates		
	2000	2008	2000	2008	2010
City of Beaufort	$36,532	--	6.2	5.1	--
Beaufort County	$46,992	$55,897 [b]	2.2 [d]	5.3	3.6 [b]
South Carolina	$37,802	$44,695 [c]	5.9 [e]	7.3	8.4 [c]

Source: US Census Bureau 2010b, US Census Bureau 2010c, US Census Bureau 2010d, US Census Bureau 2010e,

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CHAPTER 4.0

ENVIRONMENTAL CONSEQUENCES

4.1 ENVIRONMENTAL CONSEQUENCES ANALYTICAL APPROACH

This chapter describes potential environmental consequences associated with implementation of the Proposed Action or alternatives. This discussion addresses all resource areas described in Chapter 3. Where applicable for each resource, the impact analysis is presented for each major component of the Proposed Action and alternatives. The USMC located at MCAS Beaufort, SC proposes to acquire real estate interests in several parcels of private land totaling up to 807.56 acres in Beaufort County, using either fee simple acquisition or purchase of restrictive easements.

4.2 IMPACT SEVERITY CRITERIA

Resources that are judged to be potentially impacted by the implementation of the Proposed Action have been assigned a designation on a scale of relative magnitude of the effects between positive and adverse:

- Positive – impact would provide a beneficial or positive impact to a resource or the environment.
- Negligible – impact is imperceptible to natural or human environment, below levels of quantification.
- Minor – relatively low in severity, requiring no or minimal mitigation actions.
- Moderate – reasonable; not severely adverse, excessive, or extreme and can be minimized with mitigation actions.
- Adverse – impact results in irreversible and irretrievable commitment of the resource or extensive mitigation actions and could require an Environmental Impact Statement.

4.3 LAND USE

4.3.1 Approach to Analysis

This analysis of potential land use impacts includes an identification and description of land use activities that could be affected by implementation of the Proposed Action or alternatives and an examination of the potential impacts on land use patterns and activities. The following criteria were used to evaluate potential impacts on land use patterns and management plans. Impacts on land use would be considered significant if the Proposed Action or alternatives would:

- Physically divide an established community;
- Conflict with existing land uses;

- Conflict with any applicable land use plan, policies, or regulations; or
- Conflict with any applicable habitat conservation plan or natural community conservation plan.

4.3.1.1 MCAS Beaufort Responsibility for Compatible Land Use

Military installations and local government agencies with planning and zoning authority share the responsibility for preserving land use compatibility near the military installation. Cooperative action by both parties is essential to prevent land use incompatibility and encroachment. MCAS Beaufort implements an Encroachment Partnering Strategy and AICUZ Program to address these issues. MCAS Beaufort has a two-fold responsibility within the AICUZ Program. First, there is the responsibility to reduce aircraft noise, to the extent feasible, through operational guidance and procedures. Second, it is the responsibility of the station commander to actively work with state and local planning officials to implement the objectives of the AICUZ Program and to strive to educate and inform the local civilian community of the mutual benefit of an effective AICUZ Program (Marstel-Day 2005). Implementation of these efforts serves the dual purpose of meeting the objectives stated, and meeting the natural resources conservation objectives found within the multiple federal, state, local, and non-governmental planning documents for habitat and land use conservation.

4.3.2 Impacts

4.3.2.1 Adjacent Land Uses

Potential growth-induced development within adjacent communities could create a need for residential and commercial development associated with projected increases in population. Although a large portion of Port Royal Island remains in rural or low-density suburban uses, the area is experiencing a real potential for rapid development. The unincorporated part of the island continues to grow through increased low-density residential and commercial development. The land areas west, northwest, and southwest of MCAS Beaufort are experiencing increased development pressures from residential, as well as industrial land uses, especially along US Highway 21.

Implementing the Proposed Action by MCAS Beaufort would prevent any future development on the subject properties. Current zoning and land use patterns would not change with the exception of agriculture (farming and timber harvesting), recreation, and related activities. Residents of the area would no longer have access to those properties purchased in fee. While some local residents would prefer to maintain use of the land, restricting use of the land presents the safest option, and thus does not have a significant impact.

4.3.2.2 Alternative 1: The Proposed Action

The Marine Corps has identified APZs around the Air Station runways based on historical data of where mishaps might occur, and the total number of flight operations taking place at the specific runways. Based on this data, the Marine Corps recommend that certain land uses that concentrate large numbers of people, such as stadiums and schools, be avoided in the APZs. For the safety of the aircraft, the height of structures and vegetation is restricted in these zones. The flight safety zones are designed to reduce the hazards that can cause aircraft mishaps; the APZs are designed to minimize the potential harm if a mishap does occur. Thus, the Proposed Action provides a positive impact to land use. Other hazards to flight safety that should be avoided in the airfield vicinity include:

- Uses that would attract birds, especially waterfowl;
- Lighting (direct or reflected) that would impair pilot vision;
- Uses that would generate smoke, steam, or dust;

- Electromagnetic interference with aircraft communication, navigation, or other electrical systems; and
- Obstacles to navigation, such as towers (MCAS 2003).

Figure 3.2-1 shows adjacent lands surrounding MCAS Beaufort, including the real estate interest parcels to lie within MOA 2. All properties lie within APZ I or II with the exception of the Beechwood MHP property, which lies just outside of the transition zone. All properties lie within NZs I or II.

4.3.2.3 Alternative 2: Employ Local Cooperative Efforts

Under Alternative 2, MCAS Beaufort would seek to restrict development rights on the subject properties through land use controls with local governmental authorities in Beaufort County, and would continue to work with local governmental authorities to promote regulatory controls to avoid conflicts between incompatible growth and military use. The current zoning ordinances provide some protection to prevent encroachment from incompatible development surrounding MCAS Beaufort, but zoning has previously been appealed both administratively and in court, thus Alternative 2 does not provide a viable option in regard to land use.

4.3.2.4 Alternative 3: The No Action Alternative

Under the No Action Alternative, existing conditions as described in Section 3.2 would remain unchanged. If the current vacant, agricultural and undeveloped lands located below the FCLP, approach and departure flight tracks in APZs I and II and NZs II and III are not purchased or permanently controlled to prevent incompatible development; the lands will likely be developed. That development will cause negative impacts on airfield operations. Incompatible development below flight tracks also places civilian populations in harm's way, jeopardizing the health, safety and welfare of civilians. Noise complaints and litigation will escalate proportionally with the onset of uncontrolled and incompatible development. The anticipated continued growth in the area could result in significant and major impacts to land use under the No Action Alternative, and thus presents an inherent danger to the safety of aircraft operations and the public. As such, the No Action Alternative is not recommended as a viable option.

4.4 GEOLOGICAL RESOURCES

4.4.1 Approach to Analysis

The protection of unique land features, minimization of soil erosion, and construction of facilities away from potential geological hazards are considered when evaluating potential impacts of an action. Impacts on geological resources would be considered significant if the Proposed Action or alternatives:

- Resulted in substantial alteration of the topography or destruction of any unique topographic features;
- Exposed people or structures to potential adverse effects, including the risk of loss, injury, or death involving seismically induced ground failure;
- Resulted in substantial soil erosion; or
- Would be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project.

4.4.2 Impacts

4.4.2.1 Alternative 1: The Proposed Action

Erosion/Sedimentation

Soil erosion can occur following exposure and disturbance of soil during agricultural and forest harvesting activities. If any use of the property occurs that may have an impact on earth resources in the future, additional NEPA documentation will be performed appropriate to any proposed action. However, since it is anticipated that the property would be allowed to simply revert back to its natural state, no significant environmental impacts to geological resources are anticipated under this proposal.

Seismic Impacts

The MCAS Beaufort has a slight risk of being exposed to the impacts of an earthquake because of the proximity of the Charleston Seismic Area. However, no major earthquakes have occurred near MCAS Beaufort to date, and there are no anticipated land use activities for all the properties, thus no seismic impacts would be anticipated.

Minerals

It is currently unknown if any mineral resources lie within the Proposed Action properties.

4.4.2.2 Alternative 2: Employ Local Cooperative Efforts

Geologic resources for Alternative 2 contain the same basic components as the Proposed Action and are identified in Section 3.3. If any use of the property occurs that may have an impact on earth resources in the future, additional NEPA documentation will be performed appropriate to any proposed action. With the application of restrictive easements, ordinances and control of development rights, it is anticipated that the property would be allowed to simply revert back to its natural state. Thus no significant environmental impacts to geological resources are anticipated under Alternative 2.

4.4.2.3 Alternative 3: The No Action Alternative

Under the No Action Alternative, existing conditions as described in Section 3.3 would remain unchanged. The opportunity to maintain lands in an undeveloped condition would not be likely to occur. Impacts related to erosion/sedimentation could result if these lands were to become developed without restrictions, and appropriate best management practices (BMPs) are not addressed accordingly. Therefore, implementation of the No Action Alternative may result in potentially adverse impacts to geological resources were the properties to be developed.

4.5 WATER RESOURCES

4.5.1 Approach to Analysis

Impacts to water resources could potentially occur if implementation of the Proposed Action or alternatives resulted in changes to water quality or supply, threatened or damaged unique hydrologic characteristics, endangered health by creating or exacerbating health hazards, resulted in an increased flood potential, or violated established laws or regulations. Impacts on hydrology would be significant if the Proposed Action or alternatives would:

- Conflict with water delivery obligations;
- Violate any water quality standards or waste discharge requirement;
- Substantially deplete groundwater supplies or interfere substantially with groundwater recharge; or

- Substantially alter the existing drainage pattern of the site or area, including the alteration of the course of a stream or river, in a manner which would result in substantial erosion or flooding.

4.5.2 Impacts

Extensive floodplain areas exist in the Beaufort area because of its slight elevation above sea level and the relatively flat topographic relief of the land surface. Although these areas are located within the 100-year floodplain zone, it is not anticipated that any structures would be placed within the floodplain zone. Positive impacts to water resources are anticipated under the Proposed Action.

4.5.2.1 Alternative 1: The Proposed Action

The Proposed Action presents an opportunity to conduct stream restoration as the properties would be allowed to revert back to their natural state. Restoration methods can be a means of modifying the environment to meet engineering objectives in an ecologically sensitive way. Stream restoration methods such as vegetative re-growth can anticipate and respond to the problems of flood and erosion damage, and can be redeemed as aesthetic resources with some ecological integrity (Riley 1998).

Watershed and Drainage Impacts

The floodplain provides temporary storage space for floodwaters and sediment produced by the watershed. This attribute serves to add to the *lag time* of a flood—the time between the middle of the rainfall event and the runoff peak. Land use activities have the greatest potential to impact components of the stream corridor and watershed. Plant communities play a significant role in determining stream corridor condition, vulnerability, and potential for (or lack of) restoration. Floodplains serve as essential focal points for the growth of many riparian plant communities and the wildlife they support, enhancing biological productivity and maintaining diversity (USDA 2001). The Proposed Action serves as an ecological conduit for watershed restoration, and as such provides a positive impact to water resources.

Water Quality Impacts

Stream restoration methods can be applied to the subject properties via natural re-growth. Vegetation acts as a natural filter that can improve the quality of stormwater entering the stream/water. The Proposed Action provides a positive impact to water quality, as the properties revert back to their natural vegetative state.

Coastal Zone Management

The CZMA provides for the effective management, beneficial use, protection, and development of the coastal zone resources of the United States. As there would be no construction activities occurring within the properties for the Proposed Action, there would not be any direct or indirect impacts to the coastal zone or any coastal resources. All of the parcels investigated are located within the South Carolina Coastal Zone Management Area, but no past actions have been identified that would require a CZM consistency determination. A Coastal Consistency Determination is not required. If any use of the property occurs in the future that may have an impact on CZM, additional NEPA documentation and CZM consistency determination will be performed appropriate to the proposed action.

4.5.2.2 Alternative 2: Employ Local Cooperative Efforts

If any use of the property occurs that may have an impact on water resources in the future, additional NEPA documentation will be performed appropriate to the proposed action. With the application of restrictive easements,

ordinances and control of development rights, it is anticipated that the property would be allowed to revert back to its natural state. The same restorative methods as described in Section 4.5.2.1 would be employed. A positive impact to water resources would be anticipated under Alternative 2.

4.5.2.3 Alternative 3: The No Action Alternative

Under the No Action Alternative, existing conditions as described in Section 3.4 would remain unchanged. However, implementation of the No Action Alternative may result in potentially adverse impacts to water resources were the properties to be developed.

4.6 BIOLOGICAL RESOURCES

4.6.1 Approach to Analysis

This section describes the direct and indirect impacts to biological resources that would result from the Proposed Action. Direct impacts are caused by the action and occur in the same time and place. Typical direct impacts include ground disturbance and the removal of vegetation, and disturbance or mortality to wildlife occurring as an immediate result of project activities. Indirect impacts are also caused by the action, but occur later in time or farther removed in distance than direct impacts. Typical indirect impacts include changes in land use (e.g., traffic) or habitat features (e.g., the alteration of drainage patterns) that subsequently impact the vegetation or wildlife of the action area. Factors considered in determining whether the Proposed Action or alternatives would have significant impacts on biological resources include the extent or degree to which its implementation would:

- Adversely affect sensitive species, including those listed or proposed for listing as endangered or threatened under the Endangered Species Act (ESA) (16 USC §§ 1531-1544), migratory birds afforded protection by the Migratory Bird Treaty Act (MBTA) [16 USC §§ 703-712] and EO 13186, or other species of concern; and,
- Degrade or destroy sensitive species habitat, as defined by the ESA.

4.6.2 Impacts

4.6.2.1 Alternative 1: The Proposed Action

<u>Vegetation</u>

The Proposed Action is in conformance with the station land use plan and INRMP. Under the Proposed Action, moderate and long-term positive impacts to vegetation are anticipated due to the property reverting back to its natural state.

<u>Wildlife</u>

Impacts to wildlife are not likely to occur since the properties are anticipated to return to their natural state. No significant environmental impacts to wildlife are anticipated under this proposal.

<u>Special-Status Species</u>

No significant environmental impacts to T&E species are anticipated under this proposal, and it is anticipated that T&E would benefit from the implementation of the Proposed Action.

4.6.2.2 Alternative 2: Employ Local Cooperative Efforts

With the application of restrictive easements, ordinances and control of development rights, it is anticipated that the property would be allowed to revert back to its natural state. A positive impact to biological resources would be anticipated under Alternative 2.

4.6.2.3 Alternative 3: The No Action Alternative

Under the No Action Alternative, existing conditions as described in Section 3.5 would remain unchanged. However, the No Action Alternative may result in potentially adverse impacts to biological resources were the properties to be developed, as protective measures for biological resources are not likely to be implemented.

4.7 CULTURAL RESOURCES

4.7.1 Approach to Analysis

Factors considered when determining the potential for impacts to cultural resources include the extent or degree to which the Proposed Action or alternatives would diminish the integrity of the location, design, setting, materials, workmanship, feeling, or association of historic property, including those significant to Native Americans. Factors considered in determining whether the Proposed Action or alternatives would have significant impacts on cultural resources included the extent or degree to which its implementation would adversely impact:

- Association with events that have made a significant contribution to the broad patterns of history;
- Association with the lives of persons significant in the past;
- Distinctive characteristics of a type, period, or method of construction, represents the work of a master, that which possesses high artistic values, or represents a significant and distinguishable entity whose components may lack individual distinction; and/or
- That which has yielded, or may be likely to yield, information important in prehistory or history.

4.7.2 Impacts

No surveys for archaeological resources have been conducted on any of the parcels on the subject property or there have been none that have been identified. Therefore, this action would warrant a finding of "no historic properties affected." However, if any archaeological resources are discovered, procedures for inadvertent discovery as outlined in the Air Station's ICRMP would be implemented.

4.7.2.1 Alternative 1: The Proposed Action

Location Area of Potential Effect

Under the Proposed Action, impacts to cultural resources are not anticipated. There are no NRHP-eligible archaeological sites or sites requiring further evaluation for NRHP status that have been identified within the proposed property acquisition areas.

Construction Activities

There would be no anticipated construction activities associated to the Proposed Action. There are no significant impacts that are anticipated as a result of the Proposed Action.

4.7.2.2 Alternative 2: Employ Local Cooperative Efforts

No associated significant impacts related to cultural resource alteration would occur, and there would be no activities under Alternative 2 that would impact cultural resources in that area.

4.7.2.3 Alternative 3: The No Action Alternative

Under the No Action Alternative, existing conditions as described in Section 3.6 would remain unchanged. Therefore, implementation of the No Action Alternative would not result in significant impacts to cultural resources. However, implementation of the No Action Alternative may result in potential impacts to cultural resources were the properties to be developed, as protective measures induced by land preservation are not likely to be implemented.

4.8 AIR QUALITY

4.8.1 Approach to Analysis

Emission thresholds associated with federal CAA conformity requirements are the primary means of assessing the significance of potential air quality impacts associated with implementation of the Proposed Action or alternatives. Air quality impacts would occur if implementation of the Proposed Action or alternatives would directly or indirectly:

- Produce emissions that would be the primary cause or significantly contribute to a violation of state or federal ambient air quality standards;
- Establish land uses that would expose people to localized (as opposed to regional) air pollutant concentrations that violate state or federal ambient air quality standards;
- Cause a net increase in pollutant or pollutant precursor emissions that exceeds relevant emission significance thresholds (such as CAA conformity *de minimis* levels or the numerical values of major source thresholds for nonattainment pollutants); and/or,
- Conflict with adopted air quality management plan policies or programs.

4.8.2 Impacts

4.8.2.1 Alternative 1: The Proposed Action

The Proposed Action would not entail any activities related to construction or property alteration. There are no significant impacts to air quality related to the Proposed Action. Since it is anticipated that the property would be allowed to revert back to its natural state, no significant environmental impacts to air quality resources are anticipated under this proposal.

4.8.2.2 Alternative 2: Employ Local Cooperative Efforts

Air quality resources for Alternative 2 contain the same basic components as the Proposed Action and are identified in Section 3.7. Alternative 2 will not result in, or include any property alteration or construction-related emissions. There are no impacts anticipated as a result of Alternative 2.

4.8.2.3 Alternative 3: The No Action Alternative

Under the No Action Alternative, existing conditions as described in Section 3.7 would remain unchanged. Therefore, implementation of the No Action Alternative would not result in significant impacts to air quality.

4.9 NOISE

4.9.1 Approach to Analysis

This section evaluates potential impacts to noise associated with implementation of the Proposed Action or alternatives. Impacts would result from activities that generate the following:

- Annoyance. Noise can impact the performance of various every day activities such as communication and watching TV in residential areas;
- Hearing loss. The EPA recommends limiting daily equivalent energy to 70 dBA, approximately 75 DNL, to protect against hearing impairment over a period of 40 years;
- Sleep interference, which is of great concern in residential areas; and
- Wildlife may show a startle response to high intensity, sporadic noise levels.

4.9.2 Impacts

There would be no change in noise levels as a result of the Proposed Action. Therefore, there would be no impact to noise with implementation of the Proposed Action.

4.9.2.1 Alternative 1: The Proposed Action

Short-term impacts from noise are possible only during any harvest, burning, or farming activities, if permitted, and would occur from equipment and vehicles traveling to, from, and on the site. The level of impact depends on the type of equipment used, the amount of tree cutting, and loading and hauling when the activity is performed, and the proximity to noise-sensitive receptors. The only activity anticipated to occur would be from land maintenance at the fee purchased sites, and the associated equipment noise levels which generally range from 60-80 DNL, depending on equipment used and proximal distances. However, these activities would be infrequent and thus presents a negligible impact.

As previously identified in Section 2.2.1, all properties are located within NZs I and II with a DNL range between 65 and 75. The Proposed Action presents a positive impact in regard to noise resources by establishing compatible land use.

4.9.2.2 Alternative 2: Employ Local Cooperative Efforts

Resources for noise under Alternative 2 contain the same basic components as the Proposed Action and are identified in Section 3.8. Under Alternative 2, MCAS Beaufort would employ cooperative efforts between the installation and local jurisdictions to limit land use in the vicinity of the installation that are incompatible with aircraft operations. Relying on local cooperative efforts is not a viable alternative as local governments can change existing zoning regulations with newly elected council. Although employing cooperative efforts and ordinances helps achieve incompatible development, land owners may find little interest in managing their lands. The potential for continued noise complaints under Alternative 2 would be likely were the lands allowed to be developed.

4.9.2.3 Alternative 3: The No Action Alternative

The No Action Alternative would result in continued or increased noise complaints within the vicinity of MCAS Beaufort. With continued growth in the Beaufort area, the transition of land uses from agriculture or open space to residential and commercial uses would escalate, thus inciting more noise complaints. The No Action Alternative presents an adverse impact to humans from noise.

4.10 HAZARDOUS MATERIALS AND WASTES

4.10.1 Approach to Analysis

Impacts to hazardous materials and waste resources would be considered significant if the Proposed Action or alternatives result in:

- Discharge that creates a pollution, contamination, or nuisance, as defined in CFR §48-1-90 and the South Carolina Guide for Environmental Compliance;
- Release of toxic substances that would be deleterious to humans, fish, bird, or plant life; and/or
- Release of hydrocarbon or related contaminants to the surface waters in such concentrations that existing local, state, or federal statutes would be violated.

4.10.2 Impacts

As it is anticipated that the property would be allowed to revert back to its natural state, no significant environmental impacts to the property from hazardous materials and waste operations are anticipated under this proposal.

4.10.2.1 Alternative 1: The Proposed Action

There are currently no identified hazardous wastes or contaminated sites within the Proposed Action properties. An ECP assessment will be conducted as appropriate for each site, to identify any potential hazards.

4.10.2.2 Alternative 2: Employ Local Cooperative Efforts

There are currently no identified hazardous wastes or contaminated sites within the properties for Alternative 2. An ECP assessment will be conducted as appropriate for each site, to identify any potential hazards.

4.10.2.3 Alternative 3: The No Action Alternative

Under the No Action Alternative, existing conditions as described in Section 3.9 would remain unchanged. Therefore, implementation of the No Action Alternative would not result in significant impacts to hazardous materials and wastes.

4.11 HEALTH AND SAFETY

4.11.1 Approach to Analysis

Impacts to safety would be major if it would result in one or more of the following:

- In an increase in risk to station and military personnel, construction crews, the public, and property; or
- In an increase in the likelihood of an accident, or other related mishap, that negatively affects station and military personnel, construction crews, the public or property over baseline conditions

4.11.2 Impacts

4.11.2.1 Alternative 1: The Proposed Action

<u>Accident Potential Zones</u>

All properties of the Proposed Action lie within APZ II, with the exception of Pinckney and Beechwood MHP. The Proposed Action would provide a positive impact to health and safety by discouraging land uses that are

incompatible with aircraft operations. It would also serve to protect MCIEAST investments by safeguarding the operational capabilities of the installation from encroachment.

4.11.2.2 Alternative 2: Employ Local Cooperative Efforts

Resources for health and safety under Alternative 2 contain the same basic components as the Proposed Action and are identified in Section 3.10. Under Alternative 2, MCAS Beaufort would employ cooperative efforts between the installation and local jurisdictions to limit land use in the vicinity of the installation that are incompatible with aircraft operations. Relying on local cooperative efforts is not a viable alternative as local governments can change existing zoning regulations with newly elected council. Although employing cooperative efforts and ordinances helps achieve incompatible development, land owners may find little interest in managing their lands so as to reduce the flight hazards as described in Section 4.11.2.1. The potential for moderate and adverse impacts to health and safety under Alternative 2 would be likely.

4.11.2.3 Alternative 3: The No Action Alternative

The No Action Alternative would result in the potential for continued safety hazards within the APZs. As previously discussed the rapid growth of the region spurs demand for residential properties and stimulates the transition of land uses to residential and commercial uses. Under this scenario of continued development of community infrastructure requirements and incompatible development in the AICUZ footprint, which is permitted under the current zoning, is a very serious threat to the installation's vital aviation mission, and in particular, the safety of the surrounding public. The No Action Alternative would present an adverse impact to health and safety.

4.12 SOCIOECONOMICS

4.12.1 Approach to Analysis

This section reviews the baseline conditions for Socioeconomic Resources. EO. 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," The analysis of environmental justice impacts is required by EO 12898, and must be evaluated in NEPA documents. This analysis considers whether the impacts of the project would disproportionately affect minority or low income populations. Impacts to socioeconomics would be considered major if the Proposed Action or alternative:

> Had an impact in terms of their direct effects on the area's financial situation and related effects on other socioeconomic resources, such as housing availability and community services. The magnitude of potential impacts can vary greatly depending on the location and characteristics of the Proposed Action.

4.12.2 Impacts

4.12.2.1 Alternative 1: The Proposed Action

<u>Economic Characteristics</u>

With MCAS Beaufort acquiring the subject properties, no further development of the properties would occur. There would be little or no change to the current economic activity in the Beaufort area, since there is no current development planned for the land tracts. Overall, the proposed changes would not result in any significant impacts to the local economic outlook.

Demographics and Housing

The majority of the land is used for agricultural crops, and there are very few people living on the properties that may have to be relocated. There are no discernable impacts to demographics and housing under the Proposed Action.

Recreational Activities

If the Proposed Action is implemented it is likely that those properties purchased would be closed to the public. There are no impacts to recreation anticipated under the Proposed Action.

4.12.2.2 Alternative 2: Employ Local Cooperative Efforts

Socioeconomic resources for Alternative 2 contain the same basic components as the Proposed Action and are identified in Section 3.11. No associated significant impacts related to socioeconomic resources would occur as property owners would maintain holdings of their land. Restrictive easements and cooperative efforts would be employed but would not affect the economic status of the residents. There would be no impacts under Alternative 2 that would affect socioeconomic resources in that area.

4.12.2.3 Alternative 3: The No Action Alternative

Under the No Action Alternative, existing conditions as described in Section 3.11 would remain unchanged. Therefore, implementation of the No Action Alternative would not result in significant impacts to socioeconomic resources.

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5.0 CHAPTER

OTHER NEPA CONSIDERATIONS

5.1 OTHER CONSIDERATIONS AS REQUIRED BY NEPA

This chapter addresses topics required by NEPA in an EA, including cumulative impacts, irreversible and irretrievable commitment of resources, and possible conflicts between the Proposed Action and the objectives of federal and state land use plans, policies, and controls. In addition, the relationship between short-term environmental impacts and long-term productivity is addressed.

5.2 CUMULATIVE IMPACTS

The DoN regulations for implementing NEPA (42 USC § 4321 *et seq*. and 32 CFR 775, respectively) and the USMC's MCO P5090.2A require that the cumulative impacts of a Proposed Action be assessed. CEQ regulations implementing the procedural provision of NEPA define cumulative impacts as:

> *"The impact on the environment which results from the incremental impacts 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"* (40 CFR 1507).

The scope must consider geographic and temporal overlaps among the Proposed Action and other actions. Cumulative impacts can result from individually minor, but collectively substantial, actions undertaken over a period of time by various agencies (federal, state, and local) or individuals. Specific NEPA compliance requirements have been addressed during the preparation of this EA. These include, but are not limited to federal statutes, EOs, regulations, and permitting requirements (Table 5.2-1) which address cumulative impacts of the Proposed Action including beneficial and adverse impacts for each resource, as discussed in chapter 4.

5.3 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

Resources that are irreversibly or irretrievably committed to a project are those that are used on a long-term or permanent basis. This includes the use of non-renewable resources such as metal and fuel. These resources are irretrievable in that they would be used for a project when they could have been used for other purposes. Human labor is also considered an irretrievable resource. In addition, the unavoidable destruction of natural resources that could limit the range of potential uses of that particular environment is also considered an irreversible commitment of resources.

Table 5.2-1. Applicable Environmental Statutes and Regulations

Federal Statutes
Watershed Protection and Flood Prevention Act of 1954
National Historic Preservation Act of 1966, as amended
National Environmental Policy Act of 1969, as amended
Migratory Bird Treaty Act of 1918, as amended
Endangered Species Act of 1973, as amended
Archaeological and Historic Preservation Act of 1974
Archaeological Resources Protection Act of 1979
Farmland Protection Policy Act of 1980
Noise Control Act of 1971
Clean Air Act of 1990, as amended
Native American Graves Protection and Repatriation Act of 1990
Resource Conservation and Recovery Act of 1976
Toxic Substances Control Act of 1976
Clean Water Act of 1997, as amended
Executive Orders, Memorandums, etc.
Floodplain Management (*EO 11988*) of 1977
Protection of Wetlands (*EO 11990*) of 1977
Federal Compliance with Pollution Control Standards (as amended by *EO 13423*)
Government-to-Government Relations with Native American Tribal Governments (Presidential Memorandum) of 1994
Federal Actions to Address Environmental Justice to Minority Populations and Low-Income Populations (*EO 12898*) of 1994
Indian Sacred Sites (*EO 13007*) of 1996
Protection of Children from Environmental Health Risks (*EO 13045*) of 1997
Consultation and Coordination with Indian Tribal Governments (*EO 13175*) of 2000
Strengthening Federal Environmental, Energy, and Transportation Management (*EO 13423*)
Protection of Migratory Birds & Game Mammals (*EO 11629*) of 2001

Implementation of the Proposed Action at MCAS Beaufort would not require the consumption of materials typically associated with construction activities (e.g., concrete), as there are no construction or land use change requirements. The use of vehicles is the only potential use that would result in the consumption of fuel, oil, and lubricants. However, the amount of these resources used would be negligible as the amount of usage would be minimal and restricted to actions associated with maintenance of the properties. Therefore, implementation of the Proposed Action and alternatives would not result in a significant irreversible or irretrievable commitment of resources.

5.4 POSSIBLE CONFLICTS BETWEEN THE PROPOSED ACTION OR ALTERNATIVES AND THE OBJECTIVES OF FEDERAL AND STATE LAND USE PLANS, POLICIES AND CONTROLS

Implementation of the Proposed Action would not conflict with the objectives of federal and state land use plans, policies, and controls. The action proponent would adhere to all requirements as identified in Table 5.2-1 and Section 1.5 of this EA.

5.5 RELATIONSHIP BETWEEN SHORT TERM ENVIRONMENTAL IMPACTS AND LONG TERM PRODUCTIVITY

The NEPA requires an analysis of the relationship between a project's short-term impacts on the environment, and the effects that these impacts may have on the maintenance and enhancement of the long-term productivity of the

affected environment. Impacts that narrow the range of beneficial uses of the environment are of particular concern. This refers to the possibility that choosing one development option reduces future flexibility in pursuing other options, or that giving over a parcel of land or other resource to a certain use often eliminates the possibility of other uses being performed at that site.

Under the Proposed Action, minor effects would be primarily related to the use of associated vehicles and equipment to maintain the properties. With MCAS Beaufort acquiring the subject properties, no further development of the properties would occur. Although developmental options would be reduced, currently, the majority of the properties are farmed, and as such do not contribute a significant amount to the development activities of the Beaufort area. In the long-term, the acquisition of these properties would increase the safety of the military and surrounding communities in and around the Air Station, resulting in beneficial impacts to public health and safety. Through adherence to policies and plans as listed in Table 5.5-1, the Proposed Action would not result in any impacts that would reduce environmental productivity or narrow the range of beneficial uses of the environment.

Table 5.5-1. Project Compliance with Objectives of Federal and State Land Use Plans, Policies, and Controls

Plans, Policies, and Controls	Lead Agency	Status of Compliance
NEPA (42 USC 4321 *et seq*.) US Navy Procedures for Implementing NEPA (32 CFR 775)	DoN	This EA has been prepared in accordance with the CEQ Regulations implementing NEPA and DoN NEPA procedures.
CWA Section 401/402 (401-402, 33 USC 1251 *et seq*.), Section 404 (404, 33 USC 1251 *et seq*.)	EPA/USACE	Implementation of the Proposed Action would not discharge or place fill material into waters of the US.
EO 11990, *Protection of Wetlands*	DoN	Implementation of the Proposed Action would not impact wetlands.
EO 11988, *Floodplain Management*	DoN	Implementation of the Proposed Action would not impact floodplains.
Endangered Species Act (16 USC 1531)	USFWS	Pursuant to Section 7 of the Endangered Species Act, implementation of the Proposed Action would not impact endangered species.
CAA, as amended (42 USC 7401 *et seq*.)	EPA	Implementation of the Proposed Action would not compromise air quality attainment status or conflict with established attainment status and goals.
EO 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations	DoN	Minority or low-income populations would not be disproportionately affected by implementation of the Proposed Action.
EO 13045, Protection of Children from Environmental Health Risks and Safety Risks	DoN	Implementation of the Proposed Action would not disproportionately expose children to environmental health risks or safety risks.
NHPA (106, 16 USC 470 *et seq*.)	Advisory Council on Historic Preservation and/or the South Carolina State Historic Preservation Officer	All required BMP measures would be adhered to.

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6.0 CHAPTER

REFERENCES

Beaufort County, South Carolina (BCSC). 2004. Hazard Mitigation Plan Final for State and FEMA Review for Unincorporated Beaufort County. March 18.

Burtchard, 2007. Archaeology in Washington, Vol. 13. Holocene Subsistence and Settlement Patterns: Mount Rainier And The Montane Pacific West. An Intensification Model For Mount Rainier And The Montane Pacific Northwest.

CLR Search.com. 2011. Beaufort Population Growth and Population Statistics. http://www.clrsearch.com/Beaufort_Demographics/SC/Population-Growth-and-Population-Statistics. Site accessed May 13.

Marine Corps Air Station (MCAS). 2010. Draft United States Marine Corps F-35B East Coast Basing Environmental Impact Statement (EIS). May.

_____. 2007. Integrated Cultural Resources Management Plan. Beaufort, South Carolina.

_____. 2006a. Integrated Natural Resources Management Plan. Beaufort, South Carolina.

_____. 2006b. Wetland Services at the Main Installation, Agricultural Out-Lease, and Laurel Bay Housing Area. Beaufort, South Carolina. Prepared by Tidewater Environmental Services. November.

_____. 2003. Air Installation Compatible Use Zones Report for Marine Corps Air Station Beaufort, Beaufort, South Carolina. February.

Marstel Day, LLC. 2005. *Prototyping an Encroachment Control Plan For The US Marine Corps Using Marine Corps Air Station Beaufort and Townsend Bombing Range As Case Studies* Final Report For Headquarters, US Marine Corps. October 31.

Riley, Ann L. 1998. Restoring Streams in Cities. A Guide for Planners, Policymakers, and Citizens.

South Carolina Department of Health and Environmental Control (SCDHEC). 1979. http://www.scdhec.gov/environment/ocrm/docs/program_doc/SC_Coastal_%20Program%20(Pt.%202%20-%20Ch.%20IV).pdf. Site accessed January 4, 2011.

South Carolina Forestry Commission (SCFC). 2006. Smoke Management Guidelines for Vegetative Debris Burning for Forestry, Agriculture, and Wildlife purposes in the State of South Carolina. SCFC 7th Printing. August.

US Census Bureau. 2010a. State and County QuickFacts. Beaufort County QuickFacts from the US Census Bureau. http://quickfacts.census.gov/qfd/states/45/45013.html. Site accessed January 6, 2011.

_____. 2010b. American Fact Finder. County Profile of Selected Economic Characteristics: 2005-2009

http://factfinder.census.gov/servlet/ADPTable?_bm=y&-geo_id=05000US45013&-gr_name=ACS_2009_5YR_G00_DP5YR3&-ds_name=ACS_2009_5YR_G00_&-_lang=en&-redoLog=false&-_sse=on Site accessed January 7, 2011.

_____. 2010c. American Fact Finder. State Profile of Selected Economic Characteristics: 2005-2009

http://factfinder.census.gov/servlet/ADPTable?_bm=y&-geo_id=04000US45&-gr_name=ACS_2009_5YR_G00_DP5YR3&-ds_name=ACS_2009_5YR_G00_&-_lang=en&-redoLog=false&-_sse=on Site accessed January 7, 2011.

_____. 2010d. American Fact Finder. County Profile of Selected Economic Characteristics: 2000
http://factfinder.census.gov/servlet/QTTable?_bm=y&-geo_id=05000US45013&-gr_name=DEC_2000_SF3_U_DP3&-ds_name=DEC_2000_SF3_U&-_lang=en&-redoLog=false&-_sse=on
Site accessed January 7, 2011.

_____. 2010e. American Fact Finder. State Profile of Selected Economic Characteristics: 2000

http://factfinder.census.gov/servlet/QTTable?_bm=y&-geo_id=04000US45&-gr_name=DEC_2000_SF3_U_DP3&-ds_name=DEC_2000_SF3_U&-_lang=en&-redoLog=false&-_sse=on
Site accessed January 7, 2011.

US Department of Agriculture (USDA) 2010. Natural Resource conservation Service. Web Soil Survey. http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx. Site accessed January 9, 2011.

_____. 2001. Stream Corridor Restoration Principles, Processes, and Practices. By The Federal Interagency Stream Restoration Working Group. August.

Wikipedia 2011. The Free Encyclopedia. http://en.wikipedia.org/wiki/Beaufort_County,_South_Carolina. Site accessed May 13.

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