

**Environmental Assessment**  
**For**  
**Construct Living Shoreline**  
**At**  
**Marine Corps Air Station Cherry Point**

**April 2021**



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Abstract

**Designation:** Environmental Assessment

**Title of Proposed Action:** Construct Living Shoreline

**Project Location:** MCAS Cherry Point, NC

**Lead Agency for the EA:** United States Marine Corps

**Affected Region:** Craven County, NC

**Action Proponent:** MCAS Cherry Point

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**Date:** April 2021

Marine Corps Air Station (MCAS) Cherry Point has prepared this Environmental Assessment in accordance with the National Environmental Policy Act, as implemented by the Council on Environmental Quality Regulations and Navy regulations for implementing National Environmental Policy Act. The Proposed Action would construct a living shoreline along MCAS Cherry Point's Neuse River shoreline, thereby improving water quality, increasing installation resilience, protecting existing infrastructure, and providing more diverse habitat. This Environmental Assessment evaluates the potential environmental impacts associated with the preferred alternative and the No Action Alternative to the following resource areas: air quality, water resources, geological resources, biological resources, infrastructure, transportation, and public health and safety.



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## EXECUTIVE SUMMARY

### ES.1 Proposed Action

The USMC seeks to construct a living shoreline in the Neuse River along the northern boundary of MCAS Cherry Point, Havelock, NC. This living shoreline will improve water quality, create valuable habitat and also promote resiliency by preventing erosion and mitigating flooding that would damage the Marine Corps' vital infrastructure.

### ES.2 Purpose of and Need for the Proposed Action

The purpose of the Proposed Action is to construct a living shoreline that will provide protection for USMC properties along the Neuse River, habitat for the many species that inhabit the river, and water quality improvements. More detailed goals of this project are:

- To attenuate wave energy to reduce the rate of shoreline erosion on the Neuse River, thereby protection USMC assets that utilize that shoreline.
- Increase resiliency of our shoreline by adding marsh grasses and restoring appropriate slopes that have been eroded.
- Enhance riparian habitat, shallow water habitat, and water quality in the Neuse River, which promotes recreational uses for our Marines, Sailors, and community neighbors.

The need for the Proposed Action is to enhance the resiliency and protect valuable shorelines, which include USMC assets that have been degraded due to erosion from coastal storms. A living shoreline will protect the investments the USMC has made, while providing important ecological functions and water quality improvements.

### ES.3 Alternatives Considered

Alternative 1, the preferred alternative, would construct a living shoreline parallel to the shoreline of the Neuse River at MCAS Cherry Point, from Slocum Creek on the west, to Hancock Creek on the east. The living shoreline would consist of a granite sill constructed approximately 25-30 feet waterward of normal water level (NWL). This granite sill will be segmented to allow for flushing and cross-shore movement of fish and wildlife. Oyster shell will be installed at the landward toe and the landward fringe will be back-filled and planted with marsh grasses. The No Action Alternative will also be evaluated.

### ES.4 Summary of Environmental Resources Evaluated in the EA

Council on Environmental Quality regulations, National Environmental Policy Act, and Navy instructions for implementing the National Environmental Policy Act, specify that an Environmental Assessment (EA) should address those resource areas potentially subject to impacts. In addition, the level of analysis should be commensurate with the anticipated level of environmental impact.

The following resource areas have been addressed in this EA:

- Air Quality
- Water Resources
- Geological Resources
- Biological Resources
- Infrastructure
- Transportation, and
- Public Health and Safety.

#### **ES.5 Summary of Potential Environmental Consequences of the Action Alternatives and Major Mitigating Actions**

Table ES-1 provides a tabular summary of the potential impacts to the resources associated with each of the alternative actions analyzed.

#### **ES.6 Public Involvement**

Regulations from CEQ direct agencies to involve the public in preparing and implementing their NEPA procedures. For this project, which will affect lands within the boundaries of the air station and adjacent public trust waters, a scoping meeting was held on July 27, 2020 with the U.S. Army Corps of Engineers, NC Division of Environmental Quality, and all relevant stakeholders. The Final EA will be published to the MCAS Cherry Point website. A notice of availability will be published in the Havelock News, and comments will be accepted for a period of 30 days.

Table ES-1 Summary of Potential Impacts to Resource Areas

<b>Resource Area</b>	<b>No Action Alternative</b>	<b>Alternative 1 (Preferred Alternative)</b>
<b>Air Quality</b>	<ul style="list-style-type: none"> <li>The No Action Alternative would have no impacts to air quality.</li> </ul>	<ul style="list-style-type: none"> <li>The emissions associated with construction would be temporary and localized.</li> </ul>
<b>Water Resources</b>	<ul style="list-style-type: none"> <li>Continued erosion and increased sediment into surface waters</li> <li>Storm surge and flooding would continue to threaten structures along the shoreline</li> <li>Erosion would impact wetlands</li> </ul>	<ul style="list-style-type: none"> <li>Reduce erosion and sediment inputs into the Neuse River</li> <li>Provide habitat diversity</li> <li>Provide Flood Control</li> <li>Provide protection of coastal zone and shorelines</li> </ul>
<b>Geological Resources</b>	<ul style="list-style-type: none"> <li>Continued erosion and increased sediment into surface waters</li> </ul>	<ul style="list-style-type: none"> <li>Provide protection of soils and reduction of erosion to preserve land</li> </ul>
<b>Biological Resources</b>	<ul style="list-style-type: none"> <li>Continued erosion and increased sediment into surface waters</li> <li>Decreased water quality due to turbidity and sediment loads</li> <li>Continued lack of diverse habitat and detrimental to marine wildlife</li> </ul>	<ul style="list-style-type: none"> <li>Terrestrial vegetation – Re-establish functional riparian buffer</li> <li>Terrestrial Wildlife – Improved access to Neuse River and its resources</li> <li>Marine Vegetation – Possibility to restore SAV in the Neuse</li> <li>Marine Wildlife – Increased diversity of habitat</li> <li>Threatened and Endangered Species - no impact.</li> </ul>
<b>Infrastructure</b>	<ul style="list-style-type: none"> <li>Continued erosion puts infrastructure at risk</li> <li>More frequent and costly maintenance and repair to maintain status quo</li> </ul>	<ul style="list-style-type: none"> <li>Protection from erosion and flooding for critical infrastructure</li> <li>Reduction in frequency and cost of maintenance and repairs</li> </ul>

<b><i>Transportation</i></b>	<ul style="list-style-type: none"><li>• The No Action Alternative would not impact transportation or traffic on station roads.</li><li>• Increased sedimentation into the Neuse River could cause shoaling and require increased dredging to maintain navigation channels for vessels.</li></ul>	<ul style="list-style-type: none"><li>• No impacts to transportation or traffic on station roads.</li><li>• Granite sill would be marked so as not to obstruct navigation in public trust waters.</li></ul>
<b><i>Public Health and Safety</i></b>	<ul style="list-style-type: none"><li>• Continued erosion and increased sediment into surface waters will continue to degrade water quality</li><li>• Continued risk to residents living and recreating in the area due to unsafe bulkheads</li></ul>	<ul style="list-style-type: none"><li>• Reduced erosion and sediment into surface waters will improve water quality</li><li>• Improve safety for residents living next to shoreline or recreating in the area</li></ul>



**Environmental Assessment for the  
Construction of a Living Shoreline  
at**

**Marine Corps Air Station Cherry Point, Craven County**

**TABLE OF CONTENTS**

<b>ABBREVIATIONS AND ACRONYMS .....</b>	<b>VII</b>
ES.1 Proposed Action.....	1
ES.2 Purpose of and Need for the Proposed Action.....	1
ES.3 Alternatives Considered.....	1
ES.4 Summary of Environmental Resources Evaluated in the EA .....	1
ES.5 Summary of Potential Environmental Consequences of the Action Alternatives and Major Mitigating Actions.....	2
ES.6 Public Involvement .....	2
<b>1 PURPOSE OF AND NEED FOR THE PROPOSED ACTION .....</b>	<b>1-1</b>
1.1 Introduction .....	1-1
1.2 Background .....	1-1
1.3 Location.....	1-1
1.4 Purpose of and Need for the Proposed Action.....	1-3
1.5 Scope of Environmental Analysis.....	1-3
1.6 Key Documents .....	1-3
1.7 Relevant Laws and Regulations .....	1-3
1.8 Public and Agency Participation and Intergovernmental Coordination .....	1-4
<b>2 PROPOSED ACTION AND ALTERNATIVES .....</b>	<b>2-1</b>
2.1 Proposed Action.....	2-1
2.2 Alternatives Carried Forward for Analysis .....	2-3
2.2.1 No Action Alternative .....	2-3
2.2.2 Alternative 1 – Construct Living Shoreline (Preferred Alternative).....	2-3
2.3 Alternatives Considered But Not Carried Forward for Analysis.....	2-5
<b>3 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES .....</b>	<b>3-1</b>
3.1 Air Quality .....	3-1
3.1.1 Regulatory Setting .....	3-1
3.1.2 Affected Environment.....	3-3
3.1.3 Environmental Consequences .....	3-3
3.2 Water Resources.....	3-4
3.2.1 Regulatory Setting .....	3-4

3.2.2	Affected Environment.....	3-5
3.2.3	Environmental Consequences .....	3-9
3.3	Geological Resources .....	3-10
3.3.1	Affected Environment.....	3-11
3.3.2	Environmental Consequences .....	3-12
3.4	Biological Resources .....	3-12
3.4.1	Affected Environment.....	3-13
3.4.2	Environmental Consequences .....	3-19
3.5	Infrastructure.....	3-22
3.5.1	Affected Environment.....	3-22
3.5.2	Environmental Consequences .....	3-22
3.6	Transportation .....	3-23
3.6.1	Regulatory Setting .....	3-23
3.6.2	Affected Environment.....	3-24
3.6.3	Environmental Consequences .....	3-24
3.7	Public Health and Safety .....	3-24
3.8	Summary of Potential Impacts to Resources and Impact Avoidance and Minimization.....	3-25
<b>4</b>	<b>CUMULATIVE IMPACTS .....</b>	<b>4-1</b>
4.1	Definition of Cumulative Impacts.....	4-1
4.2	Scope of Cumulative Impacts Analysis.....	4-2
4.3	Past, Present, and Reasonably Foreseeable Actions .....	4-2
4.3.1	Past Actions .....	4-2
4.3.2	Present and Reasonably Foreseeable Actions.....	4-3
4.4	Cumulative Impact Analysis.....	4-4
4.4.1	Air Quality .....	4-4
4.4.2	Water Resources.....	4-5
4.4.3	Geological Resources.....	4-5
4.4.4	Biological Resources .....	4-5
4.4.5	Infrastructure.....	4-6
4.4.6	Public Health and Safety.....	4-6
<b>5</b>	<b>OTHER CONSIDERATIONS REQUIRED BY NEPA .....</b>	<b>5-1</b>

5.1	Consistency with Other Federal, State, and Local Laws, Plans, Policies, and Regulations .....	5-1
5.2	Irreversible or Irretrievable Commitments of Resources .....	5-2
5.3	Unavoidable Adverse Impacts .....	5-3
5.4	Relationship between Short-Term Use of the Environment and Long-Term Productivity.....	5-3
<b>6</b>	<b>REFERENCES .....</b>	<b>6-1</b>
<b>7</b>	<b>LIST OF PREPARERS .....</b>	<b>7-1</b>

### List of Figures

Figure 1-1	Location Map .....	1-2
Figure 2-1	Project Location .....	2-1
Figure 2-2	Bulkhead and Shoreline Condition Segments.....	1-2
Figure 2-3	Cross-Section of Proposed Living Shoreline .....	1-23
Figure 2-4	Shoreline photo displaying escarpment and fallen vegetation .....	1-24
Figure 3-1	Digital photography comparison to determine erosion .....	3-8
Figure 3-2	Mapped Soils in the vicinity of the shoreline .....	3-12
Figure 3-3	Estuarine and marine submerged aquatic vegetation (SAV) located in the vicinity of the MCAS Cherry Point. ....	3-15
Figure 3-4	Exerpt of NOAA Nautical Chart #11552 along MCAS Cherry Point shoreline ...	3-23

### List of Tables

Table 2-1	Bulkhead and Shoreline Condition Assessment .....	2-2
Table 3-1	Craven County Air Emissions Inventory.....	3-3
Table 3-2	Primary Surface Water Classifications near MCAS Cherry Point.....	3-5
Table 3-3	Shoreline and Bulkhead Condition Observations .....	3-6
Table 3-4	Recession of Land Surface by Shoreline Segment .....	3-9
Table 3-5	Threatened and Endangered Species Potentially Occuring.....	3-17
Table 3-6	Summary of potential impacts to Resources.....	3-27
Table 5-1	Principal Federal and State Laws Applicable to the Proposed Action.....	5-1

### Appendices

Appendix A – Cherry Point Shoreline Change Comparison

Appendix B – Coastal Consistency Determination



## **1 Purpose of and Need for the Proposed Action**

### **1.1 Introduction**

Marine Corps Air Station (MCAS) Cherry Point proposes to construct a living shoreline along its northern boundary, which is adjacent to the Neuse River in Craven County, NC. Due to significant erosion caused by Hurricane Florence in 2018, the shoreline is deteriorating rapidly, putting structures and water quality at risk. Repairs are being completed to stabilize existing bulkheads. In order to further protect those repairs, a living shoreline is ~~being~~ proposed. The living shoreline will reduce wave action before it reaches the shoreline, will provide habitat, and water quality improvements to the Neuse River.

The United States Marine Corps (USMC) has prepared this Environmental Assessment (EA) in accordance with the National Environmental Policy Act (NEPA), as implemented by the Council on Environmental Quality Regulations and Navy regulations for implementing NEPA.

### **1.2 Background**

The USMC seeks to construct a living shoreline in the Neuse River along the northern boundary at MCAS Cherry Point, Havelock, NC. This living shoreline will improve water quality, create valuable habitat, prevent erosion and mitigate flooding that would damage Cherry Point's vital infrastructure.

The shoreline is comprised of segments of hardened structures (bulkhead) bounded by segments of natural shorelines. Currently, several locations along the northern boundary of MCAS Cherry Point are experiencing significant erosion at the terminus of each bulkhead as well as severe undercutting of the bulkhead structure itself. As a result of this erosion, the adjacent natural shoreline is seeing significant erosion and large amounts of fill are being lost behind the bulkhead. The stabilization of these shorelines is a priority for Cherry Point, based on the potential degradation of water quality in the Neuse River and mission impacts due to the failing bulkheads. Current conditions have created unsafe conditions for landward and shoreline related training and recreational activities. Unchecked erosion will ultimately cause shoreline stabilization systems to fail, increasing safety risks and further soil loss into the Neuse River. This harms military readiness and degrades water quality.

Complete removal of the bulkheads is not an option due to the structures they currently support. Cherry Point plans to repair bulkheads in place and construct a living shoreline parallel to the Neuse River shoreline to protect existing structures and to reestablish a natural shoreline in the area. The ultimate goal is to construct a sill along the length of Neuse Shoreline. Phase 1 of this project will construct approximately 9,000 linear feet of shoreline. Phase 2 will construct an additional 2,100 linear feet.

### **1.3 Location**

MCAS Cherry Point is located on approximately 13,164 acres in Craven County, in the City of Havelock, North Carolina. (**Figure 1-1**).

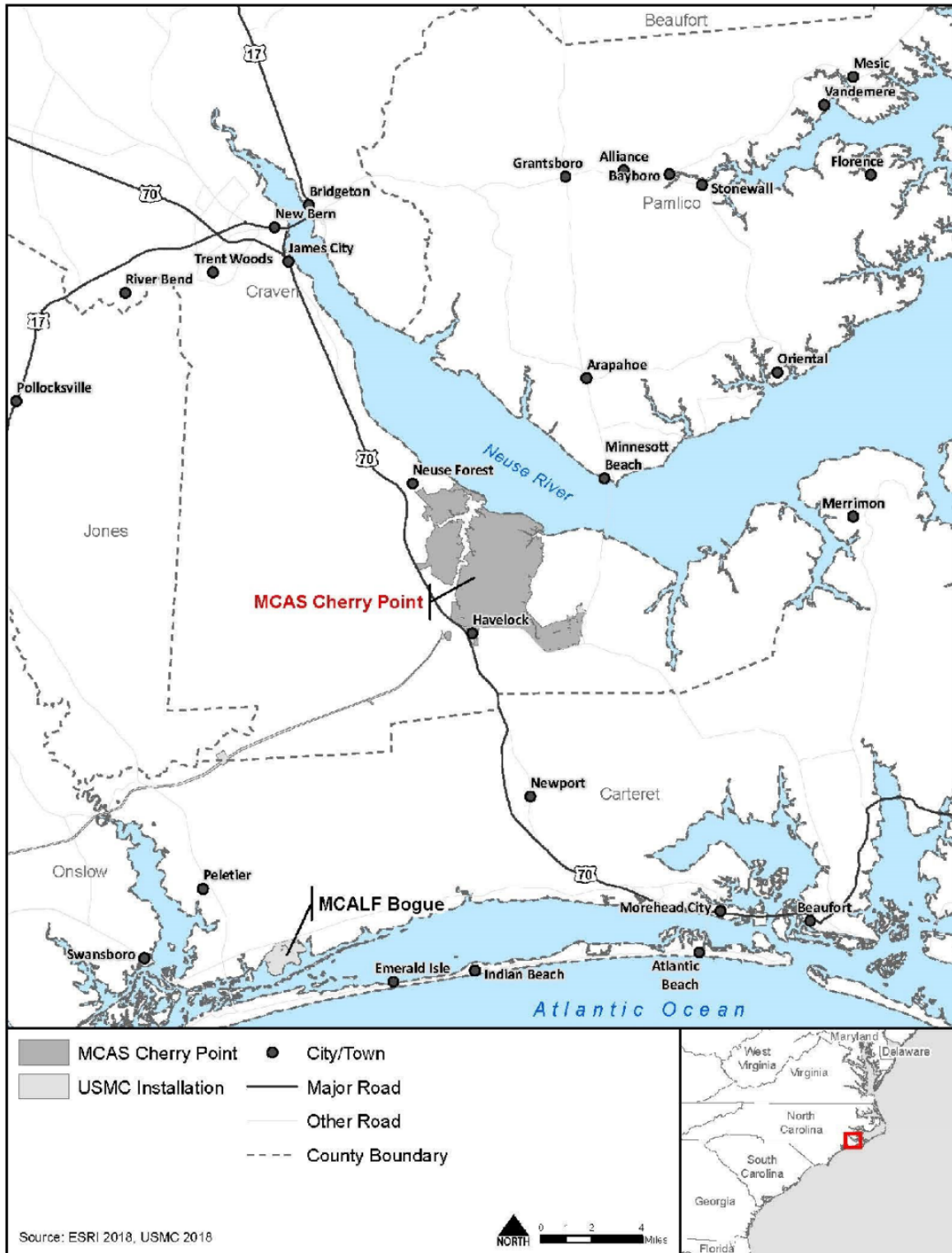


Figure 1-1 Location Map

#### **1.4 Purpose of and Need for the Proposed Action**

The purpose of the Proposed Action is to construct a living shoreline that will provide protection for USMC properties along the Neuse River, habitat for the many species that inhabit the river, and water quality improvements. More detailed goals of this project are:

- To attenuate wave energy to reduce the rate of shoreline erosion on the Neuse River, thereby protection USMC assets that utilize that shoreline.
- Increase resiliency of our shoreline by adding marsh grasses and restoring appropriate slopes that have been eroded.
- Enhance riparian habitat, shallow water habitat, and water quality in the Neuse River, which promotes recreational uses for our Marines, Sailors, and community neighbors.

The need for the Proposed Action is to enhance the resiliency and protect valuable shorelines, which include USMC assets that have been degraded due to erosion from coastal storms. A living shoreline will protect the investments the USMC has made, while providing important ecological functions and water quality improvements.

#### **1.5 Scope of Environmental Analysis**

This EA includes an analysis of potential environmental impacts associated with the action alternative and the No Action Alternative. The environmental resources initially evaluated in this EA include: air quality, water resources, geological resources, cultural resources, biological resources, land use, visual resources, airspace, noise, hazardous materials and waste, socioeconomics, and environmental justice. Due to the type of project and potential impacts, the EA will only analyze air quality, water resources, geological resources, biological resources, infrastructure, transportation, and public health and safety.

#### **1.6 Key Documents**

Key documents are sources of information incorporated into this EA. Documents are considered to be key because of similar actions, analyses, or impacts that may apply to this Proposed Action. Council on Environmental Quality (CEQ) guidance encourages incorporating documents by reference. Documents incorporated by reference in part or in whole include:

- MCAS Cherry Point Integrated Natural Resources Management Plan, 2012
- MCAS Cherry Point Shoreline Erosion and Living Shoreline Stabilization Study, 2019
- MCAS Cherry Point Assessment of the Commercial and Recreational Uses of the Waters Surrounding MCAS Cherry Point and the BTs, 2009

#### **1.7 Relevant Laws and Regulations**

The USMC has prepared this EA based upon federal and state laws, statutes, regulations, and policies pertinent to the implementation of the Proposed Action, including the following:

- NEPA (42 U.S.C. sections 4321–4370h)
- CEQ Regulations for Implementing the Procedural Provisions of NEPA (40 CFR 1500-1508)
- Department of Navy (DoN) Regulations for implementing NEPA (32 CFR 775)
- MCO 5090.2, Volume 12, Environmental Planning and Review
- Clean Air Act (42 U.S.C. section 7401 et seq.)
- Clean Water Act (33 U.S.C. section 1251 et seq.)
- Rivers and Harbors Act (33 U.S.C. section 407)
- Coastal Zone Management Act (16 U.S.C. section 1451 et seq.)
- Endangered Species Act (16 U.S.C. section 1531 et seq.)
- Marine Mammal Protection Act (16 U.S.C. section 1361 et seq.)
- Migratory Bird Treaty Act (16 U.S.C. section 703–712)
- Bald and Golden Eagle Protection Act (16 U.S.C. section 668–668d)
- EO 11988, Floodplain Management
- EO 13693, Planning for Federal Sustainability in the Next Decade
- Magnuson-Stevens Fishery Conservation and Management Reauthorization Act

A description of the Proposed Action’s consistency with these laws, policies and regulations, as well as the names of regulatory agencies responsible for their implementation, is presented in Chapter 5 (Table 5-1).

### **1.8 Public and Agency Participation and Intergovernmental Coordination**

Regulations from CEQ direct agencies to involve the public in preparing and implementing their NEPA procedures. For this project, which will affect lands within the boundaries of the air station and adjacent public trust waters, a scoping meeting was held on July 27, 2020 with the U.S. Army Corps of Engineers, NC Division of Environmental Quality, and all relevant stakeholders. The Final EA will be published to the MCAS Cherry Point website. A notice of availability will be published in the Havelock News, and comments will be accepted for a period of 30 days.



## 2 Proposed Action and Alternatives

### 2.1 Proposed Action

The USMC seeks to construct a living shoreline in the Neuse River along the northern boundary of MCAS Cherry Point, Havelock, NC. This living shoreline will improve water quality, create valuable habitat and also promote resiliency by preventing erosion and mitigating flooding that would damage the Marine Corps' vital infrastructure.

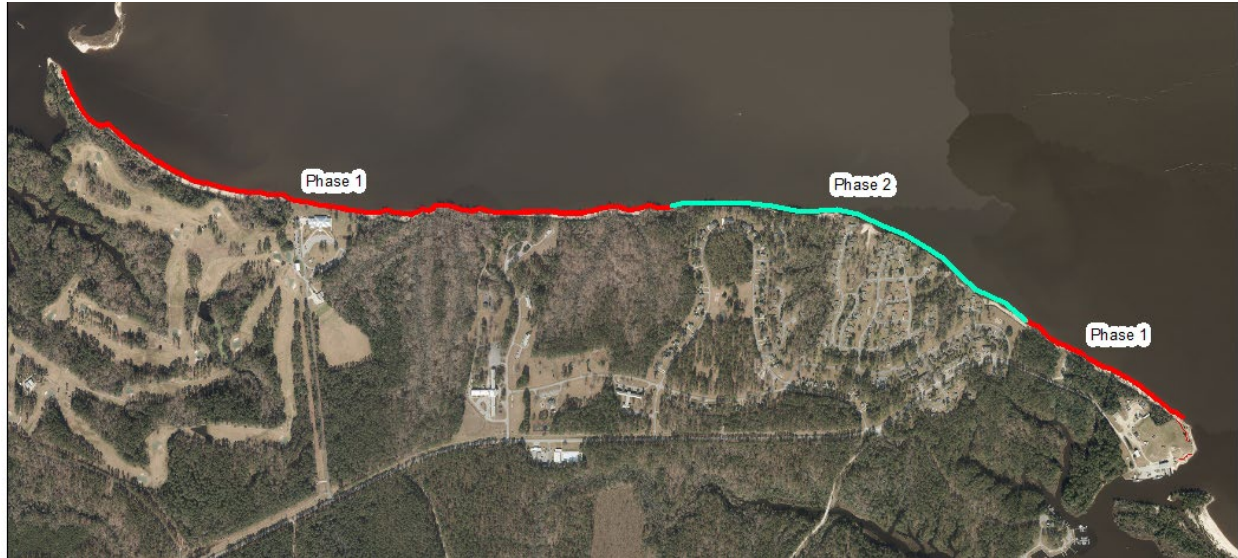
The project area consists of both hardened and natural, unprotected shorelines. There are approximately 5,500-feet of bulkhead structures along eight distinct segments that protect waterfront property along the Neuse River shoreline. None of the structures are contiguous (i.e., there are varying lengths of unarmored shoreline between each segment). Most of the bulkheads are in direct contact with the water during the majority of the normal tidal fluctuations, while several bulkheads are in contact with the water only occasionally – during storms or other high tidal events. The bulkheads appear to have been constructed at about the same time period and consist of steel sheet pile sections with a tieback system. The steel sections are coated with an epoxy. The steel sheet piles are generally 22 or 27 pounds per foot such as the old U.S Steel PZ22 or PZ27 type. An 18"x18" concrete cap typically connects and encases the top of sheet piles. The bulkheads generally retain between nine to 17 feet of soil. The retained soil grade is about four to six inches below the concrete cap. Starting from the bulkhead, the soil slopes up to the protected structures in a range of angles between approximately 5 to 25 degrees. The distance of the bulkhead to any building structure varies from about 50 to 100 feet. In addition to these bulkheads are segments of sporadically placed rock and/or broken concrete revetments. Bulkhead structures comprise approximately 5,500 linear feet of the shoreline, which is approximately 35-percent of the project area.

The unprotected shorelines are predominantly a mixture of mature trees, forested wetlands, marsh grass, and bare sediments. The shoreline segments vary in length from only 150 feet to approximately 3,000 feet and generally maintain a gradual nearshore slope. The shorelines also contain visual indicators of erosion such as escarpments, undercut banks, and fallen trees. The natural shoreline areas comprise approximately 10,500 linear feet of the project area.

The Neuse River and Estuary is a shallow waterbody with an average depth of 3.6 m (11.8 feet) and a width of 6.5 km (9.2 miles). Nautical charts depict water depths of 0.5 to 3 feet along the Cherry Point shoreline. The tide range is low, so the predominant water currents in the system are wind-driven. There is a NOAA gage located at the Marine Corps Air Station at 10 m (32.8 feet) above the ground. These data show predominant average hourly wind direction at Cherry Point varies throughout the year. For approximately half of the year (from September through March), the wind is from the north, which is blowing toward the Cherry Point shoreline. There is sufficient width in the Neuse River estuary to establish wind waves that interact with the shoreline. These wind waves can cause severe coastal erosion.

The project construction will be conducted in two phases, which are shown in Figure 2-1. Phase 1 will construct approximately 9,700 linear feet of living shoreline and granite sill. Phase 2 would construct an additional 2,100 linear feet.

**Figure 2-1 Project Location**



In 2017, a study was conducted to assess the structural integrity of each bulkhead as well as the natural shoreline segments shown in Figure 2-2. Table 2-1 summarizes the findings of that study.

**Figure 2-2 Bulkhead and Shoreline condition segments**



**Table 2-1 Bulkhead condition assessment**

Bulkhead Number	Condition
3495	Poor
3494	Poor
3493 & 3492	Poor/Serious
3491	Poor
3490	Fair
3489	Fair
3488	Fair
Navy Boat Docks	Fair

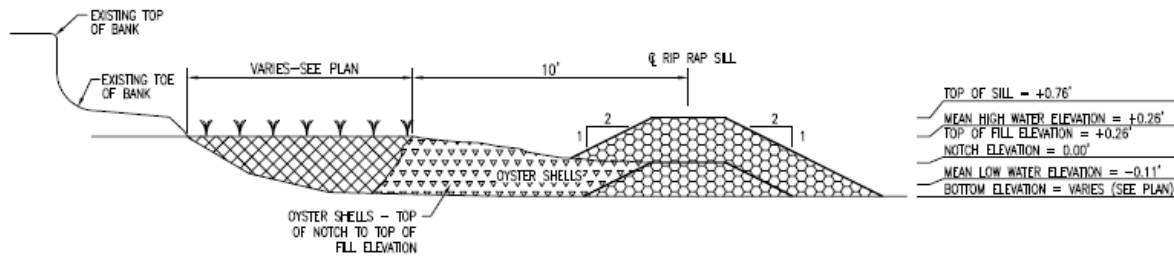
## **2.2 Alternatives Carried Forward for Analysis**

### **2.2.1 No Action Alternative**

Under the No Action Alternative, a living shoreline would not be constructed. Bulkhead repairs would continue as planned, but no additional protection would be established for those bulkheads. The No Action Alternative would not meet the purpose and need for the Proposed Action; however, as required by NEPA, the No Action Alternative is carried forward for analysis in this EA. The No Action Alternative will be used to analyze the consequences of not undertaking the Proposed Action, not simply conclude no impact, and will serve to establish a comparative baseline for analysis.

### **2.2.2 Alternative 1 – Construct Living Shoreline (Preferred Alternative)**

Alternative 1, the preferred alternative, would construct a living shoreline parallel to the shoreline of the Neuse River at MCAS Cherry Point, from Slocum Creek on the west, to Hancock Creek on the east. The living shoreline would consist of a granite sill constructed approximately 25-30 feet waterward of normal water level (NWL). This granite sill will be segmented to allow for flushing and cross-shore movement of fish and wildlife. Oyster shell will be installed at the landward toe and the landward fringe will be back-filled and planted with marsh grasses.

**Figure 2-3 Cross-Section of proposed Living Shoreline**

Phase 1 of the preferred alternative would permanently transform approximately 4.5 acres of bare sand and shallow water habitat into an intertidal coastal marsh vegetated with smooth cordgrass (*Spartina alterniflora*). In addition, Phase 1 of the preferred alternative would permanently transform approximately 3.0 acres of existing zone 1 riparian buffer from an eroding bare sandy beach into coastal wetlands vegetated with saltmeadow cordgrass (*Spartina patens*).

Phase 2 of the preferred alternative would permanently transform approximately 2.0 acres of bare sand and shallow water habitat in front of existing bulkheads into an intertidal coastal marsh vegetated with smooth cordgrass (*Spartina alterniflora*).

The overall project would provide approximately 6.5 acres of intertidal coastal marsh, vegetate approximately 3.6 acres of zone 1 riparian buffer and install approximately 12,000 linear feet (3.3 acres) of rock sill which provides aquatic habitat and a hard substrate for oyster colonization. While this seems to be a large quantity, the current condition of the shoreline and the riparian buffer is not ideal. Very little if any vegetation is currently located within the riparian buffer due to the erosion that has occurred (See Figure 2-4).

**Figure 2-4 Shoreline photo displaying escarpment and fallen vegetation**



The preferred alternative would permanently impact a total of approximately 10 acres of open water. Again, this quantity seems to be substantial, however, this segment of the Neuse River is over 3 miles wide. The proposed action would reduce open water habitat in this location by 0.13%. While this could be seen as a loss of a specific type of habitat, the habitat diversity will be greatly increased by introducing marsh habitat where it doesn't currently exist as well as rocky habitat from the granite sill, which would greatly increase the diversity of substrate that is currently available.

### **2.3 Alternatives Considered But Not Carried Forward for Analysis**

The following alternatives were considered, but not carried forward for detailed analysis in this EA, as they did not meet the purpose and need for the project.

**Bulkhead Expansion** – In order to prevent future erosion and loss of property, a bulkhead would be driven the length of the Neuse River shoreline and backfilled. This additional 9,200 linear feet of hardened structure would reduce erosion, but would eliminate habitat and access for recreational users. This alternative would impact several natural stream channels that exist along the length of the shoreline, forcing them to be piped at their outlet to the Neuse River. This alternative would not meet the purpose and need of the action.

**Construct Rock Sill but eliminate backfill and planting** – To minimize loss of shallow water habitat, one alternative considered, but eliminated from future analysis is the construction of the granite sill without the proposed backfill and planting of the shoreline. Over time, sediments suspended within the Neuse River would naturally backfill the shoreline. This natural backfilling process could take several years before enough fill has accumulated to commence with planting. This gradual process would leave unprotected sediments that would be more susceptible to eroding than those that are held together with the roots of plantings. It would not meet the purpose and need of the action.

**Riprap Revetment** – To minimize loss of further fill, riprap revetments could be placed along the entire shoreline, including the toe of each bulkhead. This alternative would eliminate shallow water habitat and reduce access for recreational users, as well as impacting several natural stream channel outfalls. This alternative would not meet the purpose and need of the action.

### 3 Affected Environment and Environmental Consequences

This chapter presents a description of the environmental resources and baseline conditions that could be affected from implementing any of the alternatives and an analysis of the potential direct and indirect effects of each alternative.

All potentially relevant environmental resource areas were initially considered for analysis in this Environmental Assessment (EA). In compliance with the National Environmental Policy Act (NEPA), the Council on Environmental Quality (CEQ), and Department of Navy guidelines; the discussion of the affected environment (i.e., existing conditions) focuses only on those resource areas potentially subject to impacts. Additionally, the level of detail used in describing a resource is commensurate with the anticipated level of potential environmental impact.

The potential impacts to the following resource areas are considered to be negligible or non-existent so they were not analyzed in detail in this EA:

**Airspace:** The Proposed Action does not alter, use, or have the potential to affect airspace at the installation.

**Hazardous Materials and Wastes:** The proposed action would not introduce any hazardous materials into the environment. Any wastes generated by construction would be disposed of under the existing Resource Conservation and Recovery Act (RCRA) –compliant water management programs and MCAS Cherry Point Standard Operating Procedures (SOPs).

**Cultural Resources:** No impacts to cultural resources would be expected.

**Socioeconomics:** No impacts to socioeconomics would be expected.

**Environmental Justice:** No impacts to socioeconomics and environmental justice would be expected.

#### 3.1 Air Quality

Air quality in a given location is defined by the concentration of various pollutants in the atmosphere. A region's air quality is influenced by many factors, including the type and amount of pollutants emitted into the atmosphere, the size and topography of the air basin, and the prevailing meteorological conditions.

Most air pollutants originate from human-made sources, including mobile sources (e.g., cars, trucks, buses) and stationary sources (e.g., factories, refineries, power plants), as well as indoor sources (e.g., some building materials and cleaning solvents). Air pollutants are also released from natural sources such as volcanic eruptions and forest fires.

##### 3.1.1 Regulatory Setting

###### 3.1.1.1 Criteria Pollutants and National Ambient Air Quality Standards

Under the Clean Air Act (CAA), the U.S. Environmental Protection Agency (USEPA) has established National Ambient Air Quality Standards (NAAQS) (40 CFR part 50) for these

pollutants. NAAQS are classified as primary or secondary. Primary standards protect against adverse health effects; secondary standards protect against welfare effects, such as damage to farm crops and vegetation and damage to buildings. Some pollutants have long-term and short-term standards. Short-term standards are designed to protect against acute, or short-term, health effects, while long-term standards were established to protect against chronic health effects.

Areas that are and have historically been in compliance with the NAAQS are designated as attainment areas. Areas that violate a federal air quality standard are designated as nonattainment areas. Areas that have transitioned from nonattainment to attainment are designated as maintenance areas and are required to adhere to maintenance plans to ensure continued attainment.

### **3.1.1.2 Mobile Sources**

Emissions from mobile sources are called Mobile Source Air Toxics (MSATs). MSATs are compounds emitted from highway vehicles and non-road equipment that are known or suspected to cause cancer or other serious health and environmental effects. In 2001, USEPA issued its first MSAT Rule, which identified 201 compounds as being Hazardous Air Pollutants (HAPs) that require regulation. A subset of six of the MSAT compounds was identified as having the greatest influence on health and included benzene, butadiene, formaldehyde, acrolein, acetaldehyde, and diesel particulate matter. More recently, USEPA issued a second MSAT Rule in February 2007, which generally supported the findings in the first rule and provided additional recommendations of compounds having the greatest impact on health. The rule also identified several engine emission certification standards that must be implemented (40 CFR parts 59, 80, 85, and 86; Federal Register Volume 72, No. 37, pp. 8427–8570, 2007). Unlike the criteria pollutants, there are no NAAQS for benzene and other HAPs. The primary control methodologies for these pollutants for mobile sources involves reducing their content in fuel and altering the engine operating characteristics to reduce the volume of pollutant generated during combustion.

### **3.1.1.3 Greenhouse Gases (GHGs)**

GHGs are gas emissions that trap heat in the atmosphere. These emissions occur from natural processes and human activities. Scientific evidence indicates a trend of increasing global temperature over the past century due to an increase in GHG emissions from human activities. The climate change associated with this global warming is predicted to produce negative economic and social consequences across the globe.

In an effort to reduce energy consumption, reduce GHGs, reduce dependence on petroleum, and increase the use of renewable energy resources, the Navy has implemented a number of renewable energy projects. The Navy has established Fiscal Year 2020 GHG emissions reduction targets of 34 percent from a FY 2008 baseline for direct GHG emissions and 13.5 percent for indirect emissions. Examples of Navy-wide GHG reduction projects include energy efficient construction, thermal and photovoltaic solar systems, geothermal power plants, and the

generation of electricity with wind energy. The Navy continues to promote and install new renewable energy projects.

### 3.1.2 Affected Environment

The most recent emissions inventory for Craven County is shown in **Table 3.1-1**. Volatile organic compound (VOC) and nitrogen oxide (NO<sub>x</sub>) emissions are used to represent ozone generation because they are precursors of ozone.

**Table 3-1. Craven County Air Emissions Inventory (2014)**

Location	VOC (tpy)	CO (tpy)	NO <sub>x</sub> (tpy)	SO <sub>2</sub> (tpy)	PM <sub>10</sub> (tpy)	PM <sub>2.5</sub> (tpy)
Craven County	24,700	31,869	3,193	1,134	3,472	1,866

Source: USEPA 2019.

**Legend:** tpy = tons per year; NO<sub>x</sub> = nitrogen oxide; VOC = Volatile Organic Compound; CO = Carbon Monoxide; SO<sub>2</sub> = sulfur dioxide; PM<sub>10</sub> = particulate matter less than or equal to 10 microns in diameter; PM<sub>2.5</sub> = particulate matter less than or equal to 2.5 microns in diameter.

### 3.1.3 Environmental Consequences

Effects on air quality are based on estimated direct and indirect emissions associated with the action alternatives. The region of influence (ROI) for assessing air quality impacts is the air basin in which the project is located, Craven County, North Carolina.

#### 3.1.3.1 No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur and there would be no change to baseline air quality. Therefore, no significant impacts to air quality or air resources would occur with implementation of the No Action Alternative.

#### 3.1.3.2 Construction of Living Shoreline (Preferred Alternative) Potential Impacts

The construction of the living shoreline could generate small, localized air quality impacts due to the heavy equipment required. This would be intermittent, for a period of months, and would not be significant. Implementation of the Preferred Alternative would contribute directly to emissions of GHGs from the combustion of fossil fuels. Construction activities would generate a limited amount of emissions and would not likely contribute to global warming to any discernible extent.

**Therefore, implementation of the Preferred Alternative would not result in significant impacts to air quality.**



### 3.2 Water Resources

MCAS Cherry Point is located within the Neuse River Basin. The air station is bounded on the north by the Neuse River, and to the east and west by Hancock and Slocum Creeks. There are approximately 1,234 acres of wetlands on the air station, covering around 11% of the land area. A total of 168 acres of the station is classified as emergent wetland. This herbaceous community is most common along the edges of the Neuse River, Slocum Creek, and Hancock Creek. Important components of this resilient community include big cordgrass (*Spartina cynosuroides*), black needlerush (*Juncus roemerianus*), Jamacia swamp sawgrass (*Cladium mariscus ssp. Jamaicense*), and broadleaf cattail (*Typha latifolia*).

#### 3.2.1 Regulatory Setting

The Clean Water Act (CWA) establishes federal limits, through the National Pollutant Discharge Elimination System (NPDES) program, on the amounts of specific pollutants that can be discharged into surface waters to restore and maintain the chemical, physical, and biological integrity of the water. The NPDES program regulates the discharge of point (i.e., end of pipe) and nonpoint sources (i.e., storm water) of water pollution. Waters of the United States are defined as (1) traditional navigable waters, (2) wetlands adjacent to navigable waters, (3) non-navigable tributaries of traditional navigable waters that are relatively permanent where the tributaries typically flow perennially or have continuous flow at least seasonally (e.g., typically 3 months), and (4) wetlands that directly abut such tributaries under Section 404 of the CWA, as amended, and are regulated by USEPA and the U.S. Army Corps of Engineers (USACE).

Section 404 of the CWA authorizes the Secretary of the Army, acting through the Chief of Engineers, to issue permits for the discharge of dredge or fill into wetlands and other Waters of the United States. Any discharge of dredge or fill into Waters of the United States requires a permit from the USACE.

Section 10 of the Rivers and Harbors Act provides for USACE permit requirements for any in-water construction. USACE and some states require a permit for any in-water construction. Permits are required for construction of piers, wharfs, bulkheads, pilings, marinas, docks, ramps, floats, moorings, and like structures; construction of wires and cables over the water, and pipes, cables, or tunnels under Section 404 of the CWA authorizes the Secretary of the Army, acting through the Chief of Engineers, to issue permits for the discharge of dredge or fill into wetlands and other Waters of the United States. Any discharge of dredge or fill into Waters of the United States requires a permit from the USACE.

The Coastal Zone Management Act of 1972 (CZMA) provides assistance to states, in cooperation with federal and local agencies, for developing land and water use programs in coastal zones. Section 307 of the CZMA stipulates that where a federal project initiates reasonably foreseeable effects to any coastal use or resource (land or water use, or natural resource), the action must be consistent to the maximum extent practicable with the

enforceable policies of the affected state's federally approved coastal management plan. The Division of Coastal Management is the lead agency for coastal management and is responsible for enforcing the State's federally approved coastal management plan.

### 3.2.2 Affected Environment

#### 3.2.2.1 Surface Water

Surface water includes all lakes, ponds, rivers, streams, and impoundments within a defined area or watershed. MCAS Cherry Point is located within the Neuse River Basin (HUC 03020204). The Neuse River bounds the station to the north, and two streams create the eastern and western boundaries of the station, Slocum and Hancock Creeks. Slocum Creek is located on the west side of the station and flows north into the Neuse River; Hancock Creek bounds MCAS Cherry Point to the east and then flows north into the Neuse River (MCAS Cherry Point 2012). The surface water classification of the Neuse River at the proposed project location is SB; Sw, NSW. Slocum Creek and Hancock Creek both have surface water classifications of SC; Sw, NSW (DWR Surface Water Classification Map).

**Table 3-2 Primary Surface Water Classifications near MCAS Cherry Point**

<b>Class SB</b>
Tidal salt waters protected for all SC uses in addition to primary recreation. Primary recreational activities include swimming, skin diving, water skiing, and similar uses involving human body contact with water where such activities take place in an organized manner or on a frequent basis.
<b>Class SC</b>
All tidal salt waters protected for secondary recreation such as fishing, boating, and other activities involving minimal skin contact; fish and noncommercial shellfish consumption; aquatic life propagation and survival; and wildlife.
<b>Swamp Water (Sw)</b>
Supplemental classification intended to recognize those waters which have low velocities and other natural characteristics which are different from adjacent streams.
<b>Nutrient Sensitive Waters (NSW)</b>
Supplemental classification intended for waters needing additional nutrient management due to being subject to excessive growth of microscopic or macroscopic vegetation.

During the 2017 shoreline study, the Neuse River immediately adjacent to each bulkhead and natural shoreline was evaluated. Table 3-3 summarizes these observations.

**Table 3-3 Shoreline and Bulkhead Condition Observations**

Shoreline Segment	Approximate Length (ft)	Nearshore Water Depths *
1	1,000	Shallow
2	2,250	Shallow
Bulkhead 3495	900	Shallow
3	1,750	Shallow
Bulkhead 3494	530	Shallow
4	1,400	Shallow
Bulkhead 3493/92	1500	Shallow
5	375	Shallow
Bulkhead 3491	300	Shallow
6	315	Shallow
Bulkhead 3490	430	Moderate
7	150	Shallow
Bulkhead 3489	400	Moderate
8	530	Shallow
Bulkhead 3488	800	Shallow
9	2,800	Shallow
Navy Boat Docks	650	Not measured

\*Shallow = less than ~3ft; Moderate = less than ~5ft. Depths approximated using metal rod.

### 3.2.2.2 Stormwater

Stormwater at MCAS Cherry Point is managed through the Air Station's Storm Water Pollution Prevention Plan. The purpose of the plan is to identify and map potential pollutant sources that may be expected to contribute to contamination of stormwater discharges from permitted outfall drainage areas and to provide an overview of the regulatory requirements and recommendations for control of stormwater runoff from the station into onsite or adjacent streams and other water bodies. MCAS Cherry Point also has an Integrated Contingency Plan that includes control measures and action to take in the event of a discharge that could impact surface waters. The Station's Spill Prevention, Control, and Countermeasure Rule provide

requirements for oil spill prevention, preparedness, and response to avoid oil spills to navigable waters (MCAS Cherry Point 2012).

Stormwater management at MCAS Cherry Point is implemented through an integrated system of BMPs, both structural and non-structural. Structural BMPs reduce, remove, and/or prevent pollutants from entering the stormwater system. These measures include absorbent booms, sluice gates used for spill control, oil/water separators, catch basins, retention/detention basins, and grassy swales. Non-structural BMPs include policies and procedures that reduce the amount of pollutant inputs into the environment by managing the source of the pollutants or minimizing exposure to stormwater through source reduction, pollution prevention, education, and land use management. If the Proposed Action is implemented, an Erosion and Sedimentation Control Plan would be necessary. The Environmental Affairs Department and the Stormwater Program Manager are responsible for ensuring that personnel at all levels are trained in accordance with the goals of the Erosion and Sedimentation Control and Stormwater Programs (MCAS Cherry Point 2012).

### 3.2.2.3 Wetlands

There are approximately 1,234 acres of wetlands within the boundaries of MCAS Cherry Point. There are approximately 734 acres of forested wetlands on the station, the majority of which are located in the riparian zones of the major streams and their tributaries. Blackwater swamps occur within the inland floodplains of the tributary streams. The main canopy of the forested wetlands includes swamp tupelo (*Nyssa biflora*), baldcypress (*Taxodium distichum*), red maple (*Acer rubrum*), sweetgum (*Liquidambar styraciflua*), and a variety of oaks (*Quercus* spp.); the mid-canopy is dominated by American hornbeam (*Carpinus caroliniana*). There are approximately 168 acres of emergent wetland on the station, which is found along the edges of the Neuse River, Slocum Creek, Hancock Creek, and their larger tributaries. These emergent wetlands contain big cordgrass (*Spartina cynosuroides*), black needlerush (*Juncus roemerianus*), Jamaica swamp sawgrass (*Cladium mariscus* spp. *Jamaicense*), and broadleaf cattail (*Typha latifolia*). The remaining wetlands on the station are small amounts of unconsolidated bottom and scrub-shrub wetland; there are also approximately 335 acres of wetlands where the specific type has yet to be determined (MCAS Cherry Point 2012).

In the natural shoreline areas between bulkheads, exist natural stream channels bounded by wetlands.

### 3.2.2.4 Coastal Zone and Shorelines

The coastal zone is the interface between land and water and is vital to the resiliency and well-being of our country. It supports half of the nation's population and supports ecologically important habitat and natural resources.

At Cherry Point, many functions are located on our shorelines, including housing, recreation, and military training. The interface between installation property and the Neuse River is critical. The current shoreline has been eroded and damaged through many years of storms and their associated storm surge. Sections of the shoreline that had been protected with bulkheads are seeing massive losses of earthen fill and the associated vegetation. Sediment inputs into the river from this erosion contribute to the overall water quality degradation in the Neuse River.

In 2017 a study was conducted that evaluated erosion rates on the Neuse River shoreline over the period from 1994 to 2017. Erosion rates were calculated in front of bulkheads as well as on natural shorelines. Results of this study are shown in Table 3-3 below. The natural, unprotected shorelines located along the MCAS Cherry Point shoreline are severely eroded with shoreline recession rates of up to ~5 ft/yr. Figure 3-2 shows a section of shoreline that was evaluated. For maps depicting erosion since 1994 for the entire proposed project area, refer to Appendix B.

**Figure 3-1 Digital photography comparison to determine erosion**



**Table 3-4      Recession of land surface by Shoreline Segment**

<b>Shoreline Segment</b>	<b>Maximum Shoreline Recession (ft) 1994-2017</b>
1	65
2	25
Bulkhead 3495	35
3	40
Bulkhead 3494	20
4	30
Bulkhead 3493/92	35
5	35
Bulkhead 3491	0*
6	25
Bulkhead 3490	0*
7	0
Bulkhead 3489	0*
8	50
Bulkhead 3488	50
9	85

\*These bulkheads did not support a waterward beach in 1994. The mean low water line exists at the bulkhead.

Shoreline segment 9 warrants specific details regarding the overall land surface and sediment lost. Segment 9 is approximately 2,800 linear feet in length. With a maximum recession of 85 feet over the length of the shoreline, a substantial amount of fill has been lost. This loss of land affects an important operational facility, the Navy Boat Docks Compound, located at the mouth of Hancock Creek.

### **3.2.3 Environmental Consequences**

In this EA, the analysis of water resources evaluates the potential impacts on surface waters, wetlands, the coastal zone, and shorelines.

### 3.2.3.1 No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur and there would be no change to baseline water resources. No stabilization of the shoreline would occur, so continued erosion and the resulting increased sedimentation into the Neuse River would continue to impact water quality. Storm surge and flooding would continue, unimpeded, further threatening structures along the shoreline. Erosion would continue to impact wetlands and the overall resiliency of the installation.

### 3.2.3.2 Construct Living Shoreline (Preferred Alternative) Potential Impacts

The preferred action would construct a granite sill and living shoreline, which would protect the shoreline from continued erosion. Reducing erosion would reduce sediment impacts into the Neuse River, which would improve water quality. Short term impacts from construction could result in increased turbidity for a brief period of time, however, these impacts would cease once construction is complete.

The preferred alternative will impact approximately 10 acres of open water habitat, however, this habitat will be replaced with more diverse and higher quality habitat such as intertidal coastal marsh. The sill itself will provide a varied aquatic habitat that does not currently exist in this portion of the Neuse River. Oyster shells placed along the landward toe of the rock sill could accelerate the colonization of a viable oyster resource, which would provide additional water quality improvements.

A living shoreline would provide flood control and improve the overall resiliency of the installation. The granite sill would reduce water velocities and reduce the height of wave action against the shoreline. This reduction in the force of water, along with the restored marsh grass habitat immediately behind the sill, will reduce potential for flooding, as the marsh will “absorb” the storm surge and prevent it from reaching the upland surfaces in most storms.

No freshwater wetlands will be impacted by the preferred action. However, the preferred action will assist in preventing the continued erosion of estuarine wetlands and adverse impacts associated with storm events.

The Coastal Zone and shorelines will be protected by the granite sill and marsh planting. A positive impact is expected.

**Therefore, implementation of the Preferred Alternative would not result in significant impacts to water resources. Positive impacts are anticipated.**

## 3.3 Geological Resources

Geological features of the region include the low-lying coastal plain which extends inland to the Suffolk scarp, which is defined by alluvial and estuarine valleys and adjacent terraces (Ator et al. 2005). The Suffolk scarp forms the boundary between the Outer and Inner Coastal Plain, and identifies an ancient shoreline that formed during the late Pleistocene Epoch, more than 10,000 years ago. Quaternary sedimentary rocks define the soils, which are primarily comprised of

undivided surficial deposits of sand, clay and gravel (North Carolina Geological Survey 1991). The North Atlantic Coastal Plain section of the Outer Coastal Plain Mixed Forest Province is further defined as having a flat terrain, with a weakly dissected alluvial plain. Soils in this section formed in a thick layer of recent marine shale and sand deposits (USDA 2005).

### **3.3.1 Affected Environment**

#### **3.3.1.1 Topography and Soils**

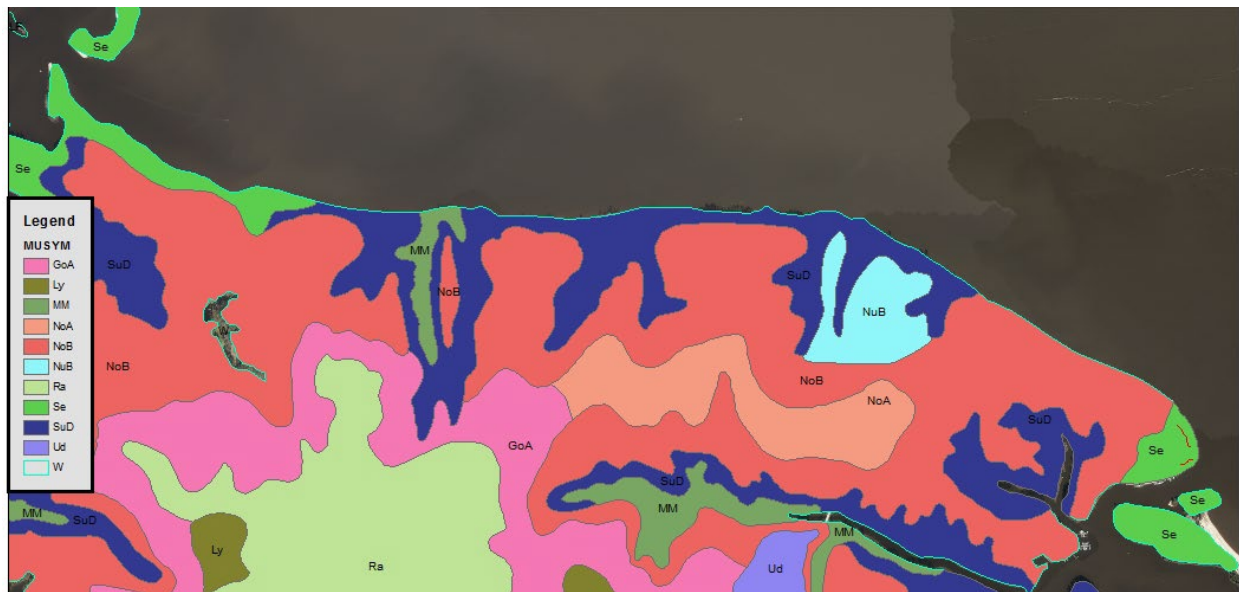
The topography of the Main Station is almost uniformly flat and poorly drained. Elevation ranges from near sea level along the shores of the Neuse River, Slocum Creek, and Hancock Creek, to 51 ft above MSL north of the airfield. Elevations of terraces located between stream systems are approximately 25–33 ft above MSL (USMC 2001). Land surface of the Main Station is part of the Talbot Terrace Plain formed of unconsolidated marine sediment deposits. These sediments were deposited and reshaped during several cycles of coastal emergence and submergence from the Cretaceous Period to present. Broad, flat terraces between major stream valleys characterize the land surface. Terraces slope rather abruptly to stream and tributary valleys, tending to be steeply sloped near outlets and more shallowly sloped inland.

There are 27 different soil series mapped on the Main Station, a majority which are hydric (69%) and associated with broad interstream divides and ridges of marine terraces (Table 2.1) (USDA NRCS 2009). The following seven soil series comprise 67% of Main Station soils: Norfolk loamy fine sand, 2–6% slopes, Rains fine sandy loam, Goldsboro loamy fine sand, 0–2% slopes, Urban land, Suffolk loamy sand, 10–30% slopes, Bragg soils, 0–8% slopes, and Autryville loamy sand, 0–6% slopes.

Soils of the Main Station range from well drained soils to very poorly drained soils. Areas of low relief contain soils that have low water retention capacity, with well drained soils generally associated with slopes of streams and rivers. Major well drained soils series of the Main Station include Norfolk loamy fine sand (2–6% slopes), Suffolk loamy sand (10–30% slopes), Bragg soils (0–8% slopes), Autryville loamy sand (0–6% slopes), and Norfolk–Urban land complex (0–6% slopes). Soils associated with broad interstream terraces are loamy sands or sandy loams, including Rains fine sandy loam, Lynchburg fine sandy loam, Norfolk–Urban land complex (0–6% slopes), Goldsboro–Urban land complex (0–2% slopes), Norfolk loamy fine sand (0–2% slopes), and Onslow loamy sand. Masontown mucky fine sandy loam and Muckalee sandy loam, frequently flooded, is associated with floodplain areas of the Main Station. Approximately 75% of soils classified as Urban land are covered by asphalt and buildings (USMC 2001).

Soils in the immediate vicinity of the proposed action include Goldsboro loamy fine sand, Seabrook loamy sand, Suffolk loamy sand, Norfolk loamy fine sand, and Masontown mucky fine sandy loam.



**Figure 3-2 Mapped Soils in the vicinity of the shoreline**

### 3.3.2 Environmental Consequences

#### 3.3.2.1 No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur and there would be no means to stabilize shorelines. Erosion would continue and soils would continue to be lost. This would result in a negative impact to geology and soils.

#### 3.3.2.2 Construct Living Shoreline (Preferred Alternative) Potential Impacts

The preferred alternative will stabilize shorelines, increase resiliency, and prevent future erosion.

Therefore, implementation of this alternative would not result in significant impacts to geological resources.

### 3.4 Biological Resources

Biological resources include living, 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.

Within this EA, biological resources are divided into five major categories: (1) terrestrial vegetation, (2) terrestrial wildlife, (3) marine vegetation, (4) marine wildlife, and (5) Threatened and Endangered Species.

### 3.4.1 Affected Environment

#### 3.4.1.1 Terrestrial Vegetation

Terrestrial vegetation along the Neuse River shoreline consists of a mixture of mature trees, forested wetlands, marsh grass, and stretches of non-vegetated sediments due to erosion. Species currently present include baldcypress, pine (*Pinus spp.*), black willow (*Salix nigra*), eastern red cedar (*Juniperus virginiana*), southern magnolia (*Magnolia grandiflora*), waxmyrtle (*Myrica cerifera*), salt hay grass (*Spartina patens*), saltbush (*Baccharis halimifolia*), and smooth cordgrass (*Spartina alterniflora*).

Riparian buffers act as a filter, removing pollutants and sediment from stormwater runoff. North Carolina Department of Environment Quality – Division of Water Resources in conjunction with Section 404 of the Clean Water Act, set out the Neuse Riparian Buffer Rules specifically to protect existing riparian buffers to reduce nutrient loading after multiple fish kills from toxins in the sounds. This rule applies to activities affecting vegetation within a 50-foot wide riparian buffer directly adjacent to surface waters in the Neuse River Basin, including intermittent streams, perennial streams, lakes, ponds, reservoirs, and estuaries. Proper management of the vegetation within riparian buffers is essential to the success and health of the ecosystem and resiliency of the community. Conditions for the living shoreline are dynamic within the riparian buffer. Desirable vegetation includes naturally occurring species of trees and various marsh grasses.

#### 3.4.1.2 Terrestrial Wildlife

Common mammal species at MCAS Cherry Point include white-tailed deer (*Odocoileus virginianus*), black bear (*Ursus americanus*), bobcat (*Lynx rufus*), gray fox (*Urocyon cinereoargenteus*), raccoon (*Procyon lotor*), striped skunk (*Mephitis mephitis*), swamp rabbit (*Sylvilagus aquaticus*), eastern cottontail (*Sylvilagus floridanus*), eastern gray squirrel (*Sciurus carolinensis*), fox squirrel (*Sciurus niger*), and many small rodents and shrews. Bird species that are widespread include wild turkey (*Meleagris gallopavo*), northern bobwhite (*Colinus virginianus*), and the mourning dove (*Zenaidura macroura*).

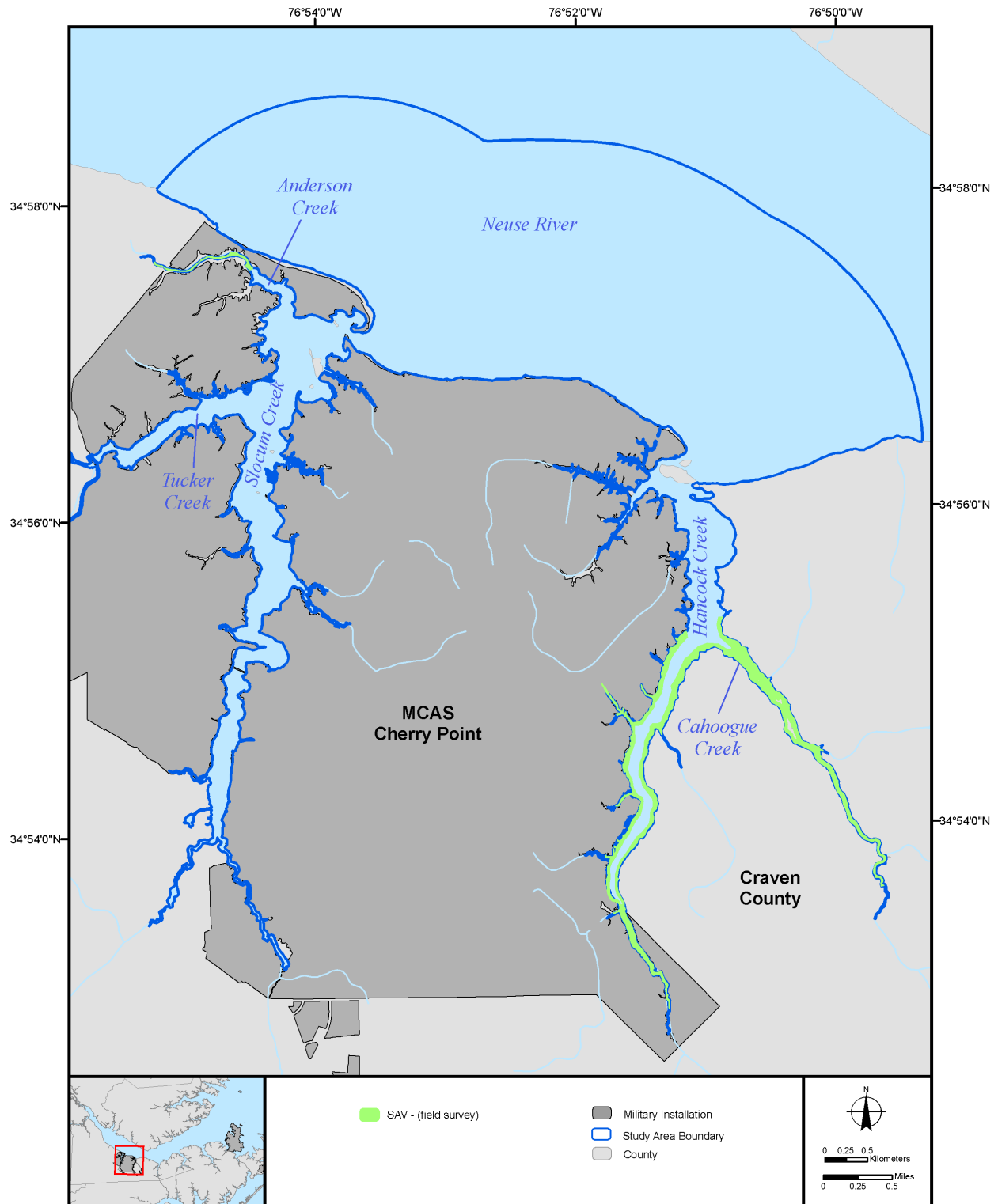
Resident and migratory waterfowl are also common. Ibis (subfamily *Threskiornithinae*), cormorants (family *Phalacrocoracidae*), herons and egrets (family *Ardeidae*), and belted kingfisher (*Ceryle alcyon*) are common throughout flooded areas. Common songbirds include red-eyed vireo (*Vireo olivaceus*), cardinal (family *Cardinalidae*), tufted titmouse (*Baeolophus bicolor*), ruby-throated hummingbird (*Archilochus colubris*), eastern towhee (*Pipilo erythrophthalmus*), wood thrush (*Hylocichla mustelina*), summer tanager (*Piranga rubra*), blue-gray gnatcatcher (*Poliophtila caerulea*), hooded warbler (*Wilsonia citrina*), and Carolina wren (*Thryothorus ludovicianus*). Common herpetofauna include box turtle (*Terrapene spp.*), common garter snake (*Thamnophis sirtalis*), eastern diamondback rattlesnake (*Crotalus adamanteus*), timber rattlesnake (*Crotalus horridus*), and American alligator (*Alligator mississippiensis*).

### **3.4.1.3 Marine Vegetation**

Marine vegetation includes plants occurring in marine or estuarine waters. These may include mangroves, algae, and various grasses. The Magnuson-Stevens Fishery Conservation and Management Act provides for the conservation and management of the fisheries. Under the Act, essential fish habitat (EFH) consists of the waters and substrate needed by fish to spawn, breed, feed, or grow to maturity.

MCAS Cherry Point is located on the southern shore of the Neuse River and bounded on either side by Hancock and Slocum Creeks. Water depths are shallow. No Submerged Aquatic Vegetation (SAV) has been mapped in the vicinity of MCAS Cherry Point. This is likely due to the frequent high wave energies focused in those shallow water habitats. However, seagrasses have been identified in the upper reaches of Hancock and Cahooque Creek (MCAS 2009).

**Figure 3-3 Estuarine and marine submerged aquatic vegetation (SAV) located in the vicinity of the MCAS Cherry Point.**



### 3.4.1.4 Marine Wildlife

#### Marine Mammals

Jurisdiction over marine mammals is maintained by NOAA Fisheries and the United States Fish and Wildlife Service (USFWS). All marine mammals are protected under the provisions of the Marine Mammal Protection Act (MMPA). The MMPA prohibits any person or vessel from “taking” marine mammals in the United States without authorization. The MMPA defines “take” to mean “to harass, hunt, capture, or kill or attempt to harass, hunt, capture, or kill any marine mammal.” The common bottlenose dolphin (*Tursiops truncatus*) is known to inhabit the Neuse River in the vicinity of MCAS Cherry Point.

The primary species of marine mammal that utilizes the Neuse River is the common bottlenose dolphin. While dolphins do utilize shallow waters, in the location of the preferred alternative, most waters are 3 feet or shallower, which is not preferred foraging habitat for these mammals.

#### Fish

The Neuse River supports abundant and varied fresh and brackish water sport fisheries (NCWILDLIFE.org). Recreational and Commercial fishermen utilize the Neuse River. According to a study performed on MCAS Cherry Point, these fishermen primarily sought trout (*Cynoscion spp.*), red drum (*Sciaenops ocellatus*), and southern flounder (*Paralichthys lethostigma*), along with the occasional striped bass (*Morone saxatilis*), bluefish (*Pomatomus saltatrix*), and Atlantic croaker (*Micropogonias undulatus*) in the more brackish portions of the creeks, while black crappie (*Pomoxis nigromaculatus*), sunfish (*Centrarchus spp.*), and largemouth bass (*Micropterus salmoides*) were sought in the fresher upper reaches (DoN 2009). The variety of fish present in the Neuse are largely due to seasonal salinity concentrations that are dependent on freshwater input and the wind tides the Neuse experiences in this area. Waterways around MCAS Cherry Point are jointly managed by the North Carolina Wildlife Resources Commission and the North Carolina Department of Marine Fisheries.

#### Benthic Invertebrates

Animals that live on the sea floor are called benthos. Most of these animals lack a backbone and are called invertebrates. Typical benthic invertebrates found in the Neuse River include oysters, blue crab, and shrimp. Shrimp and blue crab are an important fishery in the Neuse River near Cherry Point. Oysters are abundant further downstream, however, they are not currently present in large numbers in this portion of the Neuse River. It is unclear when the populations declined or why those populations no longer exist.

Through a partnership with Duke University, we are evaluating the feasibility of reintroduction of the oyster as the rock sill being proposed would serve as ideal habitat for this filter feeding bivalve. The re-introduction of this fishery that once thrived in this area, would be a great benefit to the Neuse River ecosystem.

### 3.4.1.5 Threatened and Endangered Species

There are seven threatened and endangered species that have the potential to occur on MCAS Cherry Point. Those species are listed in Table 3-5 below.

**Table 3-5 Threatened and Endangered Species and Species Potentially Occurring at MCAS Cherry Point**

<i>Common Name</i>	<i>Scientific Name</i>	<i>Federal Listing Status</i>	<i>State Listing Status</i>	<i>Critical Habitat Present?</i>
<b>Plants</b>				
Roughleaf loosestrife	<i>Lysimachia asperulifolia</i>	E	E	No
Sensitive joint-vetch	<i>Aeschynomene virginica</i>	T	E	No
<b>Birds</b>				
Red-cockaded woodpecker	<i>Picoides borealis</i>	E	E	No
Roseate tern	<i>Sterna dougallii</i>	E	E	No
<b>Fish</b>				
Shortnose sturgeon	<i>Acipenser brevirostrum</i>	E	E	No
<b>Herpetofauna</b>				
American Alligator	<i>Alligator mississippiensis</i>	T (SAT)	T	No
<b>Marine Mammals</b>				
West Indian Manatee	<i>Trichechus manatus</i>	E	-	No

Selections for Listing Status Column include: E = endangered, T = threatened, SAT = Listed due to similarity of appearance to threatened species (These species are not biologically threatened or endangered and are not subject to ESA section 7 consultation.).

#### Roughleaf Loosestrife

Roughleaf loosestrife (*Lysimachia asperulifolia*) is a federal and North Carolina endangered species that could potentially occur at the air station. Roughleaf loosestrife is endemic to North and South Carolina coastal plain and sandhill habitats (USFWS 1994). It occurs within ecotones located between longleaf pine and uplands, and pond pine pocosins on moist to seasonally saturated sands, and on shallow organic soils overlaying sand (USMC 2009a).

**Sensitive joint-vetch**

Sensitive (Virginia) joint-vetch (*Aeschynomene virginica*) is a federally threatened species and a North Carolina endangered species that occurs in intertidal zone areas that are flooded twice daily. This species could potentially occur at the air station due to the presence of suitable habitat; however surveys for this species have not identified it.

**Red Cockaded Woodpecker**

RCW is a federally endangered and North Carolina endangered species that historically occurred in longleaf pine forests of MCAS Cherry Point. This species has not been observed at MCAS Cherry Point since the 1970's (USMC 2001). In 1980, an abandoned colony was identified in the Ordnance Area of the Main Station, and in 1982 some evidence of recent RCW activity ("start" holes on a mature pine tree) were discovered; however no representatives were observed, and no further activity or evidence of this species occurring at the Main Station has been identified since 1982 (Rogers 1999). Subsequent surveys have not identified this species, or provided indications of their presence in suitable cavity trees.

Due to the presence of an established colony of RCW at Croatan National Forest, located approximately within 3 miles of suitable longleaf pine habitat at the Main Station, there is a potential for RCW to occur, however, it is unlikely that RCW would establish in forested land adjacent to the Neuse River.

**Roseate Tern**

The roseate tern breeds primarily on small offshore islands, islets, rocks, and cays; rarely do they breed on large islands. They typically nest near vegetation or jagged rock, close to the waterline on narrow ledges of emerging rocks, on open sandy beaches, or among coral rubble. Habitat for roseate terns exists in the adjacent Carteret County; however, the species has not been observed in the county for more than 20 years (USMC 2009d). No known habitat for the Roseate Tern exists at MCAS Cherry Point.

**Shortnose Sturgeon**

(*Acipenser brevirostrum*) is a federal and North Carolina endangered species that has the potential to occur in offshore waters of the Main Station, Piney Island, OLF Atlantic, Pamlico Point, Maw Point, and Cat Island. However, presence of this species in these waters has not been documented. Former and current distribution of shortnose sturgeon is uncertain (Hightower 2001) and in North Carolina, current populations are thought to be restricted to the Cape Fear River and Albemarle Sound (NMFS 2002). No reports of this species are associated with the Neuse River.

### **American Alligator**

The federally and State threatened American alligator occurs at the Main Station (Table 4.1) (LeBlond et al. 1994). Although this species is considered fully recovered, it is listed as threatened due to similarity in appearance with the federally endangered American crocodile. No critical habitat rules have been published by USFWS for American alligator (USFWS 2021).

The Main Station supports a breeding population of American alligator, with a range of alligator sizes (post-hatchling to adult) commonly observed in the Hancock and Slocum creek areas, with nests observed in Jack's Branch (LeBlond et al. 1994, USMC 2001).

### **West Indian Manatee**

This West Indian manatee includes two distinct subspecies, Florida manatee (*Trichechus manatus latirostris*) and Antillean manatee (*Trichechus manatus manatus*); however the two subspecies share similar physical characteristics, and are distinguished based on their range (USFWS 2021). Range of Florida manatees is primarily restricted to the southeastern U.S., although they are occasionally observed as far north as Massachusetts, and as far west as Texas. Antillean manatees are found in coastal and riverine systems of South and Central America (from Brazil to Mexico), and in the Greater and Lesser Antilles throughout the Caribbean Basin. West Indian manatee inhabits both marine and freshwater habitats, with a preference for warm water. They are herbivores, feeding on a variety of marine, estuarine, and freshwater plants, including submerged, floating and emergent vegetation. Manatees are rarely seen in the Neuse River, however their presence is possible.

## **3.4.2 Environmental Consequences**

### **3.4.2.1 No Action Alternative**

Under the No-Action Alternative, the Proposed Action would not occur and the shoreline would remain vulnerable to continued shoreline erosion. If shoreline erosion were to continue at its current rate, the result would be negative impacts to biological resources.

### **Terrestrial Vegetation**

The No Action Alternative will not stabilize the shoreline, therefore continued erosion will occur and resiliency will be decreased. Terrestrial vegetation will be severely impacted by that erosion. Shoreline trees will be eliminated as the soils below them are swept away by storm waters. Forested areas will become un-vegetated, barren beaches.

### **Terrestrial Wildlife**

With no stabilization activities to protect shoreline vegetation, habitat available for terrestrial wildlife will be reduced. For most species, they will migrate inland and utilize other habitats



available to them on Cherry Point. For those species that utilize the Neuse River, access will be greatly restricted due the escarpments and steep bluffs.

### **Marine Vegetation**

As there has been no marine vegetation observed in the vicinity of the project area, the No Action Alternative would not impact marine vegetation.

### **Marine Wildlife**

With continued shoreline erosion and increased sediment load in the Neuse River, marine wildlife will be detrimentally impacted by increased sediment loads and turbidity. Diversity will continue to be impacted as no suitable habitat would exist for many species.

### **Threatened and Endangered Species and Species at Risk**

With no stabilization activities to protect shoreline vegetation and habitat available for threatened and endangered flora and fauna. For most species, they will migrate inland and utilize other habitats available to them on Cherry Point. For those species that utilize the Neuse River, access will be greatly restricted due the escarpments and steep bluffs.

## **3.4.2.2 Construct Living Shoreline (Preferred Alternative) Potential Impacts**

### **Terrestrial Vegetation**

All work will minimize any impacts to vegetation and will re-establish vegetation in those areas that erosion has eliminated the riparian buffer. This will be a positive impact and increase the resiliency of the shoreline.

### **Terrestrial Wildlife**

The proposed alternative will repair severe erosion that has caused large scarps along the length of the Neuse River shoreline. Any improvements to this erosion will have a great benefit to terrestrial wildlife, as they will now have access restored to the Neuse River and the resources it provides.

### **Marine Vegetation**

As there has been no marine vegetation observed in the vicinity of the project area, the No Action Alternative would not impact marine vegetation. Altering the wave energies in the shallow waters of the Neuse River by installing the granite sill could encourage the establishment of SAV beds along the shoreline. This would be a positive impact of the Preferred Alternative.

### **Marine Wildlife**

The preferred action will have a minimal impact on wildlife species during construction. Any wildlife species that may occupy the project site would likely be temporarily displaced. There are ample adjacent areas in which to feed or take cover during construction.

Once construction has been completed, the preferred action should have a positive effect on local wildlife by reducing shoreline erosion and increasing habitat diversity.

While backfill of the living shoreline in advance of the planting of marsh grasses may displace some wildlife, including invertebrates that utilize the sandy bottom, it is not expected that this habitat loss would be a significant impact. Overall, the project will increase habitat and habitat diversity, which will benefit the Neuse River wildlife communities as a whole.

Due to the depths of water in which the work is taking place (quantify the depth at which the sill will be installed), it is unlikely that the installation will have any impact on marine mammals that may be in the Neuse River. If marine mammals are observed during construction, work will cease until the individuals have left the area. No formal consultation would be required.

### **Threatened and Endangered Species**

#### **Roughleaf Loosestrife**

The preferred alternative is not expected to impact this species, as it has not been identified in the project area.

#### **Sensitive joint-vetch**

The preferred alternative is not expected to impact this species, as it has not been identified in the project area.

#### **Red Cockaded Woodpecker**

The preferred alternative is not expected to impact this species, as it has not been identified in the project area.

#### **Roseate Tern**

The preferred alternative is not expected to impact this species, as it has not been identified in the project area.

#### **Shortnose Sturgeon**

The preferred alternative is not expected to impact this species, as it has not been identified in the project area.

#### **American Alligator**

Due to construction activities and timing, it is unlikely that any alligator would be present during construction. If an alligator is observed, construction will cease until the individual has left the area.

### **West Indian Manatee**

Due to the depths of water in which the work is taking place (less than 3 feet of water), and the rare occurrence of manatees in the Neuse River, it is unlikely that the construction of the preferred alternative will have any impact on manatees. If a manatee is observed during construction, work will cease until the individuals have left the area.

There would be no significant impact on threatened and endangered species and no formal consultation between the U.S. Navy and USFWS or NOAA Fisheries would be required.

**Therefore, implementation of the Preferred Alternative would not result in significant impacts to biological resources.**

### **3.5 Infrastructure**

The project area encompasses eight (8) areas that are currently protected by bulkheads. These bulkheads total approximately 5,500 linear feet of the shoreline. Most of this linear footage is in direct contact with the water during normal tidal fluctuations. Most are composed of steel sheet pile sections with a tieback system and concrete cap. In recent storm events, severe erosion has occurred at each bulkhead terminus, as they are segmented along the shoreline. This erosion has scoured out backfill, removed native vegetation, and has generally de-stabilized the structures. Due to the large amount of fill behind these bulkheads which support numerous base functions, it is not feasible to remove the bulkheads. Repairs to these bulkheads are being made, however, additional protection by way of a living shoreline is being proposed.

#### **3.5.1 Affected Environment**

##### **3.5.1.1 Facilities/Real property**

Several facilities exist on fill that is currently supported by bulkheads. These structures are important sectors of the installation, including housing, recreation, and Marine Corps Community Services.

#### **3.5.2 Environmental Consequences**

##### **3.5.2.1 No Action Alternative**

Under the No Action Alternative, the Proposed Action would not occur and there would be no additional protection for the bulkheads that are currently in place. High water events and storms would continue to occur and erosion at the terminus of each bulkhead would continue. This erosion would ultimately lead to the shorelines and bulkheads becoming de-stabilized and requiring additional major repairs.

##### **3.5.2.2 Construct Living Shoreline (Preferred Alternative) Potential Impacts**

Under the preferred alternative, the living shoreline would serve as protection to the bulkheaded shoreline by slowing down water velocities and reducing stress on the shoreline.

This would result in less maintenance costs and reduce the threat to infrastructure from storms and erosion. The living shoreline would increase the resiliency of the shoreline. Therefore, implementation of this action alternative would not result in significant impacts to infrastructure.

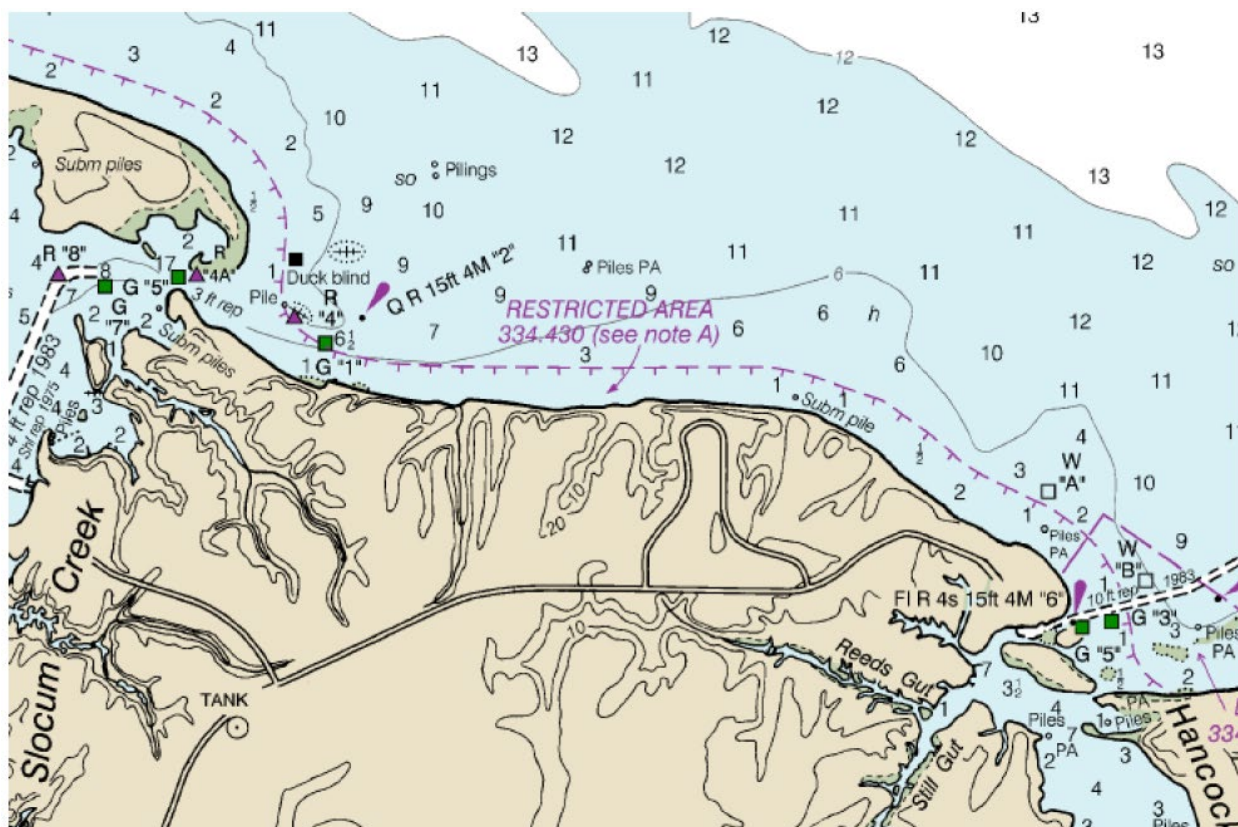
### 3.6 Transportation

The Neuse River is a large navigable water that supports commercial and recreational fisheries and recreational users in vessels of varying sizes.

#### 3.6.1 Regulatory Setting

The proposed living shoreline will be constructed within public trust waters, which are open to boating and recreational uses. 33 CFR 334.430 restricts access within 500 feet of the shoreline, as a security measure. The living shoreline will fall within that restricted area, which will serve as a means of protection for the sill. As the Neuse River is a navigable water, lighting will be present in order to provide safe transportation for vessels during the nighttime hours.

**Figure 3-4 Excerpt of NOAA Nautical Chart #11552 along MCAS Cherry Point Shoreline**



### **3.6.2 Affected Environment**

The Neuse River is a large navigable water that supports commercial and recreational fisheries and recreational users in vessels of varying sizes. The river is considered Public Trust Waters and is generally open to the public, with some exceptions. In the location of the project, water depths are around 3 feet, so only smaller vessels (kayaks, flat-bottomed skiffs) frequently utilize the area.

### **3.6.3 Environmental Consequences**

#### **3.6.3.1 No Action Alternative Potential Impacts**

Under the No Action Alternative, the Proposed Action would not occur and there would be no change to transportation. With continued erosion and the resultant sedimentation within waterways, there is the potential for shoaling and the need for future dredging downstream of MCAS Cherry Point. Due to the overall size of the Neuse River, this is likely not a significant impact.

#### **3.6.3.2 Construct Living Shoreline (Preferred Alternative) Potential Impacts**

The Neuse River is relatively shallow in the location where the living shoreline will be installed. Any vessel traffic in that area consists of fishermen, crabbers, and recreational users. There may be some temporary impacts to transit during the construction of the sill, due to the presence of turbidity curtains to prevent excessive sedimentation. After construction is completed, transit immediately adjacent to the shoreline will be impeded, however, since that area is codified as a restricted area, there will be no significant impact to transportation. Implementation of the Preferred Alternative would not result in significant impacts to transportation.

### **3.7 Public Health and Safety**

This discussion of public health and safety includes consideration for any activities, occurrences, or operations that have the potential to affect the safety, well-being, or health of members of the public. A safe environment is one in which there is no, or optimally reduced, potential for death, serious bodily injury or illness, or property damage. The primary goal is to identify and prevent potential accidents or impacts on the general public. Public health and safety within this EA discusses information pertaining to community emergency services, construction activities, operations, and environmental health and safety risks to children.

#### **3.7.1.1 No Action Alternative**

Under the No Action Alternative, the Proposed Action would not occur and there would be a continued significant risk to public health and safety. Fencing behind the housing area is in place to prevent children and adults from accessing the shoreline. However, it does not completely prevent or restrict access. Because of the unsafe current conditions, children or adults could fall behind the bulkheads and become entrapped. Erosion would continue to

occur and sediment would continue to detrimentally affect water quality in the Neuse River. Negative impacts would occur with implementation of the No Action Alternative.

#### **3.7.1.2 Construct Living Shoreline (Preferred Alternative) Potential Impacts**

Impacts to public health and safety from the proposed action would be primarily positive impacts, as increases to water quality will reduce the number of water borne illnesses/pathogens present in the Neuse River, making consumption of seafood from the river safer.

Residents and patrons of the air station will have safe access to the shoreline where they are able to recreate and exercise with stable shorelines. During construction, all safety procedures will be followed in order to ensure the safety of construction workers and patrons of the air station. Lighting and signage will be installed once construction is complete to avoid nighttime boating accidents.

Therefore, implementation of the Preferred Alternative would not result in significant impacts to public health and safety.

### **3.8 Summary of Potential Impacts to Resources and Impact Avoidance and Minimization**

A summary of the potential impacts associated with each of the action alternatives and the No Action Alternative is presented in Table 3-6.

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Table 3-6 Summary of potential impacts to Resources

<b>Resource Area</b>	<b>No Action Alternative</b>	<b>Alternative 1 (Preferred Alternative)</b>
<b>Air Quality</b>	<ul style="list-style-type: none"> <li>The No Action Alternative would have no impacts to air quality.</li> </ul>	<ul style="list-style-type: none"> <li>The emissions associated with construction would be temporary and localized.</li> </ul>
<b>Water Resources</b>	<ul style="list-style-type: none"> <li>Continued erosion and increased sediment into surface waters</li> <li>Storm surge and flooding would continue to threaten structures along the shoreline</li> <li>Erosion would impact wetlands</li> </ul>	<ul style="list-style-type: none"> <li>Reduce erosion and sediment inputs into the Neuse River</li> <li>Provide habitat diversity</li> <li>Provide Flood Control</li> <li>Provide protection of coastal zone and shorelines</li> </ul>
<b>Geological Resources</b>	<ul style="list-style-type: none"> <li>Continued erosion and increased sediment into surface waters</li> </ul>	<ul style="list-style-type: none"> <li>Provide protection of soils and reduction of erosion to preserve land</li> </ul>
<b>Biological Resources</b>	<ul style="list-style-type: none"> <li>Continued erosion and increased sediment into surface waters</li> <li>Decreased water quality due to turbidity and sediment loads</li> <li>Continued lack of diverse habitat and detrimental to marine wildlife</li> </ul>	<ul style="list-style-type: none"> <li>Terrestrial vegetation – Re-establish functional riparian buffer</li> <li>Terrestrial Wildlife – Improved access to Neuse River and its resources</li> <li>Marine Vegetation – Possibility to restore SAV in the Neuse</li> <li>Marine Wildlife – Increased diversity of habitat</li> <li>Threatened and Endangered Species - no impact.</li> </ul>
<b>Infrastructure</b>	<ul style="list-style-type: none"> <li>Continued erosion puts infrastructure at risk</li> <li>More frequent and costly maintenance and repair to maintain status quo</li> </ul>	<ul style="list-style-type: none"> <li>Protection from erosion and flooding for critical infrastructure</li> <li>Reduction in frequency and cost of maintenance and repairs</li> </ul>



<b><i>Transportation</i></b>	<ul style="list-style-type: none"><li>• The No Action Alternative would not impact transportation or traffic on station roads.</li><li>• Increased sedimentation into the Neuse River could cause shoaling and require increased dredging to maintain navigation channels for vessels.</li></ul>	<ul style="list-style-type: none"><li>• No impacts to transportation or traffic on station roads.</li><li>• Granite sill would be marked so as not to obstruct navigation in public trust waters.</li></ul>
<b><i>Public Health and Safety</i></b>	<ul style="list-style-type: none"><li>• Continued erosion and increased sediment into surface waters will continue to degrade water quality</li><li>• Continued risk to residents living and recreating in the area due to unsafe bulkheads</li></ul>	<ul style="list-style-type: none"><li>• Reduced erosion and sediment into surface waters will improve water quality</li><li>• Improve safety for residents living next to shoreline or recreating in the area</li></ul>

## 4 Cumulative Impacts

This section (1) defines cumulative impacts, (2) describes past, present, and reasonably foreseeable future actions relevant to cumulative impacts, (3) analyzes the incremental interaction the proposed action may have with other actions, and (4) evaluates cumulative impacts potentially resulting from these interactions.

### 4.1 Definition of Cumulative Impacts

The approach taken in the analysis of cumulative impacts follows the objectives of the National Environmental Policy Act (NEPA), Council on Environmental Quality (CEQ) regulations, and CEQ guidance. Cumulative impacts are defined in 40 CFR section 1508.7 as “the impact on the environment that results from the incremental impact of the action when added to the other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.”

To determine the scope of environmental impact analyses, agencies shall consider cumulative actions, which when viewed with other proposed actions have cumulatively significant impacts and should therefore be discussed in the same impact analysis document.

In addition, CEQ and USEPA have published guidance addressing implementation of cumulative impact analyses—Guidance on the Consideration of Past Actions in Cumulative Effects Analysis (CEQ 2005) and Consideration of Cumulative Impacts in EPA Review of NEPA Documents (USEPA 1999). CEQ guidance entitled *Considering Cumulative Impacts Under NEPA* (1997) states that cumulative impact analyses should

“...determine the magnitude and significance of the environmental consequences of the proposed action in the context of the cumulative impacts of other past, present, and future actions...identify significant cumulative impacts...[and]...focus on truly meaningful impacts.”

Cumulative impacts are most likely to arise when a relationship or synergism exists between a proposed action and other actions expected to occur in a similar location or during a similar time period. Actions overlapping with or in close proximity to the proposed action would be expected to have more potential for a relationship than those more geographically separated. Similarly, relatively concurrent actions would tend to offer a higher potential for cumulative impacts. To identify cumulative impacts, the analysis needs to address the following three fundamental questions.

- Does a relationship exist such that affected resource areas of the proposed action might interact with the affected resource areas of past, present, or reasonably foreseeable actions?

- If one or more of the affected resource areas of the proposed action and another action could be expected to interact, would the proposed action affect or be affected by impacts of the other action?
- If such a relationship exists, then does an assessment reveal any potentially significant impacts not identified when the proposed action is considered alone?

## 4.2 Scope of Cumulative Impacts Analysis

The scope of the cumulative impacts analysis involves both the geographic extent of the effects and the time frame in which the effects could be expected to occur. For this EA, the study area delineates the geographic extent of the cumulative impacts analysis. In general, the study area will include those areas previously identified in Chapter 3 for the respective resource areas. The time frame for cumulative impacts centers on the timing of the proposed action.

Another factor influencing the scope of cumulative impacts analysis involves identifying other actions to consider. Beyond determining that the geographic scope and time frame for the actions interrelate to the proposed action, the analysis employs the measure of “reasonably foreseeable” to include or exclude other actions. For the purposes of this analysis, public documents prepared by federal, state, and local government agencies form the primary sources of information regarding reasonably foreseeable actions. Documents used to identify other actions include notices of intent for EISs and EAs, management plans, land use plans, and other planning related studies.

## 4.3 Past, Present, and Reasonably Foreseeable Actions

This section will focus on past, present, and reasonably foreseeable future projects at and near the Proposed Action locale. In determining which projects to include in the cumulative impacts analysis, a preliminary determination was made regarding the past, present, or reasonably foreseeable action. Specifically, using the first fundamental question included in Section 4.1, it was determined if a relationship exists such that the affected resource areas of the Proposed Action (included in this EA) might interact with the affected resource area of a past, present, or reasonably foreseeable action. If no such potential relationship exists, the project was not carried forward into the cumulative impacts analysis. In accordance with CEQ guidance (CEQ 2005), these actions considered but excluded from further cumulative effects analysis are not catalogued here as the intent is to focus the analysis on the meaningful actions relevant to informed decision-making. Projects included in this cumulative impacts analysis are briefly described in the following subsections.

### 4.3.1 Past Actions

**Grow the Force in North Carolina.** The Marine Corps prepared an EIS in December 2009 to evaluate the environmental impacts associated with an increase in 9,900 Marine Corps and civilian personnel at Marine Corps Base Camp Lejeune, MCAS New River, and MCAS Cherry Point. Also analyzed was the construction of new infrastructure and demolition and upgrades to existing infrastructure to support the staff increases. No significant impacts to resources from

the addition of personnel and construction of associated facilities at MCAS Cherry Point were identified. A Record of Decision for the action was published on February 2, 2010 (DoN 2010a). All construction projects at MCAS Cherry Point associated with the Grow the Force action are currently complete; therefore, there would be no temporal overlap with the construction proposed in this EA.

**Basing the U.S. Marine Corps F-35 on the East Coast.** The U.S. DoN prepared an EIS in May 2010 to evaluate the environmental impacts associated with basing of three F-35 operational squadrons and the Pilot Training Center at MCAS Beaufort in Beaufort, South Carolina, and eight operational squadrons at MCAS Cherry Point (DoN 2010b). To support the basing action, the proposed action included: construction and renovation of airfield facilities and infrastructure necessary to accommodate and maintain the F-35 squadrons; changes to personnel to accommodate squadron staffing; and required F-35 training operations. The F-35 aircraft replace legacy Marine Corps F/A- 18A/B/C/D Hornet and AV-8B Harrier aircraft. The EIS determined that there would be no significant, immitigable impacts at MCAS Cherry Point. A Record of Decision for the action was published on December 15, 2010 (DoN 2010b).

**Fleet Readiness Center East Facilities Improvements in Support of F-35 Depot Capability Establishment.** The U.S. DoN prepared an EA in June 2013 to evaluate the environmental impacts associated with establishing depot-level maintenance capabilities for the F-35 aircraft at Fleet Readiness Center East at MCAS Cherry Point. Construction of new facilities and modification of an existing facility were considered. The analysis indicated there would be no significant impact to resources associated with the proposed construction of new facilities and modification of an existing facility in support of establishing the Fleet readiness Center.

#### **4.3.2 Present and Reasonably Foreseeable Actions**

**U.S. 70, Havelock Bypass.** In December 2016, a Record of Decision was signed by the Department of Transportation, Federal Highway Administration for the construction of a 10.3-mile four-lane divided bypass around the southwest side of the City of Havelock and MCAS Cherry Point (Federal Highway Administration 2016). The EIS concluded that there would be impacts from change in land use, impacts to community facilities from displacement of the Craven County Waste Transfer facility, water quality impacts from increased stormwater runoff, localized increases in noise from traffic, fragmentation of some plant communities, and impacts to wetlands. Construction is to be completed in 2021 (DoT 2015). There would be a temporal overlap with the construction under the preferred alternative analyzed in this EA.

**Roadway Improvements in Support of Flightline Utilities Modernization.** The Marine Corps prepared an EA in May of 2017 to evaluate the environmental impacts of making improvements to 5th Avenue and C Street and creating temporary parking areas to ensure these streets could accept the volume of traffic diverted from 6th Avenue and A Street during the flightline utilities modernization project with minimal impact to traffic flow and that adequate parking would be available to offset parking area closures (DoN 2017). The proposed roadway improvements would be implemented in two phases. Phase 1 would: establish temporary parking area(s); extend 5th Avenue at the northwest and southeast terminus points; and widen C Street. Phase

2 would: establish permanent replacement asphalt parking areas; and remove the temporary parking areas. Facility demolition would be required in some areas. Phase 1 of the project began in FY 2019 and Phase 2 will begin in FY 2021 with each phase requiring approximately two years. The EA concluded there would be minor to negligible adverse impacts during construction and positive impacts to traffic and transportation.

**Bulkhead Repairs.** Repairs to the existing bulkhead at Miller's Landing are being conducted to repair structural deficiencies that were identified, as well as sever sinkholes that formed along the length of the bulkhead. These actions will be completed prior to the construction of the living shoreline. Impacts to water resources were negligible and qualified for a Nationwide Permit.

#### **4.4 Cumulative Impact Analysis**

The following analysis of cumulative impacts is organized by environmental component in the same order presented in Chapter 3. Only the environmental components that have the potential to have cumulative impacts resulting from the incremental effects of the Preferred Alternative are addressed. Where feasible, the cumulative impacts were assessed using quantifiable data; however, for many of the resources included for analysis, quantifiable data is not available and a qualitative analysis was undertaken. In addition, where an analysis of potential environmental effects for future actions has not been completed, assumptions were made regarding cumulative impacts related to this EA's Proposed Action where possible. The analytical methodology presented in Chapter 3, which was used to determine potential impacts to the various resources analyzed in this document, was also used to determine cumulative impacts.

##### **4.4.1 Air Quality**

###### **4.4.1.1 Description of Geographic Study Area**

The study area for cumulative air quality impacts is the county within which the project would occur, Craven County. Past, present, and future actions have the potential to cumulatively increase the criteria air pollutants within the county.

###### **4.4.1.2 Relevant Past, Present, and Future Actions**

The air emissions associated with past projects described in Section 4.3.1 were temporary during construction and demolition of those facilities and improvements and would not interact with the proposed action.

###### **4.4.1.3 Cumulative Impact Analysis**

Therefore, implementation of the Proposed Action combined with the past, present, and reasonably foreseeable future projects, would not result in significant impacts within the region of influence.

#### **4.4.2 Water Resources**

##### **4.4.2.1 Description of Geographic Study Area**

The proposed study area for cumulative water resources impacts would be the Neuse River shoreline.

##### **4.4.2.2 Relevant Past, Present, and Future Actions**

Present actions that may interact with the proposed action is the repair of bulkhead structures in the immediate vicinity of the shoreline. These repairs are being done prior to the living shoreline construction and caused negligible impacts to water resources. The repairs were permitted through the Nationwide Permitting process.

##### **4.4.2.3 Cumulative Impact Analysis**

Cumulative water resources impacts from past, present, and future actions within the ROI would be less than significant. Therefore, implementation of the Proposed Action combined with the past, present, and reasonably foreseeable future projects, would not result in significant impacts within the ROI.

#### **4.4.3 Geological Resources**

##### **4.4.3.1 Description of Geographic Study Area**

The proposed study area for cumulative geological resources impacts would be the Neuse River shoreline.

##### **4.4.3.2 Relevant Past, Present, and Future Actions**

Present actions that may interact with the proposed action is the repair of bulkhead structures in the immediate vicinity of the shoreline. These repairs are being done prior to the living shoreline construction and caused negligible impacts to geological resources.

##### **4.4.3.3 Cumulative Impact Analysis**

Cumulative impacts to geological resources from past, present, and future actions within the ROI would be less than significant. Therefore, implementation of the Proposed Action combined with the past, present, and reasonably foreseeable future projects, would not result in significant impacts within the ROI.

#### **4.4.4 Biological Resources**

##### **4.4.4.1 Description of Geographic Study Area**

The proposed study area for cumulative biological resources impacts would be the Neuse River shoreline.

**4.4.4.2 Relevant Past, Present, and Future Actions**

None of the past, present, or reasonably foreseeable actions would interact with the affected resource areas of the Proposed Action.

**4.4.4.3 Cumulative Impact Analysis**

Cumulative biological resource impacts from past, present, and future actions within the ROI would be less than significant. Therefore, implementation of the Proposed Action combined with the past, present, and reasonably foreseeable future projects, would not result in significant impacts within the ROI.

**4.4.5 Infrastructure****4.4.5.1 Description of Geographic Study Area**

The proposed study area for cumulative biological resources impacts would be the Neuse River shoreline.

**4.4.5.2 Relevant Past, Present, and Future Actions**

Present actions that may interact with the proposed action is the repair of bulkhead structures in the immediate vicinity of the shoreline. These repairs are being done prior to the living shoreline construction and resulted in positive impacts to infrastructure.

**4.4.5.3 Cumulative Impact Analysis**

Cumulative infrastructure impacts from past, present, and future actions within the ROI would be less than significant. Therefore, implementation of the Proposed Action combined with the past, present, and reasonably foreseeable future projects, would not result in significant impacts within the ROI.

**4.4.6 Public Health and Safety****4.4.6.1 Description of Geographic Study Area**

The proposed study area for cumulative biological resources impacts would be the Neuse River shoreline.

**4.4.6.2 Relevant Past, Present, and Future Actions**

Present actions that may interact with the proposed action is the repair of bulkhead structures in the immediate vicinity of the shoreline. These repairs are being done prior to the living shoreline construction and resulted in positive impacts to public health and safety.

**4.4.6.3 Cumulative Impact Analysis**

Cumulative public health and safety impacts from past, present, and future actions within the ROI would be less than significant. Therefore, implementation of the Proposed Action

combined with the past, present, and reasonably foreseeable future projects, would not result in significant impacts within the ROI.



## 5 Other Considerations Required by NEPA

### 5.1 Consistency with Other Federal, State, and Local Laws, Plans, Policies, and Regulations

In accordance with 40 Code of Federal Regulations (CFR) section 1502.16(c), analysis of environmental consequences shall include discussion of possible conflicts between the Proposed Action and the objectives of federal, regional, state and local land use plans, policies, and controls. Table 5-1 identifies the principal federal and state laws and regulations that are applicable to the Proposed Action, and describes briefly how compliance with these laws and regulations would be accomplished.

**Table 5-1 Principal Federal and State Laws Applicable to the Proposed Action**

<b><i>Federal, State, Local, and Regional Land Use Plans, Policies, and Controls</i></b>	<b><i>Status of Compliance</i></b>
National Environmental Policy Act (NEPA); CEQ NEPA implementing regulations; Navy procedures for Implementing NEPA	Completion of EA will document compliance.
Clean Air Act	Completion of EA will document compliance.
Clean Water Act	Approval of Individual 404/401 Permit will document compliance.
Rivers and Harbors Act	Approval of Individual 404/401 Permit will document compliance.
Coastal Zone Management Act	Concurrence with Coastal Consistency Determination will document compliance.
National Historic Preservation Act	Completion of EA will document compliance.
Endangered Species Act	Completion of EA will document compliance.
Magnuson-Stevens Fishery Conservation and Management Reauthorization Act	Completion of EA will document compliance.
Marine Mammal Protection Act	Completion of EA will document compliance.
Migratory Bird Treaty Act	Completion of EA will document compliance.
Bald and Golden Eagle Protection Act	Completion of EA will document compliance.
Comprehensive Environmental Response and Liability Act	Completion of EA will document compliance.
Emergency Planning and Community Right-to-Know Act	Completion of EA will document compliance.

**Table 5-1 Principal Federal and State Laws Applicable to the Proposed Action**

<b><i>Federal, State, Local, and Regional Land Use Plans, Policies, and Controls</i></b>	<b><i>Status of Compliance</i></b>
Federal Insecticide, Fungicide, and Rodenticide Act	Completion of EA will document compliance.
Resource Conservation and Recovery Act	Completion of EA will document compliance.
Toxic Substances Control Act	Completion of EA will document compliance.
Farmland Protection Policy Act	Completion of EA will document compliance.
Executive Order 11988, Floodplain Management	Completion of EA will document compliance.
Executive Order 12088, Federal Compliance with Pollution Control Standards	Completion of EA will document compliance.
Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-income Populations	Completion of EA will document compliance.
Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks	Completion of EA will document compliance.
Executive Order 13423, Strengthening Federal Environmental, Energy, and Transportation Management	Completion of EA will document compliance.
Executive Order 13696, Planning for Federal Sustainability in the Next Decade	Completion of EA will document compliance.

## 5.2 Irreversible or Irretrievable Commitments 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, and natural or cultural resources. These resources are irretrievable in that they would be used for this project when they could have been used for other purposes. Human labor is also considered an irretrievable resource. Another impact that falls under this category is the unavoidable destruction of natural resources that could limit the range of potential uses of that particular environment.

Implementation of the Proposed Action would involve human labor; the consumption of fuel, oil, and lubricants for construction vehicles. Loss of shallow water habitat is a potential irreversible loss, however, that shallow water habitat will be replaced with coastal marsh habitat, which could be considered a more suitable habitat. Implementing the Proposed Action would not result in significant irreversible or irretrievable commitment of resources.

Implementing the No Action Alternative would result in the irreversible loss of land into the Neuse River from erosion.

### 5.3 Unavoidable Adverse Impacts

This EA has determined that the alternatives considered would not result in any significant impacts. Implementing the alternatives would result in the following unavoidable environmental impacts:

- Loss of open water habitat.

### 5.4 Relationship between Short-Term Use of the Environment and Long-Term Productivity

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 site reduces future flexibility in pursuing other options, or that using a parcel of land or other resources often eliminates the possibility of other uses at that site.

In the short-term, effects to the human environment with implementation of the Proposed Action would primarily relate to the construction activity itself. Air quality and noise would be impacted in the short-term. Having the living shoreline in place would not significantly impact the long-term natural resource productivity of the area. The Proposed Action would not result in any impacts that would significantly reduce environmental productivity or permanently narrow the range of beneficial uses of the environment.

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## **7 List of Preparers**

This EA was prepared by MCAS Cherry Point personnel.

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**Appendix A**  
**Cherry Point Shoreline Change Comparison**



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Figure #1. Shoreline Segment #1 adjacent to Slocum Creek Mouth

## Cherry Point Shoreline Change Comparison



Figure #2. Shoreline Segment #2 and Bulkhead #3495 (east of Figure #1)

## Cherry Point Shoreline Change Comparison





Figure #3. Shoreline Segment #3 and Bulkhead #3494 (east of Figure #2)

## Cherry Point Shoreline Change Comparison



Figure #4. Shorelines Segment #4 and Bulkhead #3492/3493 (east of Figure #3)

## Cherry Point Shoreline Change Comparison





Figure #5. Shoreline Segment #5, Bulkhead #3491, Segment #6, and Beginning of Bulkhead #3490 (east of Figure #4)

## Cherry Point Shoreline Change Comparison





Figure #6. Bulkhead #3491, Shoreline Segment #6, Bulkhead #3490, Segment #7, Bulkhead #3489, and Segment #8 (east of Figure #5)

## Cherry Point Shoreline Change Comparison





Figure #7. Bulkhead #3488 and Shoreline Segment #9 (east of Figure# 6).

## Cherry Point Shoreline Change Comparison





Figure 8. Shoreline segment #10 (NW property boundary of MCAS Cherry Point).

## Cherry Point Shoreline Change Comparison

**Appendix B**  
**Coastal Consistency Determination**

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**COASTAL CONSISTENCY DETERMINATION FOR  
WO# 6973177 - INSTALL LIVING SHORELINE,  
MARINE CORPS AIR STATION CHERRY POINT, CRAVEN COUNTY, NC**

6 May 2021

The United State Marine Corps (USMC) has determined that implementing the proposed action would not result in any significant adverse impact to North Carolina's coastal zone.

1. Background

Marine Corps Air Station, Cherry Point, North Carolina has identified a critical need to make repairs to bulkheads and shoreline areas at MCAS, Cherry Point in Craven County, North Carolina. The shoreline areas and bulkhead facilities sustained significant damage from Hurricane Florence which impacted the area in September 2018.

The purpose of this project is to address the critical repair needs of shoreline and bulkhead areas and to provide improvements that will preserve the shoreline areas from erosion or further degradation.

MCAS, Cherry Point previously commissioned the completion of two studies that formulated the basis of the Scope of Work for this project, as follows:

**A. Bulkhead Condition Assessment Report [Bulkhead Report]**

MCAS, Cherry Point, North Carolina

Prepared by: NRW Engineering, PC  
748 Lord Dunmore Drive, Suite 101  
Virginia Beach, VA 23464  
July 31, 2018

**B. Living Shoreline Stabilization Study [Shoreline Report]**

MCAS, Cherry Point, North Carolina

Prepared by: Environmental Solutions, Inc.  
10475 Fortune Parkway, Suite 201  
Jacksonville, FL 32256  
October 29, 2018

The **Bulkhead Report** provides a condition assessment of multiple bulkhead segments at MCAS, Cherry Point, North Carolina and at BT-11 training area in Carteret County, North Carolina.

The **Shoreline Report** provides a preliminary structural evaluation of existing bulkheads as of October 2017 (prior to Hurricane Florence) and provides conceptual site layouts incorporating living shoreline stabilization at various shoreline segments.

Copies of each of these reports are available for review, if desired.

Based upon the information contained in these studies and upon a general assessment of shoreline and bulkhead conditions after Hurricane Florence, MCAS, Cherry Point developed a priority list of project areas to be addressed. The projects were configured based upon priority, type of work, anticipated permitting actions and the anticipated timing of funding and execution. This permit application addresses the two areas for - the Install Living Shoreline project, MCAS Cherry Point WO# 6973177.

A detailed description of each project area is outlined below:

This project covers two project areas. Each area is designated to receive shoreline stabilization through the implementation of Living Shoreline Techniques. A total of approximately 9,689 LF (7,590 - Tip Station Proper; 2,099 LF - West of Navy Docks) of shoreline will be stabilized in the project.

For each of these project areas, the waterward toe of the rock sills are proposed to be positioned approximately 30 feet waterward of the Normal Water Level (NWL). The rock sills will be segmented and/or overlapped to facilitate flushing and cross-shore movement of marine life. Additionally, sandy fill material will be installed landward of the rock sill up to an elevation that corresponds to Mean High Water. Appropriate coastal vegetation will be planted in the fill areas for the purpose of creating intertidal coastal marsh.

## 2. Federal Activity

The purpose of the project is to make essential repairs to deteriorated natural shoreline areas. These areas have deteriorated due to recent hurricane events (most notably Hurricane Florence, September 2018).

The proposed work is consistent to the maximum extent practicable with the federally approved North Carolina Coastal Management Program. A Pre-Construction Notification is necessary to properly execute the project. Due to the total cumulative impacts to open waters, the US Army Corps of Engineers will issue an Individual Permit (IP) for the project. Both the North Carolina Division of Water Quality and U.S. Army Corps of Engineers have been notified and must review and approve the project. All necessary permit applications have been made to properly execute the project.

### 3. Areas of Environmental Concern

The Coastal Resources Commission (CRC) defines Areas of Environmental Concern (AEC) as areas of natural importance which may be easily destroyed by erosion or flooding; or areas that may have environmental, social, economic, or aesthetic values that provide value.

The CRC has established four categories of AECs which are:

- The Estuarine and Ocean System
- The Ocean Hazard System
- Public Water Supplies
- Natural and Cultural Resource Areas.

### 4. Relevant Coastal Area Policies

#### **15A NCAC 07H .0200 ESTUARINE AND OCEAN SYSTEMS**

**a. 15A NCAC 07H .0205 COASTAL WETLANDS** – defines and establishes management objectives for coastal wetlands “to conserve and manage coastal wetlands so as to safeguard and perpetuate their biological, social, and economic and aesthetic values; to coordinate and establish a management system capable of conserving and utilizing coastal wetlands as a natural resource essential to the functioning of the entire estuarine system”.

There are no coastal wetlands identified in the project areas. All project work will occur below the Mean High Water (MHW) Elevation. There are coastal wetlands adjacent to and near the project areas; however, these wetlands will not be impacted by the proposed project.

**b. 15A NCAC 07H .0206 ESTUARINE WATERS** – defines and establishes management objectives for estuarine waters in order “to conserve and manage the important features of estuarine waters so as to safeguard and perpetuate their biological, social, aesthetic, and economic values; to coordinate and establish a management system capable of conserving and utilizing estuarine waters so as to maximize their benefits to man and the estuarine and ocean system”.

All project work will occur below the Mean High Water Level (MHW). The estuarine bottoms will be impacted by the footprint of the new rip rap and sill backfill and vegetation. Turbidity curtains will be employed around all in-water work areas to reduce potential damage from sediment. Erosion and sedimentation control devices will be installed on adjacent upland areas to prevent erosion and sedimentation.

No wetland areas will be impacted by the proposed construction.

The project as proposed is consistent with the general use standards and specific use standards found in 15A NCAC 07H .0206.

**c. 15A NCAC 07H .0207 PUBLIC TRUST AREA** – defines and establishes management objectives in order “to protect public rights for navigation and recreation and to conserve and manage the public trust areas so as to safeguard and perpetuate their biological, economic, and aesthetic value”.

The project will not adversely affect the value of coastal uses and will not affect the public’s right or access to use the water. The project areas are located in Marine Corps Air Station Cherry Point. Access to the base is controlled and the base is not open to the public. No work to be performed shall affect navigation of the channel. The proposed project would not impact coastal resources or prohibit access to coastal resources by the public.

**d. 15A NCAC 07H .0208 USE STANDARDS** – defines general and specific use standards necessary to protect coastal resources including but not limited to primary nursery areas, shellfish beds, Outstanding Resource Waters, and beds of submerged aquatic vegetation (SAVs).

None of the in-water project areas are located within waters designated as primary nursery areas, shellfish beds, Outstanding Resource Waters (ORW), or areas containing Submerged Aquatic Vegetation (SAV's).

The project as proposed is consistent with the general use standards and specific use standards found in 15A NCAC 07H .0208.

**e. 15A NCAC 07H .0209 COASTAL SHORELINES** – defines and establishes management objectives to ensure that “shoreline development is compatible with the dynamic nature of coastal shorelines as well as the values and the management objectives of the estuarine and ocean system.” Other objectives are to conserve and manage the important natural features of the estuarine and ocean system.

The project will occur along estuarine shorelines. All of the estuarine shoreline work proposed is intended to limit further degradation of shoreline areas. Extensive erosion and damage to adjacent vegetation has occurred over the last two years, particularly, from Hurricane Florence (September 2018).

The project as proposed is consistent with the general use standards and specific use standards found in 15A NCAC 07H .0209.

## 5. Coastal Area Policies

### **CAMA GENERAL POLICY GUIDELINES**

The North Carolina CAMA sets forth 11 General Policy Guidelines, addressing:

- a. Shoreline erosion policies;
- b. Shorefront access policies;
- c. Coastal Energy policies;
- d. Post-disaster policies;
- e. Floating structure policies;
- f. Mitigation policies;
- g. Coastal water quality policies;
- h. Policies on use of coastal airspace;
- i. Policies on water- and wetland-based target areas for military training areas;
- j. Policies on beneficial use and availability of materials resulting from the excavation or maintenance of navigational channels; and
- k. Policies on ocean mining.

The purpose of these rules is to establish generally applicable objective and policies to be followed in the public and private use of land and water areas within the coastal area of North Carolina. The following is an analysis of the applicability of these policies to the proposed action and the projects' lack of impact on North Carolina's coastal zone.

**a. 15A NCAC 07M .0200 SHORELINE EROSION POLICIES**

One specific goal of this project is to eliminate or limit the potential of shoreline erosion and degradation of the estuarine shoreline area. Shoreline stabilization methods proposed are within the policies, Rules and Regulations established by CAMA.

The estuarine shoreline at MCAS Cherry Point was severely impacted by recent hurricane events. This project will address shoreline erosion issues at the most critically damaged areas.

**b. 15A NCAC 07M .0300 SHOREFRONT ACCESS POLICIES**

The project is on a Marine Corps Air Station that is not accessible by the general public. Since the project does not affect the public's access to water, the policy is not applicable.

**c. 15A NCAC 07M .0400 COASTAL ENERGY POLICIES**

Since the project does not involve the development of any major energy facilities these policies are not applicable.

**d. 15A NCAC 07M .0500 POST DISASTER POLICIES**

All project work will be completed in accordance with 15A NCAC 07M .0500, Post-Disaster Policies.

**e. 15A NCAC 07M .0600 FLOATING STRUCTURE POLICIES**



The policy states that a “floating structure” is any structure, not a boat, supported by a means of flotation, designed to be used without a permanent foundation, which is used or intended for human habitation or commerce.

This project does not include any floating structures so this policy does not apply.

**f. 15A NCAC 07M .0700 MITIGATION POLICY**

The project design at all project areas includes reasonable means and measures to lessen impacts to the environment and to enhance the environment where possible. The project work will significantly reduce the potential for shoreline erosion and damage, particularly during severe weather events.

None of the proposed project work requires mitigation. The Division of Water Quality (DWQ) and the US Army Corps of Engineers will review and issue a 401/404 Permit for the proposed work.

The proposed project is in compliance with 15A NCAC 07M .0700.

**g. 15A NCAC 07M .0800 COASTAL WATER QUALITY POLICIES**

The proposed project is in compliance with 15A NCAC 07M .0800, Coastal Water Quality Policies. The project work will not result in a degradation of water quality in the project area. New sources of runoff or pollution will not be created by the proposed action.

The project will result in a more eco-friendly system of shoreline stabilization in multiple project areas which will enhance habitat and improve water quality.

**h. 15A NCAC 07M .0900 POLICIES ON USE OF COASTAL AIRSPACE**

The project does not involve use of coastal airspace. The policy is not applicable to this project.

**i. 15A NCAC 07M .1000 POLICIES ON WATER – AND WETLAND-BASED TARGET AREAS FOR MILITARY TRAINING AREAS**

The project does not have water and wetland based target areas for military training. The policy is not applicable to this project.

**j. 15A NCAC 07M .1100 POLICIES ON BENEFICIAL USE AND AVAILABILITY OF MATERIALS RESULTING IN EXCAVATION OR MAINTENANCE OF NAVIGATIONAL CHANNELS**

The project work does not include any dredging activities that would generate materials that would be of any beneficial use.

**k. 15A NCAC 07M .1200 POLICIES ON OCEAN MINING**

This project does not involve ocean mining, therefore, this policy does not apply.

**6. Craven County Coastal Management Land Use Policies**

The CAMA required local governments in each of the 20 coastal counties in the state to prepare, implement, and enforce a land use plan and ordinances consistent with established state and federal policies. Specifically, local policy statements are required on resource protection; resource production and management; economic and community development; continuing public participation; and storm hazard mitigation, post-disaster recovery, and evacuation plans. Upon approval by the North Carolina Coastal Resources Commission, each plan becomes part of the *North Carolina Coastal Management Plan*.

The 2007/2008 – 2008/2009 Craven County Land Use Plan was adopted by the County Board of Commissioners and certified by the Coastal Resources Commission on October 30, 2009. The Plan includes the local policies required by the Coastal Resources Commission to meet the standards for land use planning and development in Areas of Environmental Concern. **Table 1** contains a list of Craven County's comprehensive plan policies and their applicability to this project.

Table 1  
Craven County Land Use/Coastal Zone Management Policies

#	Policies	Applicability to Project
	Public Access	
P1	Craven County supports providing shoreline access for persons with disabilities.	Consistent
P2	Craven County supports the frequency of shoreline access as defined by 15A NCAC 7M, Section .0300, Shorefront Access Policies.	Consistent
P3	Craven County supports state/federal funding of piers for crabbing and fishing.	Not Applicable
P4	Craven County supports the development of estuarine access areas to ensure adequate shoreline access within all areas of the county. Areas that have traditionally been used by the public will be given special attention, including existing bridges and bridge replacements.	Not Applicable
P5	Craven County opposes the loss/abandonment of any facilities dedicated to public shoreline/water access.	Consistent
P6-P18	Residential Policies	Not Applicable
P19 -P25	Commercial Policies	Not Applicable
P26 – P34	Industrial Policies	Not Applicable
	Conservation Policies	
P35	Craven County supports the preservation of its rural/agricultural areas.	Not Applicable
P36	Craven County encourages the Croatan National Forest to maintain land holdings (no land swaps) within the vicinity of Cherry Point. These forest areas serve as protection from encroachment.	Not Applicable
P37	Residential, commercial, and industrial development which meets 15A NCAC 7H use standards will be allowed in estuarine shoreline, estuarine water, and public trust areas. In all other areas, development will be allowed that is consistent with applicable local, state, and federal regulations.	Consistent
P38	Craven County supports the enforcement of local, state, and federal regulations and programs that minimize the threat to life and property from flooding.	Not Applicable
P39	Craven County supports the use of erosion control structures in estuarine shoreline areas.	Consistent
P40	All development should be designed to protect Protected Lands and Significant Natural Heritage Areas.	Not Applicable
P41	Craven County will use local land use ordinances to identify development which includes 404 and coastal wetlands.	Not Applicable
P42	Craven County opposes the establishment of any state freshwater wetlands regulations.	Not Applicable
P43	Craven County supports the construction of new marinas which comply with the policies of this plan and all other state/federal regulations.	Not Applicable
P44	Craven County will continuously monitor the effects of sea level rise and update the land use plan policies as necessary to protect the county's public and private properties from rising water levels.	Not Applicable
P45	There are no estuarine system islands of any significance in Craven County's jurisdiction. For those islands which do exist, Craven County does not oppose development of the islands if the development satisfies the 15A NCAC 7H use standards.	Not Applicable

#	Policies	Applicability to Project
P46	Craven County supports the construction of docks and piers if they are in compliance with applicable policies of this plan and state/federal regulations.	Consistent
P47	Craven County will allow construction of dry stack storage facilities for boats associated either with or independent of marinas. All applicable state and federal regulations must be satisfied.	Not Applicable
P48	Floating homes are not an issue or problem in Craven County. The county will consider prohibiting the anchoring of floating homes within mooring fields.	Not Applicable
	Stormwater Control	
P49	Craven County and its participating municipalities will support reducing soil erosion, runoff, and sedimentation to minimize the adverse effects on surface and subsurface water quality.	Consistent
P50	Craven County and its participating municipalities support the enforcement of all controls and regulations, specifically design standards, tie-down requirements, construction and installation standards, elevation requirements, floodproofing, CAMA regulations, and FEMA regulations deemed necessary by the Board of Commissioners to mitigate the risks of lives and property caused by severe storms and hurricanes.	Consistent
P51	Craven County supports the discharge of stormwater runoff into coastal wetlands if the associated construction and development does not damage coastal wetland areas, and is permitted under applicable North Carolina Storm Water regulations.	Not Applicable
P52	Craven County supports reducing soil erosion, runoff, and sedimentation to minimize the adverse effects on surface and subsurface water quality.	Consistent
P53	Craven County supports implementation of the Tar-Pamlico, Neuse and White Oak River Basinwide Water Quality Plans.	Consistent
P54-P65	Water and Sewer Policies	Not Applicable
P66-P78	Transportation Policies	Not Applicable
P79-P84	Natural Hazard Areas	Consistent
	Water Quality	
P85	At a minimum, Craven County will rely on 15A NCAC 7H to protect water quality.	Consistent
P86	Craven County supports protection of its surficial waters and potable water supply.	Consistent
P87	Craven County recognizes the value of water quality maintenance to the protection of fragile areas and to the provision of clean water.	Consistent
P88	Craven County supports the enforcement of local, state, and federal regulations and programs that protect water quality.	Consistent
P89	Craven County supports wetlands "created" to aid in treating waste effluent.	Not Applicable
P90	Craven County supports conserving its surficial groundwater resources.	Not Applicable
P91	Craven County opposes the disposal of any toxic wastes, as defined in the US Environmental Protection Agency's Listing of Hazardous Substances and Priority Pollutants (developed pursuant to the Clean Water Act of 1977), within its planning jurisdiction.	Not Applicable
P92	Craven County recognizes the value of water quality maintenance to the protection of fragile areas and to the provision of clean water for recreational purposes and supports the control of stormwater runoff to aid in the preservation of water quality. The county will support existing state regulations relating to stormwater runoff resulting from development (Stormwater Disposal Policy 15 NCAC 2H.001-.1003)	Consistent

#	Policies	Applicability to Project
P93	Craven County supports regulation of underground storage tanks in order to protect its groundwater resources.	Not Applicable
P94	Craven County supports the policy that all State of North Carolina projects should be designed to limit to the extent possible stormwater runoff into coastal waters.	Consistent
P95	Craven County supports implementation of the Tar-Pamlico, Neuse, and White Oak River Basin Water Quality Management Plans.	Consistent
P96	Craven County supports all aquaculture activities which meet applicable federal, state, and local policies and permit requirements. However, Craven County reserves the right to comment on all aquaculture activities which require Division of Water Quality permitting.	Consistent
P97-P100	Cultural, Historic and Scenic Areas	Not Applicable
P101-P113	Economic Development	Consistent
P114-P117	Military /Community Cooperation	Consistent
P118-P130	General Health and Human Service Needs	Not Applicable
P131-P136	Community Appearance	Not Applicable
P137-139	Redevelopment	Not Applicable

## 7. Conclusion

In conclusion, after careful consideration of the proposed action, Marine Corps Air Station Cherry Point has determined that implementing the proposed action is consistent with the relevant enforceable policies of North Carolina's Coastal Management Program and will have no adverse impacts to coastal resources. This was based on the review of the proposed project against the enforceable policies of the North Carolina Coastal Management Program and the Craven County's comprehensive plan policies.

**DEPARTMENT OF THE NAVY  
UNITED STATES MARINE CORPS**

**FINDING OF NO SIGNIFICANT IMPACT (FONSI) FOR THE ENVIRONMENTAL ASSESSMENT FOR THE  
CONSTRUCTION OF A LIVING SHORELINE AT MARINE CORPS AIR STATION CHERRY POINT, NORTH  
CAROLINA**

Pursuant to Council on Environmental Quality (CEQ) regulations (40 Code of Federal Regulations Parts 1500-1508) implementing the National Environmental Policy Act, Navy Regulations (32 Code of Federal Regulations part 775), and Marine Corps Order 5090.2, the United States Marine Corps (USMC) gives notice that an Environmental Assessment (EA) has been prepared and an Environmental Impact Statement is not required for the following activities at Marine Corps Air Station (MCAS) Cherry Point.

**Proposed Action:** The USMC seeks to construct a living shoreline in the Neuse River along the northern boundary of MCAS Cherry Point, Havelock, NC. This living shoreline will improve water quality, create valuable habitat and also promote resiliency by preventing erosion and mitigating flooding that would damage the Marine Corps' vital infrastructure.

**Purpose and Need:** The purpose of the Proposed Action is to construct a living shoreline that will provide protection for USMC properties along the Neuse River, habitat for the many species that inhabit the river, and water quality improvements. More detailed goals of this project are:

- To attenuate wave energy to reduce the rate of shoreline erosion on the Neuse River, thereby protecting USMC assets that utilize that shoreline.
- Increase resiliency of our shoreline by adding marsh grasses and restoring appropriate slopes that have been eroded.
- Enhance riparian habitat, shallow water habitat, and water quality in the Neuse River, which promotes recreational uses for our Marines, Sailors, and community neighbors.

The need for the Proposed Action is to enhance the resiliency and protect valuable shorelines, which include USMC assets that have been degraded due to erosion from coastal storms. A living shoreline will protect the investments the USMC has made, while providing important ecological functions and water quality improvements.

**Alternatives Analyzed:** The USMC considered the Proposed Action Alternative as well as the No Action alternative.

Proposed Action Alternative. Alternative 1, the preferred alternative, would construct a living shoreline parallel to the shoreline of the Neuse River at MCAS Cherry Point, from Slocum Creek on the west, to Hancock Creek on the east. The living shoreline would consist of a granite sill constructed approximately 25-30 feet waterward of normal water level (NWL). This granite sill will be segmented to allow for flushing and cross-shore movement of fish and wildlife. Oyster shell will be installed at the landward toe and the landward fringe will be back-filled and planted with marsh grasses.

Phase 1 of the preferred alternative would permanently transform approximately 4.5 acres of bare sand shallow water habitat into an intertidal coastal marsh vegetated with smooth cordgrass. In addition, Phase 1 of the preferred alternative would permanently transform approximately 3.0 acres of existing

zone 1 riparian buffer from an eroding bare sandy beach into coastal wetlands vegetated with salt meadow cordgrass. Phase 2 of the preferred alternative would permanently transform approximately 2.0 acres of bare sand shallow water habitat in front of existing bulkheads into an intertidal coastal marsh vegetated with smooth cordgrass.

The overall project would provide approximately 6.5 acres of intertidal coastal marsh, vegetate approximately 3.6 acres of zone 1 riparian buffer and install approximately 12,000 linear feet (3.3 acres) of rock sill which provides aquatic habitat and a hard substrate for oyster colonization.

No Action Alternative. Under the No Action Alternative, a living shoreline would not be constructed. Bulkhead repairs would continue as planned, but no additional protection would be established for those bulkheads. The No Action Alternative does not meet the purpose and need for the Proposed Action; however, as required by NEPA, the No Action Alternative was carried forward for analysis in this EA. The No Action Alternative was used to analyze the consequences of not undertaking the Proposed Action, not simply conclude no impact, and will serve to establish a comparative baseline for analysis.

**Environmental Effects:** As summarized below, the environmental resource areas analyzed in the EA include air quality, noise, biological resources, water resources, coastal zone, traffic and transportation, and public health and safety. Because potential impacts were negligible or nonexistent, the following resource areas were not evaluated in the EA: airspace, Hazardous Materials and Wastes, Cultural Resources, Socioeconomics, and Environmental Justice. The summary of effects is focused on the Proposed Action Alternative. The level of detail in the summary analysis is commensurate with the level of potential effect to the resource.

Air Quality: The construction of the living shoreline could generate small, localized air quality impacts due to the heavy equipment required. This would be intermittent, for a period of months, and would not be significant. Implementation of the Preferred Alternative would contribute directly to emissions of Green House Gasses from the combustion of fossil fuels. Construction activities would generate a limited amount of emissions and would not likely contribute to global warming to any discernible extent. Therefore, implementation of the Preferred Alternative would not result in significant impacts to air quality.

Water Resources: The preferred action would construct a granite sill and living shoreline, which would protect the shoreline from continued erosion. Reducing erosion would reduce sediment impacts into the Neuse River, which would improve water quality. Short term impacts from construction could result in increased turbidity for a brief period of time; however, these impacts would cease once construction is complete.

The preferred alternative will impact approximately 10 acres of open water habitat; however, this habitat will be replaced with more diverse and higher quality habitat such as intertidal coastal marsh. The sill itself will provide a varied aquatic habitat that does not currently exist in this portion of the Neuse River. Oyster shells placed along the landward toe of the rock sill could accelerate the colonization of a viable oyster resource, which would provide additional water quality improvements.

A living shoreline would provide flood control and improve the overall resiliency of the installation. The granite sill would reduce water velocities and reduce the height of wave action against the shoreline.

This reduction in the force of water, along with the restored marsh grass habitat immediately behind the sill, will reduce potential for flooding, as the marsh will “absorb” the storm surge and prevent it from reaching the upland surfaces in most storms. No freshwater wetlands will be impacted by the preferred action. However, the preferred action will assist in preventing the continued erosion of estuarine wetlands and adverse impacts associated with storm events. The Coastal Zone and shorelines will be protected by the granite sill and marsh planting. A positive impact is expected.

Geological Resources: The preferred alternative will stabilize shorelines, increase resiliency, and prevent future erosion. Therefore, implementation of this alternative would not result in significant impacts to geological resources.

Biological Resources: Biological resources analyzed included Terrestrial Vegetation, Terrestrial Wildlife, Marine Vegetation, Marine Wildlife, and Threatened and Endangered Species. Once construction has been completed, the preferred action should have a positive effect on local vegetation and wildlife by reducing shoreline erosion and increasing habitat diversity. While backfill of the living shoreline in advance of the planting of marsh grasses may displace some wildlife, including invertebrates that utilize the sandy bottom, it is not expected that this habitat loss would be a significant impact. Overall, the project will increase habitat and habitat diversity, which will benefit the Neuse River wildlife communities as a whole.

Due to the depths of water in which the work is taking place, it is unlikely that the installation will have any impact on marine mammals that may be in the Neuse River. If marine mammals are observed during construction, work will cease until the individuals have left the area. There would be no significant impact on threatened and endangered species and no formal consultation between the U.S. Navy and U.S. Fish and Wildlife Service or the National Oceanographic and Atmospheric Administration Fisheries would be required.

Infrastructure: Under the preferred alternative, the living shoreline would serve as protection to the bulkheaded shoreline by slowing down water velocities and reducing stress on the shoreline. This would result in less maintenance costs and reduce the threat to infrastructure from storms and erosion. The living shoreline would increase the resiliency of the shoreline. Therefore, implementation of this action alternative would not result in significant impacts to infrastructure.

Transportation: The Neuse River is relatively shallow in the location where the living shoreline will be installed. Any vessel traffic in that area consists of fishermen, crabbers, and recreational users. There may be some temporary impacts to transit during the construction of the sill, due to the presence of turbidity curtains to prevent excessive sedimentation. After construction is completed, transit immediately adjacent to the shoreline will be impeded, however, since that area is codified as a restricted area, there will be no significant impact to transportation. Implementation of the Preferred Alternative would not result in significant impacts to transportation.

Public Health and Safety: Impacts to public health and safety from the proposed action would be primarily positive impacts, as increases to water quality will reduce the number of water borne illnesses/pathogens present in the Neuse River, making consumption of seafood from the river safer. Residents and patrons of the air station will have safe access to the shoreline where they are able to recreate and exercise with stable shorelines. During construction, all safety procedures will be followed



in order to ensure the safety of construction workers and patrons of the air station. Lighting and signage will be installed once construction is complete to avoid nighttime boating accidents. Therefore, implementation of the Preferred Alternative would not result in significant impacts to public health and safety.

**Cumulative Impacts:** Other past, present, and reasonably foreseeable actions were reviewed for potential cumulative impacts with implementation of the Proposed Action Alternative. This analysis occurred with an emphasis on the evaluation of air quality, noise, biological resources, water resources traffic and transportation, and public health and safety due to the potential for cumulative impacts in these resource areas. The analysis concluded that cumulative impacts would not be considered significant. Not all of the actions would occur simultaneously and, when viewed collectively, there is nothing inherently incompatible between these actions and the projects included in the Proposed Action, nor anything to indicate that the Proposed Action would exacerbate or otherwise collectively increase the potential for effects to the environment.

**Public Involvement:** The Final EA was made available via the installation website at the following link: <https://www.cherrypoint.marines.mil/Staff/Environmental-Affairs/>.

A notice for public comment will be published in the New Bern Sun Journal.

**Finding of No Significant Impact (FONSI):** Based on analysis presented in the Final EA and FONSI, the USMC finds that implementation of the Proposed Action Alternative will not significantly impact the quality of the human or natural environment or generate significant controversy. Therefore, the preparation of an Environmental Impact Statement will not be required.

The EA prepared by the USMC is on file and interested parties may obtain a copy from: Jessica Guilianelli, Marine Corps Air Station Cherry Point, Environmental Affairs Department, PSC Box 8006, Cherry Point, North Carolina 28533

6 MAY 2021

Date



M.R. HUBER  
COLONEL  
COMMANDING OFFICER  
MCAS CHERRY POINT