

FINDING OF NO SIGNIFICANT IMPACT

**PROPOSED WASTEWATER SYSTEM MODIFICATIONS
AND UPGRADES**

**MARINE CORPS BASE, CAMP LEJEUNE
ONSLOW COUNTY, NORTH CAROLINA**

Responsible Officer:

Commanding Officer
Marine Corps Base
Camp Lejeune, North Carolina 28542-0004

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FOR
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AND UPGRADES
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ONslow COUNTY, NORTH CAROLINA**

Pursuant to the Council on Environmental Quality regulations (40 Code of Federal Regulations Parts 1500 – 1508) implementing procedural provisions of the National Environmental Policy Act, Marine Corps Base (MCB), Camp Lejeune gives notice that an Environmental Assessment (EA) and Finding of No Significant Impact (FONSI) have been prepared for the Proposed Wastewater System Modifications and Upgrades at MCB Camp Lejeune, Onslow County, North Carolina.

The United States Marine Corps (USMC) proposes to construct a series of upgrades and modifications to the existing wastewater collection and treatment system at MCB Camp Lejeune, North Carolina. This project would provide parallel force main river crossings at the New River, Scales Creek, Northeast Creek, and Wallace Creek; construct a new lift station near Parachute Tower Road with a connection to the existing wastewater line; and replace an existing force main near Gonzales Boulevard at the Wastewater Treatment Plant (WWTP) at French Creek. Collectively, these upgrades are referred to as the wastewater system modifications component of the proposed action. Additionally, the USMC proposes to construct a new force main from United States Route 17 (US 17) along Verona Loop Road and Old Town Point Road, under the New River and connecting to an existing force main that ultimately discharges to the WWTP. This new force main would be used to reroute wastewater flow from the Marine Corps Air Station (MCAS) New River area as well as the area south of Verona Loop to the WWTP. The USMC also proposes to construct two new pump stations; one at the newly established Marine Special Operations Command (MARSOC) complex and the other near Verona Loop Road. Minor internal upgrades would be made to two existing pump stations (RR150 and SR61) located near the MARSOC complex. These project components are referred to as the proposed MARSOC sewer line upgrades.

The proposed force mains to be installed on land will be installed by trenching, while the proposed force mains that will be installed at each river/creek crossing will be installed by horizontal boring and will be placed approximately 10.7 to 12.2 meters (m) (35 to 40 feet [ft]) below the river/creek substrate. Valves, check valves, concrete vaults, air releases, and controls will also be installed to ensure that the new system is operational and compatible with the existing wastewater lines. The new force mains will be installed in accordance with Anti-terrorism/Force protection requirements, specifically, Unified Facilities Criteria 3-240-02N. The proposed action will disturb approximately 13 hectares (ha) (32 acres [ac]) of land, consisting primarily of forest and herbaceous vegetation and previously disturbed areas within existing sewer line rights-of-way.

The proposed improvements to the wastewater system will improve the efficiency of the existing wastewater collection and treatment system. Specifically, the improvements will provide a backup system in the event of breakage or damage to the existing force main while maintaining sufficient wastewater disposal capacity to support existing operations on Base and the future needs of tenant commands, Base operations, and residents.

The EA addresses the proposed action which is the preferred alternative, and the no action alternative, along with the rationale for several other alternatives that were considered but dismissed. Analysis of the no action alternative is provided in the EA because it provides a baseline against which to compare the impacts of the proposed action.

The EA demonstrates that the proposed action will have some adverse environmental impacts, but none are considered to be significant. The proposed wastewater system improvements and upgrades would be generally consistent with surrounding land uses. Most of the proposed project location areas are wooded or located in existing sewer line rights-of-way. Internal coordination will be required to ensure that the proposed activities do not interfere with military training areas. The USMC, through the Coastal Consistency Determination process, has determined that implementing the proposed action will be fully consistent with the enforceable policies of the North Carolina Coastal Area Management Act.

The proposed action will not involve an increase or relocation of any personnel, thus the demographics at MCB Camp Lejeune and the surrounding community will not change. Construction activities could contribute in a minor way to the local economy through the purchase of construction materials and the generation of construction wages. The proposed action will take place entirely within the boundary of MCB Camp Lejeune, and will not affect minorities or low-income populations. As evaluated in accordance with Executive Orders 12898 and 13045, the direct and indirect effects of the proposed action will not cause disproportionately adverse environmental, economic, or health impacts specific to any groups or individuals at MCB Camp Lejeune or in Onslow County, including minorities, low-income populations, and children.

The proposed action includes several actions that will increase air emissions. The primary source will be from operation of construction vehicles. Even with these increased emissions, the region is expected to remain in attainment for all criteria air pollutants.

Solid waste and sediment generated during the construction and horizontal drilling process will be disposed of at the Base landfill on Piney Green Road. An EA is underway for the construction of Phase III of the landfill which would accommodate another five to six years of solid waste disposal. The Base landfill is expected to remain open until approximately 2030. Therefore, no significant impacts to the capacity of the landfill are anticipated as a result of implementing the proposed action.

Constructing the MARSOC sewer line upgrades will improve the existing wastewater collection and treatment system by providing an alternate route to transfer wastewater from the MARSOC complex and areas south of Verona Loop as well as the MCAS New River area to the WWTP. This will alleviate pressure on existing lift stations and associated wet wells, decreasing the likelihood of an overflow.

Stormwater runoff will be managed and controlled in accordance with MCB Camp Lejeune's 2002 Stormwater Pollution Prevention Plan and the Stormwater Management National Pollutant Discharge Elimination System Phase II requirements.

There are no archeological sites present within the proposed project areas of potential effect. However, a portion of the proposed corridor for the MARSOC sewer line is located in the southeast corner of the Naval Hospital/Surgeon's Row Historic District that is eligible for listing in the National Register of Historic Places. In his letter of June 20, 2008, the North Carolina State Historic Preservation Officer concurred that the proposed action will not adversely affect any historic properties.

Minor impacts to existing topography and soils during clearing, grading, and trenching activities will occur. Prior to construction, approval will be obtained by the North Carolina Department of Environment and Natural Resources on all erosion and sedimentation control plans for the proposed activities. Construction activities will have no direct impact on geological formations at MCB Camp Lejeune and no adverse impact to groundwater.

A wetlands delineation was completed in January 2008, and the preliminary results indicated that there were approximately 1.9 ha (4.6 ac) of wetlands delineated in the proposed project siting areas, but that there will be no construction within wetlands, floodplains, or surface waters. Best management practices (BMPs) will be implemented to control stormwater runoff into wetlands and streams. The proposed action will result in adverse impacts to wildlife that will not be considered significant. The proposed wastewater system improvements and upgrades will disturb an estimated maximum of 13 ha (32 ac) of forest, herbaceous vegetation, and previously disturbed areas within existing sewer line rights-of-way. The adverse impacts to wildlife are not expected to affect the stability of wildlife populations on Base, including migratory bird populations or aquatic species. MCB Camp Lejeune will obtain concurrence from the United States Fish and Wildlife Service that the proposed action may affect, but is not likely to adversely affect, any threatened or endangered species. There are no natural heritage areas located within the proposed action areas.

There are no Installation Restoration sites located in the vicinity of the proposed project area. However, along the entire length of the proposed route for the MARSOC sewer line from US 17 to the New River, there are several historic ranges including one unknown range that may contain unexploded ordnance. Additionally, the proposed new force main that will be installed from the new Parachute Tower Road lift station to connect to the existing sewer line will transect a closed range area (ASR #2.78) and the D-9 Skeet Range that is currently pending closure. The section of force main that will be routed through closed range area ASR #2.78 will require a Preliminary Assessment/Site Investigation be performed as required under the Comprehensive Environmental Response, Compensation, and Liability Act process. Remediation of any contamination will be completed as needed prior to construction activities. In addition, an unexploded ordnance technician will be on site during construction. Usual BMPs will be employed in the handling, removal, and disposal of potential hazardous substances. For these reasons, there will be no significant impacts from hazardous materials and waste as a result of implementing the proposed action.

The proposed action will have a beneficial effect on human health and safety by providing a backup system for the existing wastewater collection and treatment system should any of the existing underwater force mains crossing the New River, Scales Creek, Wallace Creek, or Northeast Creek leak.

Temporary minor effects to the aesthetic environment are anticipated during proposed construction activities. After construction, mitigation will include planting grass in the disturbed areas and landscaping in select areas. All new force mains will be routed below the surface and therefore will not be visible once installed. For these reason, no significant effects to the aesthetic environment are anticipated as a result of implementing the proposed action.

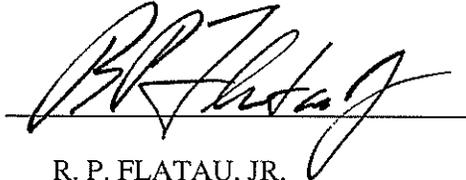
The following mitigation measures will be implemented as part of the proposed action.

- BMPs will be used to avoid and minimize the release of sediments into surface waters.
- All projects will be designed to avoid impacting any Installation Restoration sites.
- All projects would be designed to avoid and minimize impacts to wetlands and waters of the United States to the maximum extent practicable. No construction would occur within these resources.
- All river/stream crossings will be conducted with directional boring which minimizes impacts to physical and natural resources.
- Equipment will not be allowed to ford live streams.
- Reseeding of disturbed areas will be with native, warm season grass mixtures.

Based on information gathered during preparation of the EA, the USMC finds that implementing the proposed action will not significantly impact the human environment. The EA addressing this action is on file and may be reviewed by interested parties at: Commanding Officer Base Public Affairs Office, MCB Camp Lejeune, North Carolina 28542-0004, Telephone (910) 451-7440.

20 Aug 08

Date

A handwritten signature in black ink, appearing to read "R. P. Flatau, Jr.", written over a horizontal line.

R. P. FLATAU, JR.
Colonel, U.S. Marine Corps
Commanding Officer
Marine Corps Base, Camp Lejeune

**ENVIRONMENTAL ASSESSMENT
FOR
WASTEWATER SYSTEM MODIFICATIONS AND UPGRADES
MARINE CORPS BASE CAMP LEJEUNE
NORTH CAROLINA**

Responsible Officer:

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EXECUTIVE SUMMARY

This Environmental Assessment (EA) has been prepared by the United States Marine Corps (USMC) in accordance with the National Environmental Policy Act (NEPA) of 1969, 42 United States Code 4321-4370d, as implemented by the Council on Environmental Quality regulations, 40 Code of Federal Regulations Parts 1500-1508 and the NEPA procedures contained in the Marine Corps Order P5090.2A, Change 1, Chapter 12, dated 22 January 2008, *Environmental Compliance and Protection Manual*, which establishes procedures for implementing NEPA.

ES.1 DESCRIPTION OF THE PROPOSED ACTION

The USMC proposes to construct a series of upgrades and modifications to the existing wastewater collection and treatment system at Marine Corps Base (MCB) Camp Lejeune, North Carolina. This project would provide parallel force main river crossings at the New River, Scales Creek, Northeast Creek, and Wallace Creek; construct a new lift station near Parachute Tower Road with a connection to the existing wastewater line; and replace an existing force main near Gonzales Boulevard at the Wastewater Treatment Plant (WWTP) at French Creek. Collectively, these upgrades are referred to as the wastewater system modifications component of the proposed action. Additionally, the USMC proposes to construct a new force main from United States Route 17 (US 17) along Verona Loop Road through the K Range area, under the New River to Hospital Point and connecting to an existing force main that ultimately discharges to the WWTP. This new force main would be used to reroute wastewater flow from the Marine Corps Air Station (MCAS) New River area as well as the area south of Verona Loop to the WWTP. The USMC also proposes to construct two new pump stations; one at the newly established Marine Special Operations Command (MARSOC) complex and the other near Verona Loop Road. Minor internal upgrades would be made to two existing pump stations (RR150 and SR61). These project components are referred to as the proposed MARSOC sewer line upgrades.

The proposed improvements to the wastewater system would improve the efficiency of the existing wastewater collection and treatment system. Specifically, the improvements would provide a backup system in the event of breakage or damage to the existing force main, while maintaining sufficient wastewater disposal capacity to support existing operations on Base as well as the future needs of tenant commands, Base operations, and residents.

ES.2 ENVIRONMENTAL IMPACTS OF THE PROPOSED ACTION

Implementation of the proposed action would result in some adverse environmental impacts. This EA has determined that the proposed action is the preferred (and only feasible) alternative. Included in the EA is an analysis of all resource areas for each component of the proposed action except for the new pump station proposed for the MARSOC complex. The proposed MARSOC Complex pump station is evaluated with respect to wetlands, floodplains, and water resources only. Final NEPA documentation was completed in August 2007 for MARSOC and at that time, it was not known that a new pump station would be required. However, the Final EA evaluated a sufficiently broad footprint to account for all other resource areas, which this document relies on as a data source. Due to the specificity in which impacts to wetlands and water resources are calculated, this EA focuses on the impacts to these resources with respect to the proposed new

pump station. All other resource areas are fully analyzed as appropriate for the remaining components of the proposed action. Following is a brief summary of the anticipated impacts on each resource area analyzed in the EA. For a detailed description and analysis, refer to Section 4 of this EA, Environmental Consequences.

Land Use and Coastal Zone Management

The proposed wastewater system improvements and upgrades would be consistent with surrounding land uses. Internal coordination would be required to ensure that the proposed activities do not interfere with Training and Operations areas, as several project areas traverse through existing range fan areas. Implementing the proposed action would disturb approximately 13 ha (32 ac) of land, most of which is wooded or located in existing sewer line rights-of-way. The disturbance of approximately 13 ha (32 ac) under the proposed action would be 0.03 percent of the remaining forested areas within the Base.

The USMC, through the Coastal Consistency Determination (CCD) process, has determined that implementing the proposed action would be consistent to the maximum extent practicable with the enforceable policies of the State's approved Coastal Management Program.

Socioeconomics and Environmental Justice

The proposed action would not involve an increase or relocation of any personnel, thus the demographics at MCB Camp Lejeune and the surrounding community would not change. Construction activities could contribute in a minor way to the local economy through the purchase of construction materials and the generation of construction wages.

The proposed action would take place within the boundary of MCB Camp Lejeune with horizontal boring under state waters. The implementation of the proposed action would not affect minorities or low-income populations or children. As evaluated in accordance with Executive Orders 12898 and 13045, the direct and indirect effects of the proposed action would not cause disproportionately adverse environmental, economic, or health impacts specific to any groups or individuals at MCB Camp Lejeune or in Onslow County, including minorities, low-income populations, and children.

Air Quality

The primary source of increased air emissions would be from operation of construction vehicles. Even with these increased emissions, the region is expected to remain in attainment for all criteria pollutants.

Cultural Resources

While a portion of the proposed corridor for the MARSOC sewer line is located in the southeast corner of the Naval Hospital/Surgeon's Row Historic District, no archaeological sites that are eligible or potentially eligible for listing in the National Register of Historic Places have been identified as occurring with the project area. In a letter dated May 15, 2008 to the North Carolina State Historic Preservation Officer, the USMC determined that the proposed wastewater system modification and upgrade at MCB Camp Lejeune would not adversely affect any historic

properties. MCB Camp Lejeune would obtain concurrence prior to implementing the proposed undertaking.

Natural Resources

The proposed action would cause minor impacts to existing topography and soils during clearing, grading, and trenching activities. Prior to construction, approval would be obtained from the North Carolina Department of Environment and Natural Resources (NCDENR) on all Erosion and Sedimentation Control Plans for proposed activities. Construction activities would have no direct impact on geological formations and no adverse impact to groundwater.

A wetlands delineation was completed in January 2008 and the results indicated that there were approximately 1.9 ha (4.6 ac) of wetlands delineated in the proposed project siting areas, but that no impacts to wetlands are expected. Based on previous data used to develop final NEPA documentation for the MARSOC complex, an additional 0.002 ha (0.004 ac) of wetlands are present in the vicinity of the proposed siting location for the new pump station within the complex; however no wetlands would be affected in this area either. There are also approximately 0.91 ha (2.25 ac) of floodplains within the proposed project vicinity and approximately 137 linear m (448 linear ft) of tributaries. Where wetlands, floodplains, or water resources occur near proposed construction areas, the proposed projects would be designed and adjusted as needed to avoid impacts to these features to the maximum extent practicable. The project would be designed to avoid construction within wetlands, and erosion and sedimentation controls would be utilized to prevent siltation of nearby wetland areas.

The proposed action would result in minor impacts to wildlife that would not be considered adverse due to the small amount of potential habitat that would be affected. The proposed wastewater system improvements and upgrades would disturb an estimated maximum of 13 ha (32 ac) of forest and herbaceous vegetation. The disturbance of this potential habitat would not be expected to affect the stability of wildlife populations on Base, including migratory bird populations or aquatic species. The proposed MARSOC sewer line would result in the loss of approximately 1.7 ha (4.2 ac) of red-cockaded woodpecker habitat; however MCB Camp Lejeune does not expect this loss to jeopardize the Base's ability to meet the recovery goal of 173 active clusters. Prior to implementing the proposed action, MCB Camp Lejeune would obtain concurrence from the United States Fish and Wildlife Service (USFWS) that the proposed action may affect, but is not likely to adversely affect any threatened or endangered species. There are no natural heritage areas located within the proposed action areas.

Hazardous Materials and Waste

There are no Installation Restoration sites located in the vicinity of the proposed project area. However, along the entire length of the proposed route for the MARSOC sewer line from US 17 to the New River, there are several historic ranges including one unknown range, all of which may contain unexploded ordnance. Additionally, the proposed new force main that would be installed from the new Parachute Tower Road lift station to connect to the existing sewer line would transect a closed range area (ASR #2.78) and the D-9 Skeet Range that is currently pending closure. The section of force main that would be routed through closed range area ASR #2.78 would require a Preliminary Assessment/Site Investigation be performed as required under

the Comprehensive Environmental Response, Compensation, and Liability Act process. Remediation of any contamination would be completed as needed prior to construction. In addition, an unexploded ordnance technician would be on site during construction within all known range areas. Usual BMPs would be employed in the handling, removal, and disposal of potentially hazardous substances. For these reasons, there would be no adverse impacts due to hazardous materials and waste as a result of implementing the proposed action.

Human Health and Safety

The proposed action would have a beneficial effect on human health and safety by providing a backup system for the existing wastewater collection and treatment system should any of the existing underwater force mains crossing the New River, Scales Creek, Wallace Creek, or Northeast Creek break. Not having a backup system in place should a breakage occur could have adverse environmental impacts to the Base and surrounding Onslow County communities. Constructing the new lift stations would reduce the potential for sanitary sewer overflows by removing some of the pressure on the existing lift stations. Overall, the proposed action would improve the efficiency and functioning of the existing wastewater collection and treatment system, thereby improving effects on human health and safety.

Aesthetics

The aesthetic environment at MCB Camp Lejeune is typical of a military installation. The areas in and around the creeks/rivers can be described as scenic wetlands. Temporary minor effects to the aesthetic environment are anticipated during proposed construction activities. All new force mains would be routed below the surface and therefore would not be visible once installed. For these reasons, no changes in the aesthetic environment are anticipated as a result of implementing the proposed action.

ES.3 ALTERNATIVES CONSIDERED

Several alternatives for fulfilling the purpose and need of the proposed action were considered but dismissed from further study. For the proposed MARSOC sewer line, MCB Camp Lejeune considered an alternate alignment for the new sewer force main near Verona Loop road and the New River crossing. The alternate alignment for the new sewer force main was sited further south than the preferred alternative alignment, and was dismissed from further study because it required a longer crossing of approximately 3,048 m (10,000 ft) which was both cost prohibitive and pushed the limits of horizontal drilling technology.

Another alternative that was considered was to utilize existing force mains and pump stations to pump sewage from the MARSOC complex and areas south of Verona Loop to the existing wastewater system at MCB Camp Lejeune. With this alternative, the wastewater flow would follow the existing path from MCAS New River, Camp Geiger, Camp Johnson, Tarawa Terrace and Knox areas until ultimately discharging at the WWTP at French Creek. This alternative was dismissed because it does not allow for an alternate way of routing sewage to the WWTP should there be a need to repair the existing lines; it would not alleviate pressure on existing lift stations; and it does not account for recent and future planned growth at MCB Camp Lejeune.

Instead of utilizing horizontal boring methodology, MCB Camp Lejeune considered trenching to install the new force mains under the New River, Scales Creek, Northeast Creek, and Wallace Creek. However, this alternative was dismissed due to the increased environmental impacts associated with trenching within a waterway.

Finally, MCB Camp Lejeune considered leasing wastewater system facilities, however there are no known facilities that can be leased that would meet the requirements. As a result, this alternative was dismissed from further study.

Analysis of the No Action Alternative is also provided in this EA because it provides a baseline against which to compare the impacts of the proposed action.

ES.4 MITIGATION

The following mitigation measures would be implemented as part of the proposed action:

Fugitive dust emissions from construction would be controlled using standard management practices such as routine sweeping and wetting to reduce air emissions.

If during construction and site grading any site of potential historical or archaeological significance is encountered, the Director, Environmental Management would be notified. The Director would order actions in the vicinity halted and the area marked. The Director, Environmental Management would immediately notify the Base archaeologist at telephone (910) 451-7230.

BMPs would be used to avoid and minimize the release of sediments into stormwater, with mitigation plans including both short-term (construction phase) and long-term (project life) features to meet the requirements of the Base's Stormwater Pollution Prevention Plan. Areas that would be disturbed by trenching would be revegetated after the force mains are installed.

All projects would be designed to avoid and minimize impacts to wetlands and waters of the United States to the maximum extent practicable. All river crossings would be conducted with directional boring, which minimizes impacts on physical and natural resources.

All projects would be designed to avoid impacting any areas of potential contamination. The section of force main that would be routed through closed range area ASR #2.78 would require that a Preliminary Assessment/Site Investigation be performed per the Comprehensive Environmental Response Compensation and Liability Act process. Remediation of any contamination would be completed as needed prior to construction activities. In addition, a technician specializing in unexploded ordnance handling would be on site during construction. Standard BMPs would be employed in the handling, removal, and disposal of potentially hazardous substances.

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ACRONYMS AND ABBREVIATIONS

ac	Acres	mi	Mile
AEC	Area of Environmental Concern	Mk	Muckalee Loam
BaB	Baymeade Fine Sand	mld	Million Liters Per Day
BmB	Baymeade-Urban Land Complex	mm	Millimeter
BMPs	Best Management Practices	mph	Miles per Hour
CCD	Coastal Consistency Determination	Mu	Murville Fine Sand
cm	Centimeter	NCAC	North Carolina Administrative Code
CrC	Craven Fine Sandy Loam	NCDENR	North Carolina Department of Environment and Natural Resources
Ct	Croatian Muck	NCDMF	North Carolina Department of Marine Fisheries
CZMA	Coastal Zone Management Act	NEPA	National Environmental Policy Act
DoD	Department of Defense	NMFS	National Marine Fisheries Service
DoN	Department of the Navy	On	Onslow Loamy Fine Sand
EA	Environmental Assessment	ONWASA	Onslow Water and Sewer Authority
EIS	Environmental Impact Statement	Pn	Pantego Mucky Loam
EIWG	Environmental Impact Working Group	ppm	Parts per Million
EMD	Environmental Management Division	RCW	Red-cockaded Woodpecker
ft	Feet	RPW	Relatively Permanent Waterway
FONSI	Finding of No Significant Impact	SF	Square Feet
ha	Hectares	TNW	Traditional Navigable Waterway
HDPE	High Density Polyethylene Pipe	US	United States
km	Kilometer	US 17	United States Route 17
kph	Kilometers per Hour	USACE	United States Army Corps of Engineers
KuB	Kureb Fine Sand	USEPA	United States Environmental Protection Agency
LF	Linear Feet	USFWS	United States Fish and Wildlife Service
Ln	Leon Fine Sand	USMC	United States Marine Corps
MaC	Marvyn Loamy Fine Sand	Wo	Woodington Loamy Fine Sand
MARSOC	Marine Special Operations Command	WRAP	Western Regional Air Partnership
m	Meters	WWTP	Wastewater Treatment Plant
m ²	Square Meters		
MBTA	Migratory Bird Treaty Act		
MCAS	Marine Corps Air Station		
MCB	Marine Corps Base		
mgd	Million Gallons per Day		
µg/m ³	Micrograms per Cubic Meter		

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1.0 PURPOSE AND NEED

1.1 INTRODUCTION

The United States Marine Corps (USMC) proposes to construct a series of upgrades and modifications to the existing wastewater collection and treatment system at Marine Corps Base (MCB) Camp Lejeune, North Carolina. This project would provide parallel force main river crossings at the New River, Scales Creek, Northeast Creek, and Wallace Creek; construct a new lift station near Parachute Tower Road with a connection to the existing wastewater line; and replace an existing force main near Gonzales Boulevard at the Wastewater Treatment Plant (WWTP) at French Creek. Collectively, these upgrades are referred to as the wastewater system modifications component of the proposed action. Additionally, the USMC proposes to construct a new force main from United States Route 17 (US 17) along Verona Loop Road through the K Range area, under the New River to Hospital Point and connecting to an existing force main that ultimately discharges to the WWTP. This new force main would be used to reroute wastewater flow from the Marine Corps Air Station (MCAS) New River area as well as the area south of Verona Loop to the WWTP. The USMC also proposes to construct two new pump stations; one at the newly established Marine Special Operations Command (MARSOC) complex and the other near Verona Loop Road. Minor internal upgrades would be made to two existing pump stations (RR150 and SR61) located near the MARSOC complex. These project components are referred to as the proposed MARSOC sewer line upgrades.

Together these improvements to the wastewater system would improve the efficiency of the existing wastewater collection and treatment system. Specifically, the improvements would provide a backup system in the event of breakage or damage to the existing force main, while maintaining sufficient wastewater disposal capacity to support existing operations on Base as well as the future needs of tenant commands, Base operations, and residents. Although these projects are located in different areas of the Base, they are being reviewed together in this Environmental Assessment (EA) since they are part of the same infrastructure system and consist of interconnected actions. Collectively, each of the proposed construction and upgrade projects comprise the “proposed action,” which is described in detail in Chapter 2.

1.2 BACKGROUND

Located in Onslow County in southeastern North Carolina, MCB Camp Lejeune is approximately halfway between the cities of Wilmington and New Bern (Figure 1-1). MCB Camp Lejeune encompasses an estimated 57,870 hectares (ha) (143,000 acres [ac]), including the onshore, near shore, and surf area in and adjacent to the Atlantic Ocean and the New River (MCB Camp Lejeune 2007a). The northern boundary of MCB Camp Lejeune adjoins the city of Jacksonville. The southern boundary extends to the Atlantic Ocean.

In December 2002, the state of North Carolina issued a wastewater collection system permit to MCB Camp Lejeune, which was renewed in 2007. The permit was issued in response to the United States Environmental Protection Agency’s (USEPA’s) acknowledgement that sanitary sewer overflows were a primary source of surface water pollution. The emphasis of the Sanitary Sewer Overflow program and the wastewater collection system permit is to prevent spills and

Regional Location Map

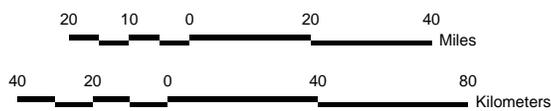
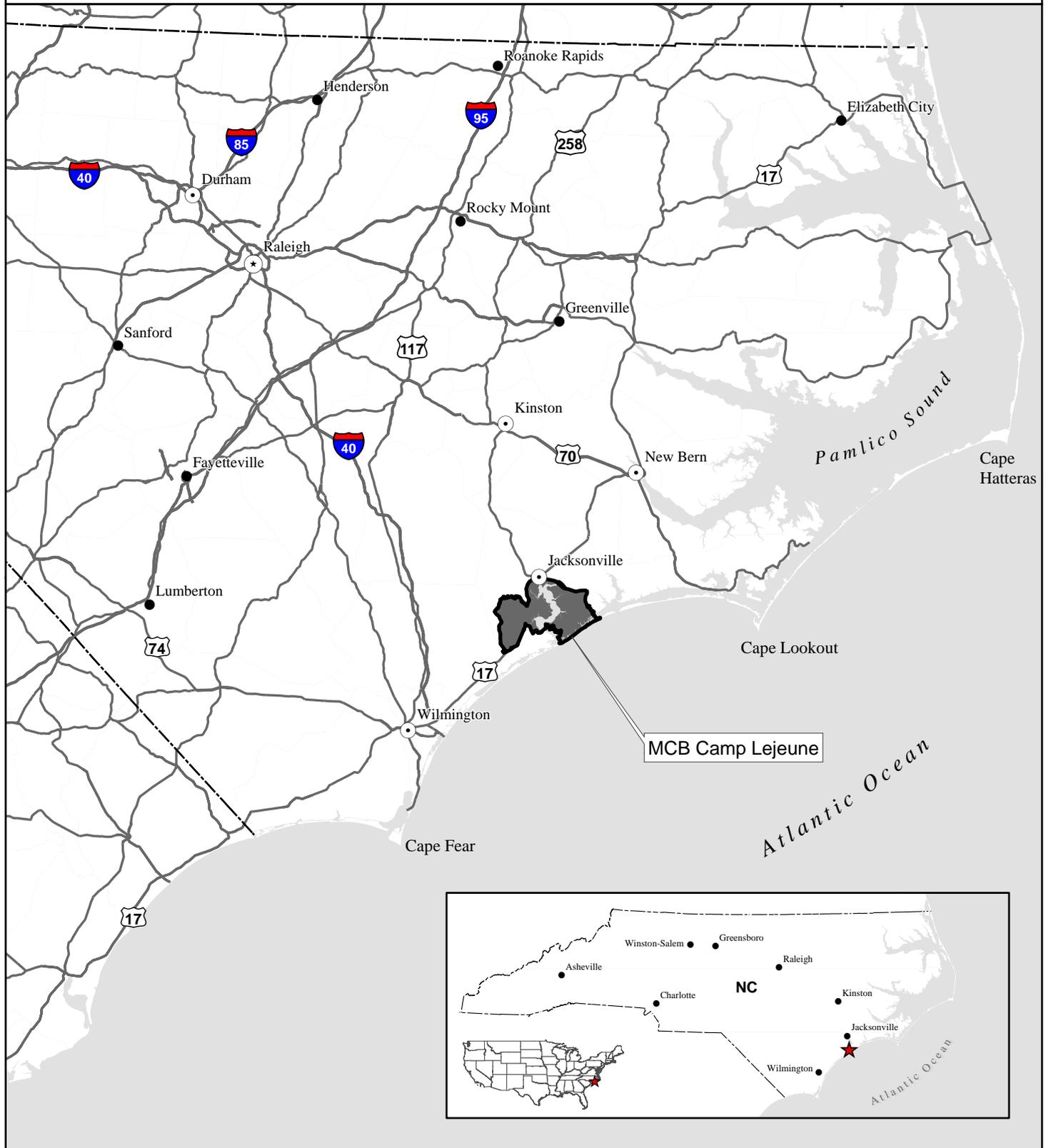


Figure 1-1

releases from overflows, leaks, and collection system breaks. Wastewater mains crossing surface water streams and rivers are primary concerns for releases. In response to the State's actions and due to environmental concerns should an existing underwater sewer line break, MCB Camp Lejeune identified a series of upgrades and modifications that could be implemented to improve the existing wastewater system. These upgrades are referred to as the wastewater system modifications component of the proposed action.

In addition to the wastewater system modifications, this EA will evaluate the proposed MARSOC sewer line upgrades and associated pump stations. Final documentation under the National Environmental Policy Act (NEPA) was completed in August 2007 for construction, operation, and maintenance of an operations complex to support the newly established MARSOC at MCB Camp Lejeune. The complex would be located within an 816 ha (2,017 ac) project area at the Stone Bay Rifle Range part of the Base. The combined size of the proposed complex facilities would be approximately 144,462 square meters (m²) (1,554,976 square feet [SF]). Development of the facilities would take place on roughly 220 ha (544 ac) of the entire 816 ha (2,017 ac) complex project area. The complex would be built over a period of several years, beginning in 2007. Associated with the new complex is an influx of approximately 875 active duty personnel to MCB Camp Lejeune. The EA determined that MARSOC wastewater would be collected with the Stone Bay Rifle Range community sewage via the existing wastewater system and transported to the WWTP in French Creek. Initially, the site design plans for MARSOC included a wastewater utility corridor transferring sewage from the proposed complex to the French Creek WWTP with a force main crossing underneath the New River at Rhodes Point via horizontal boring. However, the planned location for crossing the New River was at a rather wide part of the river and was determined to be infeasible with regard to cost and technology limitations. Therefore, this EA will evaluate in detail an alternate alignment for the force main to reroute wastewater from the MARSOC complex and other areas south of Verona Loop to the WWTP at French Creek. This new force main would also serve to reroute wastewater flow from the MCAS New River area to the WWTP.

MCB Camp Lejeune is home to an active duty, family member, retiree and civilian employee population of nearly 150,000 people (MCB Camp Lejeune 2007b). That number is not expected to decrease in the future, as MCB Camp Lejeune continues to expand to meet the operational requirements of the Marine Corps mission. Several new projects on Base are associated with an influx of personnel, including the aforementioned MARSOC complex, a proposed four-battalion regimental complex, and a new Marine Corps Reserve Center. The proposed action would facilitate the ability of MCB Camp Lejeune to meet the increasing demands on the Base wastewater disposal infrastructure resulting from the planned population growth. The intent of this EA is to assess the potential environmental effects of constructing a series of upgrades and modifications to the existing wastewater collection and treatment system at MCB Camp Lejeune.

1.3 PURPOSE AND NEED FOR THE PROPOSED ACTION

The purpose of the wastewater system modifications component of the proposed action is to improve the efficiency of the existing wastewater collection and treatment system at MCB Camp Lejeune by providing a backup system in the event of breakage or damage to the existing force main. The purpose of the proposed MARSOC sewer line upgrades is to provide an alternate route to transfer wastewater from the MARSOC complex and areas south of Verona Loop Road

as well as to reroute wastewater from the MCAS New River area to the WWTP. Collectively, the project components are necessary to support existing Base operations and to meet the future needs of tenant commands, Base operations, and residents. The specific need for the proposed action is described in the subsections that follow. Additional details describing the proposed action are provided in Chapter 2.

1.3.1 Wastewater System Modifications

Parallel Force Mains

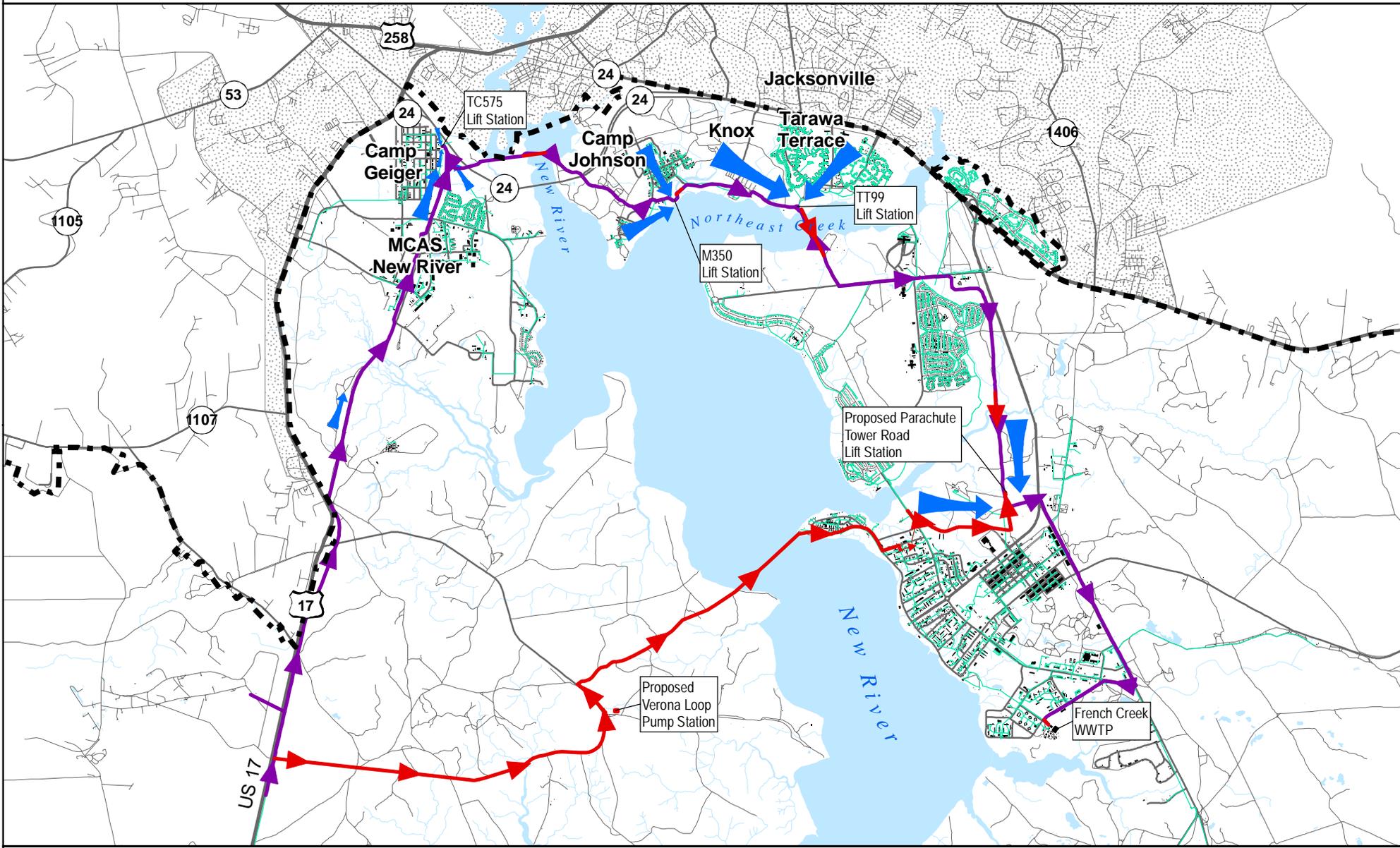
The existing wastewater system at MCB Camp Lejeune consists of a series of pump stations and force mains that pump flow in the general direction from the Rifle Range to US 17 to MCAS New River, Camp Geiger, Camp Johnson, and Tarawa Terrace, and ultimately discharging at the WWTP located in the French Creek area (Figure 1-2). The WWTP's process and sludge handling systems were designed for an average daily flow of 57 million liters per day (mld) (15 million gallons per day [mgd]) but are currently processing approximately 23 mld (6 mgd). The existing system currently has adequate treatment capacity but lacks a backup system in the event of breakage or damage to the existing force mains.

Currently there are no alternative routes to pump sewage to the main WWTP at French Creek should any of the existing underwater wastewater force mains crossing the New River, Scales Creek, Wallace Creek or Northeast Creek break. These lines continue the flow of sewage from MCAS New River, Camp Geiger, Camp Johnson, Tarawa Terrace and Knox areas. This project would provide parallel sewer lines to existing underwater sewer lines crossing the New River, Scales Creek, Northeast Creek, and Wallace Creek (see locations on Figure 1-2 and a more detailed description in Chapter 2). The existing underwater lines would remain in place to serve as a backup system to reroute sewage should the replacement lines break or require repair. Completion of this project is needed to provide a backup system to ensure uninterrupted sanitary sewer service and limit environmental impacts in the event of a breakage in the existing underwater force sewer mains. The lack of a backup system in the event a breakage occurs could result in environmental impacts to the Base and surrounding Onslow County communities. Additionally, service to affected communities on Base could be disrupted for an extended period of time during repairs to existing lines.

Parachute Tower Road Lift Station and WWTP Improvements

The proposed action also includes construction of a new lift station at Parachute Tower Road. Lift stations pump the wastewater from a lower elevation to a higher elevation prior to discharging to the WWTP. The new lift station at Parachute Tower Road is needed to reduce head pressure on the sewer force main that is routed from the TT99 lift station to the WWTP in the French Creek area (Figure 1-2). Currently, the lift station at TT99 is the last lift station prior to discharging to the WWTP, and has experienced several overflows since 1998 (Hill 2007). The new lift station at Parachute Tower Road would accept wastewater flow and alleviate pressure on the force main that carries wastewater from TT99. This construction activity would also help to reduce the likelihood of an overflow at each lift station, since the Parachute Tower Road lift station would accept some of the wastewater loading. The new lift station at Parachute

Wastewater Flow



-  MCB Camp Lejeune
-  Existing Main Sewer Line
-  Proposed Wastewater System Improvements
-  Existing Sewer Line
-  Relative Flow

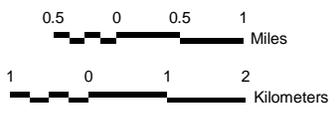


Figure 1-2

Tower Road would also accept flow from the proposed four-battalion regimental complex, which is planned for the eastern part of the Base. A new sewer line from the proposed new Parachute Tower Road lift station is needed to connect the lift station to the existing force main so that wastewater may be efficiently routed to the WWTP.

Minor improvements also are needed in the vicinity of the WWTP. Replacing approximately 122 linear meters (m) (400 linear feet [LF]) of existing 46 centimeter (cm) (18 inch) diameter force main with 61 cm (24 inch) diameter force main from Gonzales Boulevard to SFC448 at the WWTP at French Creek is needed, as the existing line is undersized. Although these improvements are still in conceptual design phase, the 46 cm (18 inch) diameter force main would likely remain operational to serve as a backup line to the proposed new 61 cm (24 inch) diameter force main that would be installed.

1.3.2 MARSOC Sewer Line Upgrades

MARSOC Sewer Line

The proposed MARSOC sewer line and associated pump station are needed to efficiently convey wastewater generated at the MARSOC complex and areas south of Verona Loop as well as the MCAS New River Air Station to the WWTP in French Creek. Currently, wastewater flows in one general direction to the WWTP, as shown on Figure 1-2. The unidirectional flow of wastewater has placed increasing pressure on the lift stations, resulting in increased chances of sewer overflows. Additionally, the unidirectional flow of wastewater under the existing system makes repairs difficult, as sections of the force main need to be shut down while the repairs are made.

The new MARSOC sewer line would be used to reroute wastewater from Verona Loop and areas south (including the MARSOC complex) and the MCAS New River area to the WWTP. Diverting wastewater flow from MCAS New River and the area south of Verona Loop is needed to alleviate pressure on existing wet wells present at lift stations TC575, M350, and TT99 (Figure 1-2). This action would reduce the likelihood of potential surface water pollution in the event of an overflow. Wet wells are holding tanks associated with a lift station that receive and store sewage prior to transfer through the wastewater line. The existing wet wells (TC575 and M350) are currently 208,197 liters (55,000 gallons) and 272,550 liters (72,000 gallons) (TT99) in size and have experienced overflows in the past during heavy rainfall events. TC575 experienced a spill in 1996, and along with M350, have experienced near spill-over events on several occasions (Hill 2007). TT99 has experienced three spill-over events since 1998 (Hill 2007). The lift station at TT99 is the last primary lift station before the WWTP at French Creek and therefore accepts all of the wastewater flow before discharging to the treatment plant (Figure 1-2). This creates a bottleneck effect which would be alleviated by rerouting some of the flow away from these wet wells and lift stations.

As part of the proposed MARSOC sewer line construction, two new pump stations are needed. Specifically, one new pump station is needed within the MARSOC complex to accept wastewater flow from the existing Rifle Range pump station (RR150) and continue the flow through an existing force main to the existing pump station located at US 17 (SR61). A new pump station near Verona Loop Road is needed to convey wastewater that is pumped from the

US 17 pump station to the WWTP. The force main needs to be constructed along Verona Loop Road, through the K Range area and extended by boring under the New River at Hospital Point, in order to convey wastewater in the most efficient manner to the WWTP. Minor internal upgrades to existing pump stations RR150 and SR61 are required to ensure optimal efficiency of these structures and to ensure compatibility with the proposed upgrades analyzed in this EA.

Additionally, the MARSOC sewer line is needed to support eight new head facilities that would be installed in the K Range area. Currently, there are no head facilities in the K Range area and the only available facilities are portable toilets. The MARSOC sewer line would provide a feasible access point to connect the new head facilities to the wastewater system at MCB Camp Lejeune. Together, these improvements would support existing Base operations as well as future wastewater disposal needs of tenant commands, Base operations, and residents by conveying wastewater to the WWTP in the most efficient manner.

1.4 THE ENVIRONMENTAL REVIEW PROCESS

1.4.1 The National Environmental Policy Act

NEPA of 1969 requires consideration of environmental issues in federal agency planning and decision making. Under NEPA, federal agencies must prepare an EA or Environmental Impact Statement (EIS) for any federal action, except those actions that are determined to be “categorically excluded” from further analysis.

An EIS is prepared for those federal actions that may significantly affect the quality of the natural or human environment. An EA is a concise public document that provides sufficient analysis for determining whether the potential environmental impacts of a proposed action are significant, resulting in the preparation of an EIS, or not significant, resulting in the preparation of a Finding of No Significant Impact (FONSI). Thus, if the USMC were to determine that the proposed action would have a significant impact on the quality of the natural or human environment, an EIS would be prepared.

The intent of this EA is to assess the potential environmental effects of upgrades to the existing wastewater facilities and the construction of the MARSOC sewer line at MCB Camp Lejeune. MCB Camp Lejeune is the decision maker with regard to the proposed action. Accordingly, information and analyses documented in this EA will be used to support the Commanding Officer of MCB Camp Lejeune in making one of three decisions: 1) a FONSI is appropriate, 2) a FONSI is not appropriate and preparation of an EIS is required, and 3) a FONSI is not appropriate and the proposed action should not proceed.

This EA has been prepared pursuant to NEPA and the following NEPA implementation regulations and guidelines:

- The Council on Environmental Quality regulations, as contained in 40 Code of Federal Regulations Parts 1500 to 1508, which direct federal agencies on how to implement the provisions of NEPA; and

- Marine Corps Order P5090.2A, Change 1, Chapter 12 (2008) which documents the USMCs' internal operating instructions on how it implements the provisions of NEPA.

1.4.2 Scoping and Alternatives Development

The Environmental Impact Working Group (EIWG) at MCB Camp Lejeune reviews all proposals at the Base to determine the requirements for NEPA documentation, in accordance with Base Order 11000.1D (MCB Camp Lejeune 2000). On 21 March 2007 the EIWG reviewed the proposal for construction of the wastewater system modifications and upgrades. The EIWG determined that the proposed action was not categorically excluded from NEPA requirements, and that potential impacts should be analyzed through preparation of an EA.

Additionally, several meetings have occurred between MCB Camp Lejeune and C. Allan Bamforth LTD, an engineering and surveying firm, to discuss the proposal to construct the new MARSOC sewer line and associated pump stations. A *Wastewater Collection System Study* was prepared by C. Allan Bamforth LTD, et. al. to evaluate the existing wastewater system on Base, perform an engineering analysis, and provide recommendations on the best approach for constructing the new sewer line to be fully automated in accordance with the requirements of Anti-Terrorism/Force Protection features including current Unified Facilities Criteria 3-240-02N (DoD 2004). The study recommended that the Rifle Range (RR150) pump station should pump to the new MARSOC pump stations, and MARSOC should pump to the US 17 (SR61) pump station. Originally the new MARSOC sewer line was planned to cross the New River at Rhodes Point, which is approximately 3,048 m (10,000 feet [ft]) wide. A subsequent meeting, held on 16 May 2007, determined that an alternate location for the New River crossing was needed. The Rhodes Point location was determined to be cost prohibitive due to the length of the crossing.

A project kickoff meeting was held on 28 August 2007. At this meeting, consisting of representatives from the MCB Camp Lejeune Environmental Management Division (EMD), Installation Development Division, Range Development Division, Naval Facilities Engineering Command – Mid-Atlantic Division, and the EA preparer, there was discussion regarding the scope of environmental issues to be addressed in the EA, along with alternatives to the proposed action. The team decided that the environmental resource categories and issues to be addressed in the EA should include, but are not limited to, land use, soils and geology, wetlands, threatened and endangered species, coastal zone, water quality, infrastructure, utilities, and hazardous materials and waste. The wastewater system modifications and the proposed MARSOC sewer line will be evaluated together in this EA, since they are part of the same infrastructure system and consist of interconnected actions.

Further discussions between the EA preparer and MCB Camp Lejeune determined that the analysis in the Final MARSOC EA sufficiently covered the additional disturbance associated with construction of the proposed pump station within the MARSOC complex, with the exception of wetlands, floodplains, and water resources. Therefore, the analysis presented in this EA for the MARSOC Complex pump station will focus on these resource areas only and will rely on the Final MARSOC EA for the remaining resource areas for that component of the proposed action.

Furthermore, the following resources were dismissed from any further analysis because they are not relevant to the proposed action:

- **Community Facilities and Services:** The proposed wastewater system modifications and upgrades would not affect on-base community facilities and services in the local community. Therefore, analysis of community facilities and services was eliminated from further discussion.
- **Transportation and Traffic:** There would be an increase in traffic associated with the proposed wastewater system modifications and upgrades due to an increase in construction vehicles at the Base; however this impact would be temporary and would not result in adverse impacts to traffic and transportation at MCB Camp Lejeune. Therefore, analysis of transportation and traffic was eliminated from further discussion.
- **Noise:** There would be minor, temporary impacts to the noise environment in the vicinity of the proposed wastewater system modifications and upgrades sites; however, this impact would be temporary and the noise environment at MCB Camp Lejeune would continue to be dominated by training operations. Therefore, analysis of transportation and traffic was eliminated from further discussion.
- **Potable Water:** The proposed wastewater system modifications and upgrades would not affect the potable water supply or system. Therefore, analysis of potable water was eliminated from further discussion.
- **Electricity and Telecommunications:** The proposed wastewater system modifications and upgrades would require a minimal increase in demand for electrical supplies and MCB Camp Lejeune is not experiencing any electricity capacity issues. Therefore, analysis of electricity and telecommunications was eliminated from further discussion.
- **Solid Waste:** The proposed wastewater system modifications and upgrades would generate only a minimal amount of solid waste and sediment during construction. Therefore, analysis of solid waste was eliminated from further discussion.

1.4.3 Related Environmental Documents

- An EIS and Record of Decision for the Proposed Wastewater Treatment System Upgrade was prepared to assess the potential environmental impacts associated with removing several discharges to the New River and Atlantic Intracoastal Waterway. Wastewater flows would be consolidated (with the exception of the flow from Onslow Beach) at the Hadnot WWTP to a new advanced WWTP that would discharge to the New River at the French Creek area (Department of the Navy [DoN] 1996).
- The “Wastewater Collection System Study for the Rifle Range and MARSOC Areas, Stone Bay” was prepared in December 2006 by C. Allan Bamforth, Jr., Engineer-

Surveyor-LTD et. al. to assess the proposed layout of wastewater pump stations and force mains to serve the Rifle Range, US 17, and Verona Loop service areas affected by construction of the MARSOC complex and facility upgrades within the K Range area (C. Allan Bamforth LTD, et. al. 2006).

- The EA and FONSI for the MARSOC complex at MCB Camp Lejeune were finalized in August 2007 (MCB Camp Lejeune 2007c). This EA evaluated the potential environmental impacts of construction, operation, and maintenance of the MARSOC complex. However, the EA did not evaluate in detail the exact alignment of the new wastewater line that is needed to route wastewater from the complex and areas south to the WWTP (MCB Camp Lejeune 2007c). As part of the MARSOC complex, the EA evaluated the proposed construction of approximately 1.2 kilometers (km) (0.72 miles [mi]) of new force mains and gravity mains, but did not specifically address the two new pump stations that will be analyzed in this document.

1.4.4 Agency Coordination and Permit Requirements

In addition to NEPA, other laws, regulations, permits, and licenses may be applicable to the proposed new wastewater system upgrades and modifications at MCB Camp Lejeune. Specifically, the proposed action may require:

- Federal Coastal Consistency Determination (CCD) concurrence by the North Carolina Department of Environment and Natural Resources (NCDENR), Division of Coastal Management;
- Clean Water Act, Section 401 Water Quality Certification, NCDENR, Division of Water Quality;
- Rivers and Harbors Act Permit, Section 10 for work in United States navigable waters;
- Compliance with the 2006 revision of MCB Camp Lejeune's Recovery Plan for the red-cockaded woodpecker (RCW);
- Concurrence from the United States Fish and Wildlife Service (USFWS) on informal consultation regarding RCW and rough-leaved loosestrife;
- Erosion and Sediment Control Plan approval by the NCDENR, Division of Land Resources, Land Quality Section;
- Stormwater Management Permit from the NCDENR, Division of Water Quality;
- Non-Discharge Sewer Extension Permit from the NCDENR, Division of Water Quality, Non-Discharge Branch;
- Water Connection Permit from the NCDENR, Public Water Supply Section;
- Concurrence from the North Carolina State Historic Preservation Office on cultural resource effects findings;
- Compliance with NCDENR, Division of Water Quality, Minimum Design Criteria for Gravity Sewer, Pump Stations and Force Mains, latest edition;

- North Carolina Department of Transportation, Standard Specifications for Roads and Structures, 2002 Edition;
- Anti-Terrorism/Force Protection security requirements in accordance with Marine Corps Order P5530.14 21 December 2000; and
- Construction of wastewater treatment system facilities in accordance with Unified Facilities Criteria 3-240-02N 16 January 2004 “Wastewater Treatment Systems Augmenting Handbook.”

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2.0 PROPOSED ACTION AND ALTERNATIVES

The Council on Environmental Quality's *Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act* establish a number of policies for federal agencies, including "using the NEPA process to identify and assess reasonable alternatives to the proposed action that would avoid or minimize adverse effects of these actions on the quality of the human environment" (40 Code of Federal Regulations 1500.2 (e)). This chapter provides a detailed description of the proposed action and a description of project alternatives, including alternatives eliminated from detailed analysis.

2.1 DESCRIPTION OF THE PROPOSED ACTION

The USMC proposes to construct a series of upgrades and modifications to the existing wastewater collection and treatment system at MCB Camp Lejeune, North Carolina. The proposed action includes two primary components; including the military construction project P1147 wastewater system modifications and the proposed military construction project P1182B MARSOC sewer line and pump station, which are described in detail in the following sections. The total amount of land disturbance that would be required is approximately 13 ha (32 ac). Approximately 46 to 54 cubic meters (60 to 70 cubic yards) of sediment disposal material would be generated from horizontal boring, which would be disposed of in the Base landfill on Piney Green Road.

2.1.1 Wastewater System Modifications

The wastewater system modifications component of the proposed action includes several construction activities, as summarized below and described in detail in the following subsections. The proposed action locations are also shown on Figures 2-1 and 2-2. The wastewater system modifications component includes:

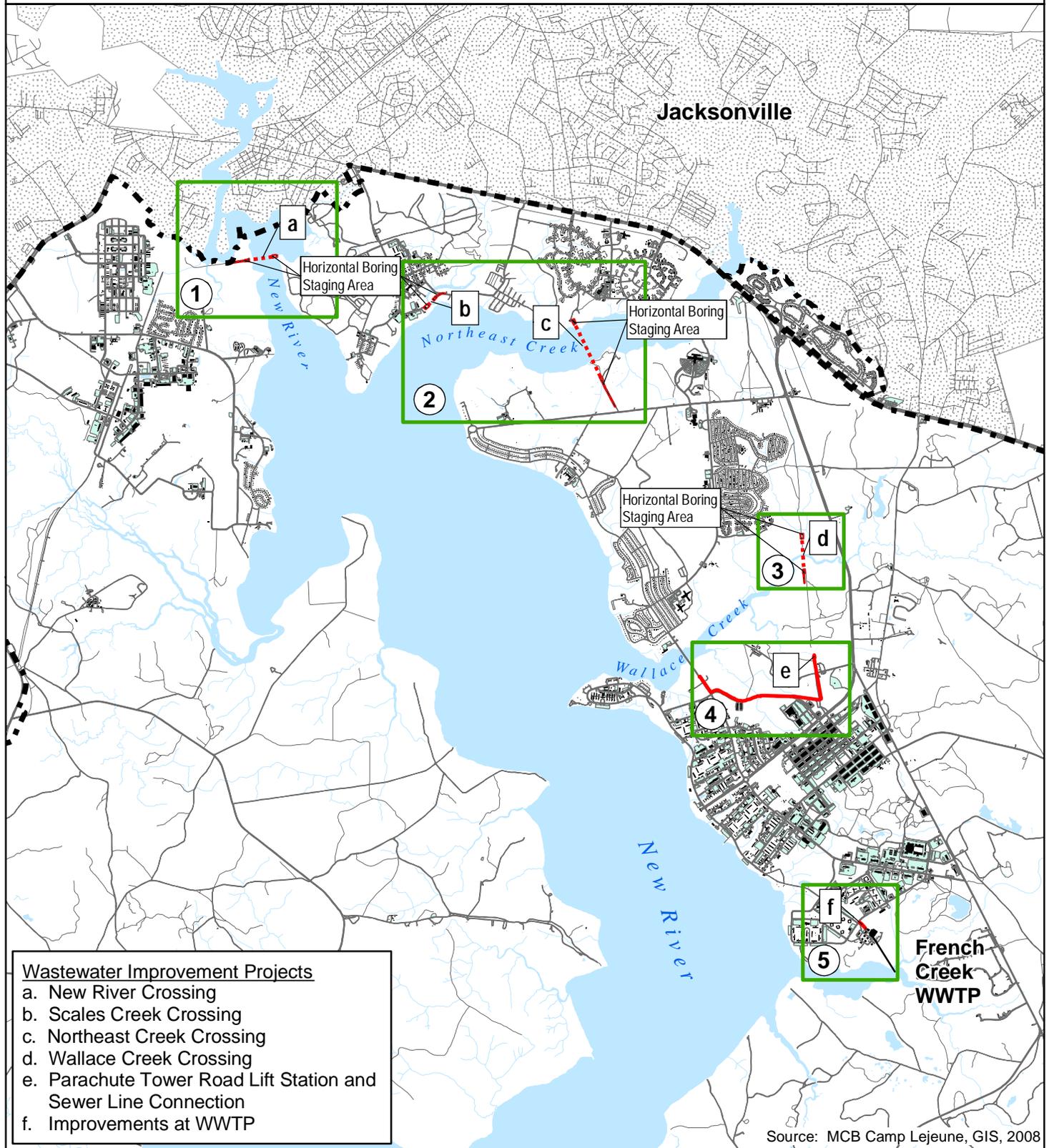
- Installing parallel force mains by boring under the New River, Scales Creek, Northeast Creek, and Wallace Creek;
- Constructing a new lift station near Parachute Tower Road with a connection to the existing wastewater line; and
- Replacing approximately 122 m (400 LF) of 46 cm (18 inch) diameter force main with 61 cm (24 inch) diameter force main near the WWTP at French Creek.

2.1.1.1 Parallel Force Mains

The proposed action includes the installation of four force sewer mains parallel to existing lines crossing the New River, Northeast Creek, Wallace Creek, and Scales Creek.

New River. At the New River crossing, approximately 396 m (1,300 ft) of 41 cm (16 inch) diameter High Density Polyethylene Pipe (HDPE) force sewer main would be installed. The point of entry would be approximately 50 m (165 ft) from the Camp

Overview of Proposed Wastewater System Improvements



Source: MCB Camp Lejeune, GIS, 2008

Extents for Detailed Views on Figures 2-2, 3-1a, 3-3a, and 3-4a

Sewer Line (Buried)

Sewer Line (Horizontal Boring)

Proposed Wastewater System Improvements (Staging Area)

0.5 0 0.5 1 Miles

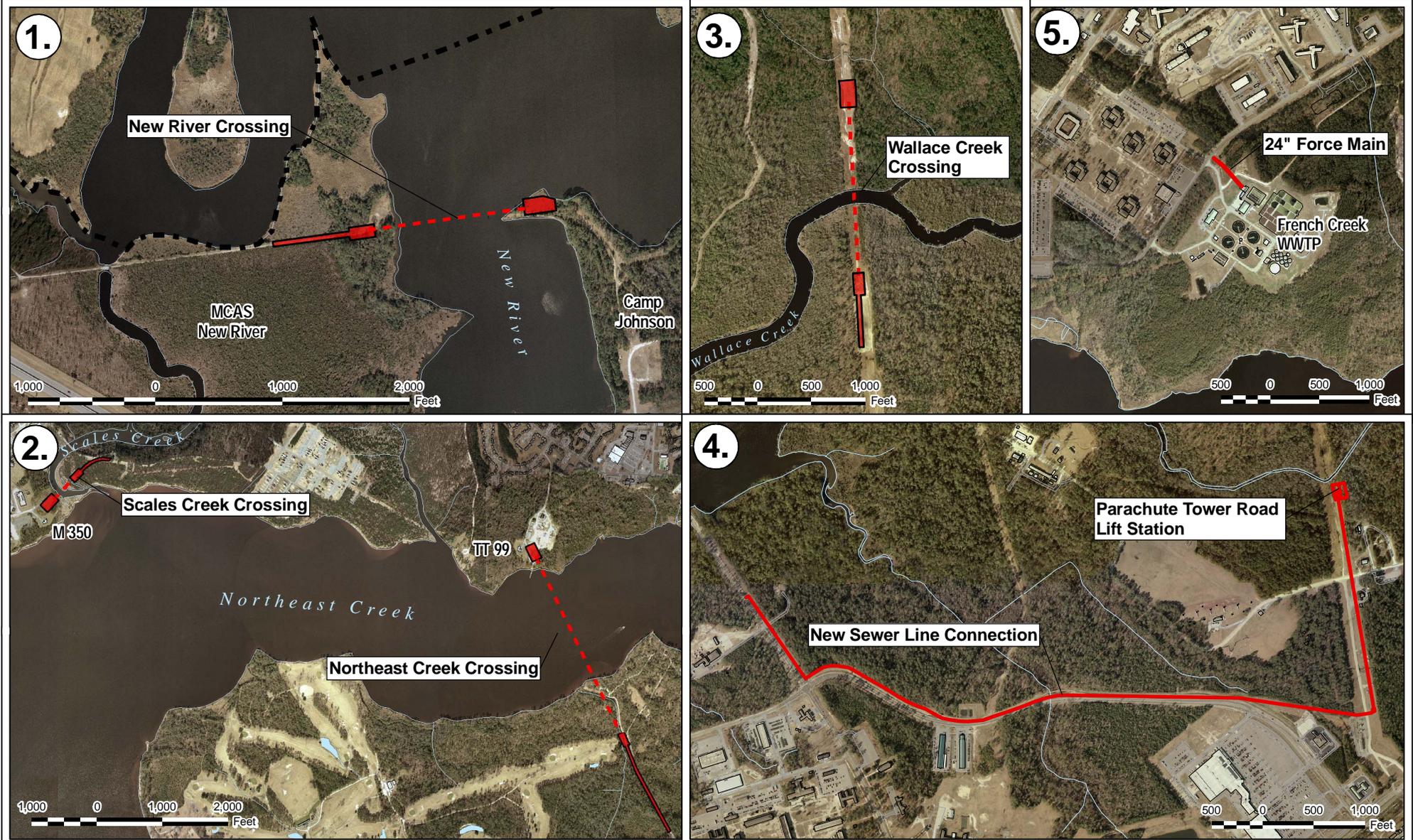
1 0 1 2 Kilometers

MCB Camp Lejeune
 Urban Areas



Figure 2-1

Detail of Proposed Wastewater System Improvements



Proposed Wastewater System Improvements

- Sewer Line (Buried)
- - - Sewer Line (Horizontal Boring)
- Proposed Wastewater System Improvements (Staging Area)
- MCB Camp Lejeune

Figure 2-2

Source: MCB Camp Lejeune, GIS, 2008



Johnson shore continuing under the New River and connecting back to the existing 41 cm (16 inch) diameter main approximately 70 m (230 ft) from the river's edge.

Scales Creek. At the Scales Creek crossing, approximately 146 m (480 ft) of 46 cm (18 inch) diameter HDPE force sewer main would be installed. The point of entry would occur at lift station M350 (at Camp Johnson) continuing under Scales Creek and connecting back to the existing 46 cm (18 inch) diameter main approximately 53 m (175 ft) from the creek's edge.

Northeast Creek. At the Northeast Creek crossing, approximately 914 m (3,000 ft) of 61 cm (24 inch) diameter HDPE force sewer main would be installed. The point of entry would occur at lift station TT99 (Tarawa Terrace) continuing under Northeast Creek and connecting back to the existing 61 cm (24 inch) diameter main approximately 305 m (1,000 ft) from the creek's edge.

Wallace Creek. At the Wallace Creek crossing, approximately 500 m (1,640 ft) of 61 cm (24 inch) diameter HDPE force sewer main would be installed. The point of entry would occur approximately 244 m (800 ft) from the north shore of the creek, continuing under the creek and connecting back into the existing 61 cm (24 inch) diameter main approximately 213 m (700 ft) from the creek's edge.

At each crossing, the existing pipes would remain in place to serve as a backup system. Valves, check valves, concrete vaults, air releases, and controls would also be installed to ensure that the new system is operational as well as compatible with the existing wastewater lines. The new force mains would be installed in accordance with Anti-Terrorism/Force Protection requirements, specifically, Unified Facilities Criteria 3-240-02N (DoD 2004). The force mains would be installed using horizontal drilling technology, and would be placed approximately 10.7 to 12.2 m (35 to 40 ft) below the creek/river substrate. Horizontal drilling is a common technique for installing underground pipeline along a prescribed bore path from the surface, with minimal environmental disturbance. The basic procedure is that a bore machine drills into the ground at the entry point, using hollow pipe to maintain the stability of the bore hole. The drill machine is guided by a sensor to ensure that the pipe is aligned correctly. When the bore hole is sufficiently large in size, the force main is pulled through the bore hole, and connections are made to the existing force main. Each crossing location would require temporary staging areas for construction and drilling equipment, including an area for laying down segments of force main in preparation for horizontal boring (see Table 2-1 and Figure 2-2).

2.1.1.2 Parachute Tower Road Lift Station and WWTP Modifications

A new lift station would be constructed at Parachute Tower Road, near an existing utility right-of-way. The lift station would be approximately 158 m² (1,701 SF). Approximately 2,652 m (8,700 LF) of force main would be required to connect the new lift station to the existing wastewater line. The sewer line extension would require installation of approximately 640 m (2,100 LF) of 46 cm (18 inch) diameter force main south of the lift station. This pipe would then connect to a new 41 cm (16 inch) diameter force main that would continue west for approximately 2,012 m (6,600 LF), following Birch Road and McHugh Boulevard. The new force main crosses Beaverdam Creek, where horizontal boring may be required. However, this

action would be much smaller than the proposed river/creek crossings described previously. The lift station would also connect to the adjacent 61 cm (24 inch) diameter force main, which is the primary force main that discharges to the WWTP at French Creek. The amount of land disturbance that would be required for the sewer line extension would be approximately 0.8 ha (2 ac), assuming a 3 m (10 ft) wide corridor would be required for trenching. Trenching would occur at a depth of approximately 0.9 m (3 ft).

Near the WWTP at French Creek, approximately 122 m (400 LF) of 46 cm (18 inch) diameter force main would be replaced with 61 cm (24 inch) diameter force main from Gonzales Boulevard to SFC448 at the WWTP. The amount of land disturbance that would be required would be approximately 0.04 ha (0.09 ac), assuming a 3 m (10 ft) wide corridor would be required for trenching. Both the new lift station and the sewer line extension would be constructed in accordance with Anti-Terrorism/Force Protection requirements, specifically Unified Facilities Criteria 3-240-02N (DoD 2005). Site improvements would include repair of damaged landscape and vegetation.

Table 2-1 summarizes the proposed upgrades and improvements associated with the wastewater system modifications component of the proposed action.

Table 2-1 Wastewater System Modifications

STRUCTURE	SIZE (metric) ¹	SIZE (English) ¹	DISTURBANCE ²
Parallel Force Mains			
New River	392 m of 41 cm force main	1,286 LF of 16 inch force main	0.7 ha (1.73 ac) ³
Scales Creek	146 m of 46 cm force main	478 LF of 18 inch force main	0.72 ha (1.78 ac) ³
Northeast Creek	928 m of 61 cm force main	3,044 LF of 24 inch force main	1.05 ha (2.59 ac) ³
Wallace Creek	500 m of 61 cm force main	1,640 LF of 24 inch force main	0.72 ha (1.78 ac) ³
New Lift Station			
Parachute Tower Road	158 m ²	1,701 SF	0.02 ha (0.04 ac)
Extend lift station to existing wastewater line	2,652 m of 41 cm and 46 cm force main	8,700 LF of 16 inch and 18 inch force main	0.8 ha (2.0 ac)
Replace Force Main near WWTP			
Replace 18 inch force main with 24 inch force main from Gonzales Boulevard to SFC448 at WWTP	122 m	400 LF	0.04 ha (0.09 ac)
TOTAL LAND DISTURBANCE ~ 4 ha (10 ac)			

¹Size of force mains are depicted in terms of pipe diameter.

²Disturbance calculations are based on on-land disturbance only.

³Disturbance includes staging area for construction drilling equipment and laying out pipe in preparation for horizontal boring.

Source: C. Allan Bamforth, LTD. 2007. USMC 2007a. Wood 2007.

2.1.2 MARSOC Sewer Line

The proposed MARSOC sewer line component of the proposed action includes installation of approximately 14,638 m (48,025 LF) of 41 cm (16 inch) diameter force main and two new pump stations. Approximately 6,744 m (22,125 LF) of 41 cm (16 inch) diameter force main would be

installed from the intersection of US 17 and Verona Loop Road South to the intersection of Verona Loop Road and Rhodes Point Road (see Figures 2-3 and 2-4). A new pump station (the Verona Loop pump station) would be constructed at this intersection. The pump station would be approximately 3,159 m² (34,000 SF). The 41 cm (16 inch) diameter force main would extend from the new pump station around Verona Loop and continue northeast through the K Range area to the New River for approximately 4,200 m (13,780 ft). At this point, the force main would be installed under the New River by horizontal boring and would continue on the opposite shore of Hospital Point mostly along Julian C. Smith Road for approximately 2,143 m (7,030 ft) until connecting with the existing force main. The length of the New River crossing is approximately 1,548 m (5,078 ft).

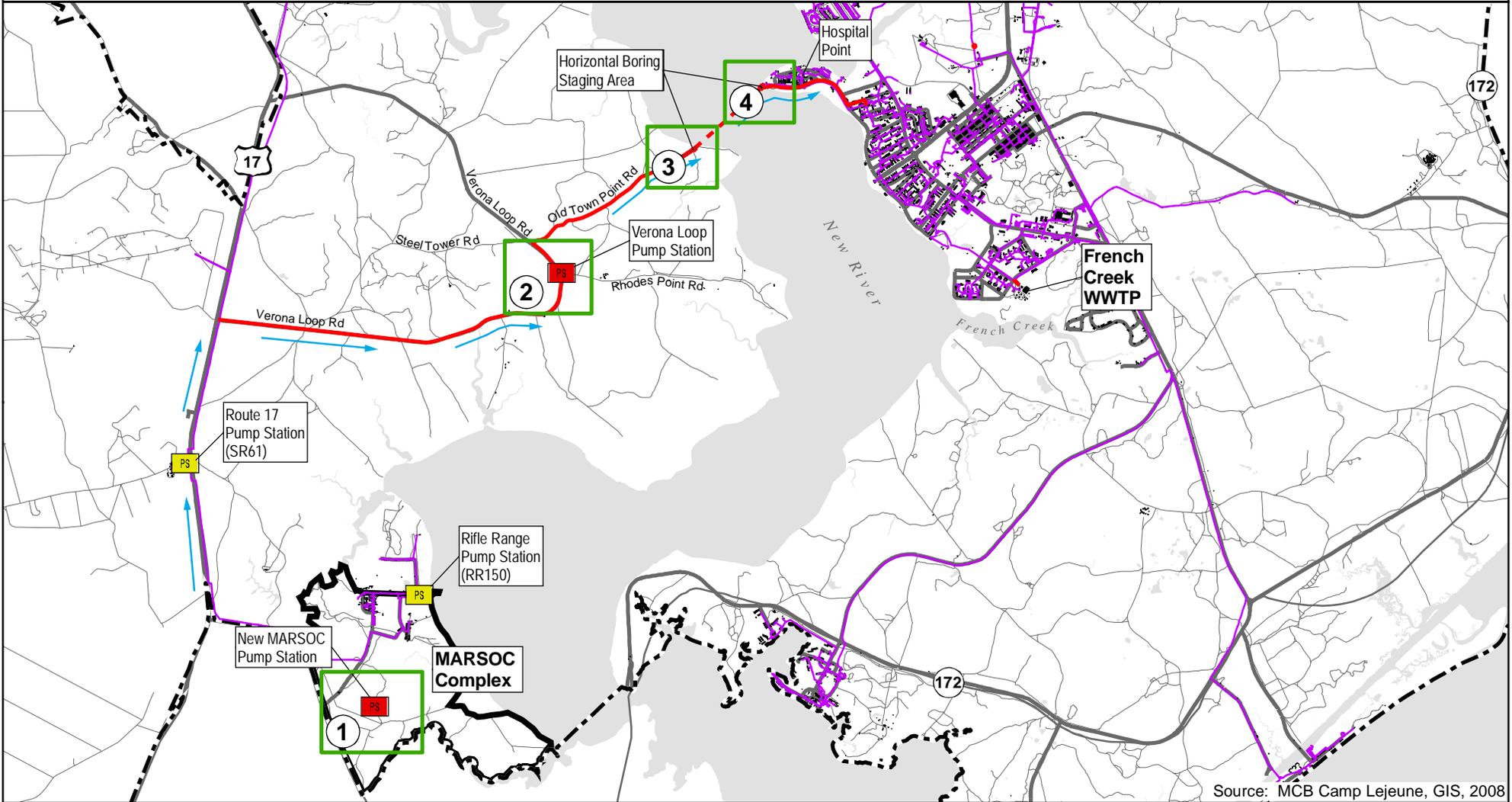
Within the MARSOC complex, one new pump station would be constructed. The existing pump station at the Rifle Range, RR150, would pump to the new pump station that would be constructed within the MARSOC complex. The new MARSOC pump station would pump wastewater flow through an existing 25 cm (10 inch) diameter force main to an existing pump station at US 17 (pump station SR61). From SR61, the existing 25 cm (10 inch) diameter force main would be utilized until the flow is diverted to the new 41 cm (16 inch) diameter line along Verona Loop Road, as described previously. The new MARSOC pump station would be approximately 84 m² (900 SF). Minor internal upgrades would occur at pump stations RR150 and SR61 but no new disturbance would be expected.

Valves, check valves, concrete vaults, air releases, and controls would also be installed to ensure that the new system is operational as well as compatible with the existing wastewater lines. The new force main would be installed in accordance with Anti-Terrorism/Force Protection requirements, specifically, Unified Facilities Criteria 3-240-02N (DoD 2004). The section of the force main crossing the New River would be installed using horizontal drilling technology, and would be placed approximately 10.7 to 12.2 m (35 to 40 ft) below the river substrate. Approximately 3,484 m² (37,500 SF) would be required as a staging area for construction and drilling equipment at the proposed crossing location entry and exit point.

Although the proposed alignment for the MARSOC sewer line and pump stations is still in conceptual design phase, the optimal alignment for the new sewer line would be on the shoulder of the north side of Verona Loop Road, beneath Old Town Point Road that crosses the K Range area to the shore of the New River, and on the north shoulder of Julian C. Smith Road on Hospital Point. The on-land portion of the force main would be installed by trenching at a depth of approximately 0.9 m (3 ft). Site improvements would include repair of damaged landscape and vegetation. The total amount of land disturbance that would be required is approximately 9 ha (22 ac).

Figures 2-3 and 2-4 show the location of the MARSOC sewer line and Table 2-2 summarizes the proposed construction activities associated with the MARSOC sewer line component of the proposed action.

Proposed MARSOC Sewer Line and Pump Stations



Source: MCB Camp Lejeune, GIS, 2008

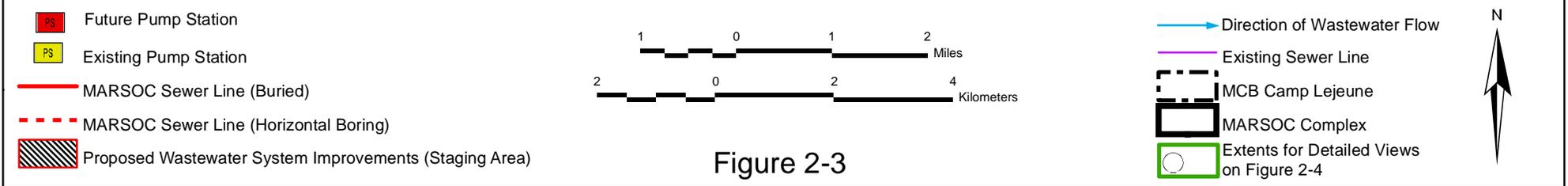
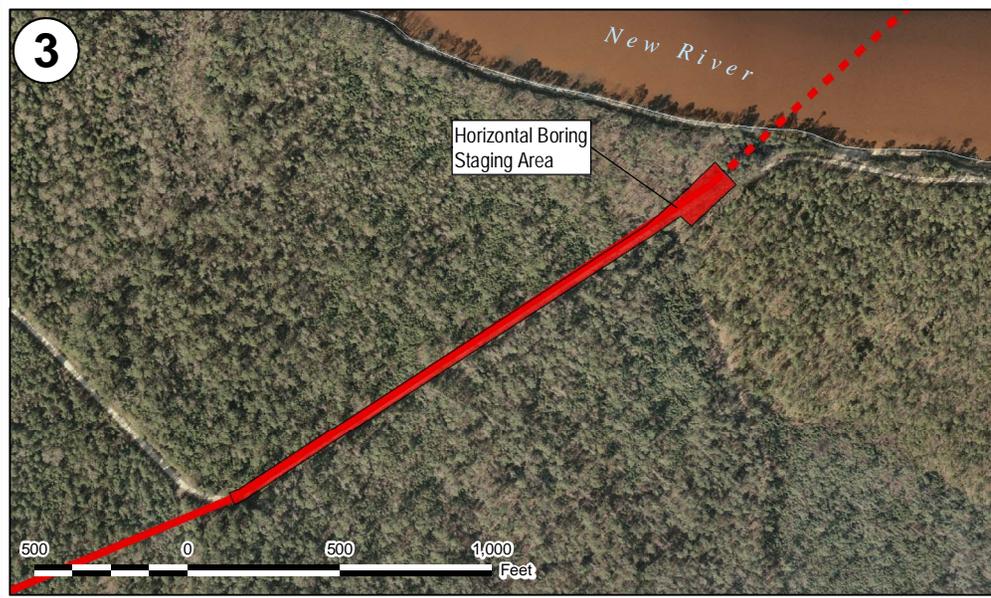
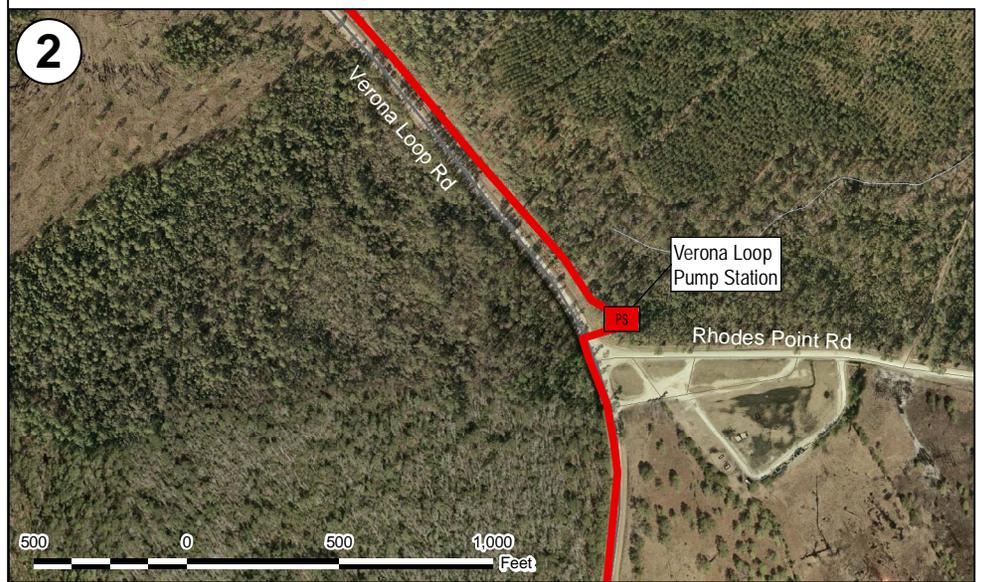


Figure 2-3

Detail of Proposed MARSOC Line and Pump Station



Proposed Wastewater System Improvements

- Sewer Line (Buried)
- - - Sewer Line (Horizontal Boring)
- Proposed Wastewater System Improvements (Staging Area)
- MCB Camp Lejeune



Figure 2-4

Table 2-2 Proposed MARSOC Sewer Line

STRUCTURE	SIZE (metric) ¹	SIZE (English) ¹	DISTURBANCE ²
New Force Main			
US 17 to Hospital Point, with boring under the New River	14,638 m of 41 cm force main	48,025 LF of 16 inch force main	8.5 ha (21 ac) ³
New Pump Stations			
MARSOC complex	84 m ²	900 SF	0.008 ha (0.02 ac)
Verona Loop	3,159 m ²	34,000 SF	0.3 ha (0.78 ac)
TOTAL LAND DISTURBANCE ~ 9 ha (22 ac)			

¹Size of force mains are depicted in terms of pipe diameter.

²Disturbance calculations are based on on-land disturbance only.

³Includes disturbance associated with staging areas for construction equipment.

Source: Bamforth 2007 and Hartman 2007.

2.2 ALTERNATIVES CONSIDERED BUT DISMISSED

Several alternatives for fulfilling the purpose and need of the proposed action were considered but dismissed from further study. For the proposed MARSOC sewer line, MCB Camp Lejeune considered an alternate alignment for the new sewer force main near Verona Loop Road and the New River crossing. The alternate alignment for the new sewer force main was sited further south than the preferred alternative alignment, with a crossing under the New River at Rhodes Point connecting to the WWTP at French Creek. This alternative was dismissed from further study because the New River crossing at Rhodes Point occurred at a rather wide part of the river. The approximate distance from shore to shore is approximately 3,048 m (10,000 ft) which was both cost prohibitive and pushed the limits of horizontal drilling technology.

Another alternative that was considered was to utilize existing force mains and pump stations to pump sewage from the MARSOC complex and areas south of Verona Loop to the existing wastewater system at MCB Camp Lejeune. With this alternative, the wastewater flow would follow the existing path from MCAS New River, Camp Geiger, Camp Johnson, Tarawa Terrace and Knox areas until ultimately discharging at the WWTP at French Creek. This alternative was dismissed because it does not allow for an alternate way of routing sewage to the WWTP should there be a need to repair the existing lines. This alternative would not alleviate pressure on existing lift stations, and sanitary sewer overflows would continue to be a concern for the Base. This alternative also does not account for recent and future planned growth at MCB Camp Lejeune. Therefore, this alternative was dismissed from further analysis.

Instead of utilizing horizontal boring methodology, MCB Camp Lejeune considered trenching to install the new force mains under the New River, Scales Creek, Northeast Creek, and Wallace Creek. However, this alternative was dismissed due to the increased environmental impacts associated with trenching within a waterway.

Finally, MCB Camp Lejeune considered leasing wastewater system facilities, however there are no known facilities that can be leased that would meet the requirements. As a result, this alternative was dismissed from further study.

2.3 NO ACTION ALTERNATIVE

Under the No Action Alternative, the proposed wastewater system modifications and MARSOC sewer line upgrades would not be constructed. The existing wastewater system at MCB Camp Lejeune consists of a series of pump stations and force mains that pump flow in the general direction from the Rifle Range to US 17, Camp Geiger, Camp Johnson, and Tarawa Terrace ultimately discharging at the WWTP located in the French Creek area. The WWTP's process and sludge handling systems were designed for an average daily flow of 56.8 mld (15 mgd), but are currently processing approximately 22.7 mld (6 mgd), or 40 percent of its design capacity (Soller 2004 in DoN 2005). MCB Camp Lejeune's National Pollutant Discharge Elimination System permit allows the discharge of up to 56.8 mld (15 mgd) through a diffuser into the New River. A portion of the wastewater residuals (bio-solids) is applied to approximately 688 ha (1,700 ac) of the Base's forested lands and open areas under MCB Camp Lejeune's Residuals Application Program (MCB Camp Lejeune, EMD, 2006a). Most of the sewer line rights-of-way are located along the sides of MCB Camp Lejeune's roadways.

Although the existing system currently has adequate treatment capacity, it does not have a backup system in the event of breakage or damage to the existing force main. Currently, there are no alternative routes to pump sewage to the main WWTP at French Creek should any of the existing underwater wastewater force mains crossing the New River, Scales Creek, Wallace Creek, or Northeast Creek break. These lines continue the flow of sewage from MCAS New River, Camp Geiger, Camp Johnson, Tarawa Terrace and Knox areas. Additionally, as described in Chapter 1, the existing system has experienced several overflows and near spill-over events at the wet wells associated with lift stations M350, TC575, and TT99.

Without the wastewater system modifications, sanitary sewer overflows would continue to be a serious concern for MCB Camp Lejeune. The emphasis of the USEPA Sanitary Sewer Overflow program is to prevent spills and releases from overflows, leaks, and collection system breaks. Currently there are no alternative routes to transfer sewage to the WWTP at French Creek should any of the existing underwater wastewater force mains crossing the New River, Scales Creek, Wallace Creek, or Northeast Creek break. Not having a backup system in place should a breakage occur could result in environmental impacts to the Base and surrounding Onslow County communities.

Without the MARSOC sewer line and associated pump stations, wastewater on Base would not be transported to the WWTP in the most efficient manner. If the Base does not reroute wastewater from MCAS New River and areas south of Verona Loop via the new MARSOC force main, sanitary sewer overflows would continue to be a serious concern for the Base. The unidirectional flow of wastewater under the current system would continue to make repairs to the existing force mains difficult. Additionally, the Base would not have a wastewater disposal system fully capable of meeting the future wastewater disposal needs of tenant commands, Base operations, and residents.

For these reasons, the No Action Alternative is not considered a reasonable alternative. However, Council on Environmental Quality guidelines stipulate that the No Action Alternative be analyzed to assess any environmental consequences that may occur if the

proposed action is not implemented. Therefore, this alternative is carried forward for analysis in this EA.

2.4 ENVIRONMENTAL PROTECTION

The USMC would follow all applicable federal laws and regulations designed to protect natural and cultural resources. Prior to construction the USMC would consult with the appropriate agencies and acquire all applicable permits as discussed in Section 1.4.4. During construction activities, numerous measures would be taken to protect natural resources including:

- Confining construction activities to work area limits;
- Removing debris, rubbish, and other waste resulting from construction operations;
- Preventing equipment from fording live streams;
- Identifying land resources to be preserved within work area;
- Conducting earthwork to minimize duration of exposure of unprotected soils;
- Constructing/installing temporary and permanent erosion and sedimentation control features as required;
- Tagging each tree and plant that are scheduled to remain; and
- Limiting dust and dirt rising and scattering in the air by use of mulch, water sprinkling, temporary enclosures, and other methods.

2.5 EVALUATION OF ALTERNATIVES

Table 2-3 summarizes the beneficial and adverse impacts of the two alternatives considered, the No Action Alternative and the proposed action. The proposed action includes a series of upgrades and modifications to the existing wastewater collection and treatment system at MCB Camp Lejeune, North Carolina.

Under the No Action Alternative, upgrades and modifications to the existing wastewater collection and treatment system would not occur, and existing conditions at MCB Camp Lejeune would remain the same.

Table 2-3 Evaluation of Alternatives

Impact	No Action Alternative	Proposed Action
Land Use and Coastal Zone Management	Sanitary sewer overflows would continue to be a concern to the coastal zone.	Some changes in land use from woodlands and herbaceous areas to developed and disturbed areas, but no changes in overall land use. Some internal coordination with Training & Operations would be required. Consistent with enforceable coastal zone policies.
Socioeconomics	No changes	There would be no socioeconomic impacts. There would be no increase or relocation of any personnel, thus the demographics at MCB Camp Lejeune and the surrounding community would not change. Short-term benefits on the local economy due to construction.
Air Quality	No changes	Short-term construction impacts, due to emissions from construction equipment and fugitive dust.
Cultural Resources	No changes	MCB Camp Lejeune has determined the proposed action would not adversely affect any historic properties. A portion of the proposed corridor for the MARSOC sewer line is located in the southeast corner of the Naval Hospital/Surgeon’s Row Historic District. The Marine Corps will obtain concurrence from the North Carolina State Historic Preservation Office before implementing the proposed action.
Natural Resources	No changes	Minor impacts on geology, topography, soils, or water resources, due in part to best management practices (BMPs) and erosion and sedimentation control plans. No adverse impacts to aquatic species or primary nursery areas. Floodplains would be avoided to the maximum extent practicable. There were approximately 1.9 ha (4.6 ac) of wetlands delineated in the proposed project areas and approximately 0.91 ha (2.25 ac) of floodplains. There are approximately 137 m (448 LF) of streams within the proposed project area. All projects would be adjusted and designed to avoid and minimize impacts to wetlands and waters of the United States to the maximum extent practicable. No construction would occur within wetlands, and BMPs would be utilized to avoid siltation of nearby wetland areas.

Impact	No Action Alternative	Proposed Action
		<p>Proposed action would require removal of approximately 13 ha (32 ac) of forest/vegetation.</p> <p>No adverse impacts to threatened or endangered species are anticipated. No adverse impacts to migratory birds or populations. Loss of approximately 1.7 ha (4.2 ac) of RCW foraging habitat is not likely to adversely affect the RCW and is not expected to jeopardize the Base’s ability to maintain sufficient foraging habitat or to meet the recovery goal of 173 active RCW clusters. RCW nesting areas are located in the vicinity but would not be adversely affected.</p> <p>There are no natural heritage areas in the vicinity of the proposed project areas.</p>
Hazardous Materials and Waste	No changes	Areas of potential contamination would be avoided to the extent possible. No adverse impacts from hazardous materials, waste, or existing contaminant sites due to the proper management of materials in accordance with all applicable laws and regulations.
Human Health and Safety	Sanitary sewer overflows would continue to be a concern.	Human health and safety would benefit due to an improved wastewater collection and treatment system.
Aesthetics	No changes	Short-term impacts to aesthetics during construction.

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3.0 AFFECTED ENVIRONMENT

This chapter provides a description of the environment that would be affected by the proposed action, as required by Council on Environmental Quality regulations for implementing NEPA (40 Code of Federal Regulations Parts 1500-1508). The description focuses on those features of the environment that would potentially be affected by the proposed action at MCB Camp Lejeune, North Carolina. The proposed action includes: installing parallel force mains by boring under the New River, Scales Creek, Northeast Creek, and Wallace Creek; constructing a new lift station near Parachute Tower Road with a connection to the existing wastewater line; and replacing approximately 122 m (400 LF) of 46 cm (18 inch) diameter force main with 61 cm (24 inch) diameter force main near the WWTP at French Creek. The proposed action also includes construction of a new force main from US 17 along Verona Loop Road through the K Range area, under the New River and connecting to an existing force main that ultimately discharges to the WWTP at French Creek. Two new pump stations would also be constructed; one within the MARSOC complex and one near Verona Loop Road. Minor internal upgrades would be made to two existing pump stations (RR150 and SR61) located near the MARSOC complex.

As discussed in Chapters 1 and 2, final NEPA documentation for the MARSOC complex at MCB Camp Lejeune was completed in August 2007 (MCB Camp Lejeune 2007c). This EA includes an analysis of all resource areas for each component of the proposed action except for the new pump station proposed for the MARSOC complex. The proposed MARSOC pump station is evaluated with respect to wetlands, floodplains, and water resources only. Final NEPA documentation was completed in August 2007 for MARSOC and at that time, it was not known that a new pump station would be required. However, the Final EA evaluated a sufficiently broad footprint to account for all other resource areas, which this document relies on as a data source. Due to the specificity in which impacts to wetlands, floodplains, and water resources are calculated and because these resources are located in the vicinity of the proposed pump station, this EA provides a discussion of these resource areas near the pump station. All other resource areas are fully analyzed as appropriate for the remaining components of the proposed action.

3.1 LAND USE AND COASTAL ZONE MANAGEMENT

Land use and coastal zone management are included in this EA because the proposed wastewater system modifications and upgrades would result in some land use changes at MCB Camp Lejeune and the Base is located within one of the state's 20 coastal counties.

3.1.1 Land Use

Land use at MCB Camp Lejeune is predominantly for operational and training purposes. Most of the Base is devoted to land and water training ranges, impact areas, and maneuver and training areas. This reflects the Base's primary mission, which is to maintain combat ready units for expeditionary deployment.

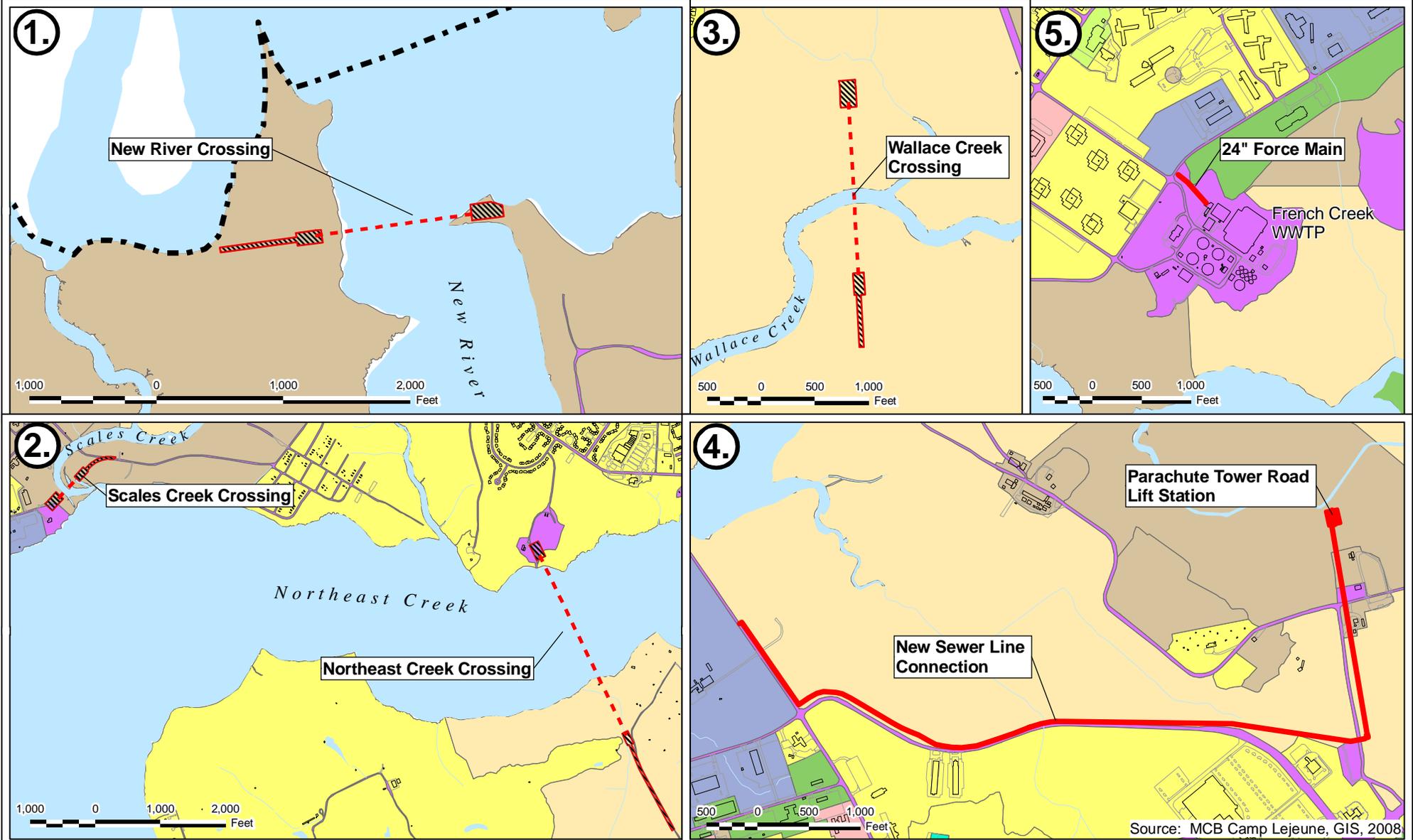
Undeveloped forested areas on MCB Camp Lejeune, although primarily classified as operational and training, are also managed for natural resources values and commodity production. Activities range from timber production and management of habitats for native and migratory wildlife, to threatened and endangered species management. Recreational uses of this

landscape, including hunting, are a key land use of undeveloped, forested areas aboard MCB Camp Lejeune.

Most of the proposed project location areas are undeveloped and generally characterized by mixed pine-hardwood forest. The land use classification for the majority of the proposed project areas is operational and training facilities. Figure 3-1a and 3-1b show land use designations within the proposed action areas. Land use descriptions for each proposed project component are grouped by location and are provided in the summaries below. For the purposes of this section, the “on land portion” of each proposed river/creek crossing includes the entry and exit points into the ground for the new force mains as well as the staging areas for construction and drilling equipment.

1. *Parallel Force Main at New River Crossing (Upper Portion)* - The on land portions of the proposed New River crossing are located in areas categorized as operational and training facilities. A natural gas line runs parallel to the proposed route for the new force main.
2. *Scales Creek Crossing and Northeast Creek Crossing* - The on land portions of the proposed Scales Creek crossing are located in areas categorized as operational and training facilities. The on land portions of the Northeast Creek crossing are located in areas categorized as utilities and ground improvements, housing and community facilities, and undeveloped land (available for development but pending designation).
3. *Wallace Creek Crossing* - The on land portions of the proposed Wallace Creek crossing are located in undeveloped areas categorized as available for development but pending designation. Overhead electric lines and a natural gas line run parallel to the proposed force main route.
4. *Parachute Tower Road Lift Station and Sewer Line Connection* - The proposed lift station near Parachute Tower Road is located in an area categorized as operational and training facilities. However, the majority of the proposed siting area for the lift station is located in a highly disturbed area adjacent to an existing above ground utility corridor. The majority of the sewer line connection area is undeveloped and is categorized as available for development but pending designation. A small section of the proposed sewer line that would extend from the lift station is also located in area categorized as operational and training facilities. Overhead electric lines and a natural gas line run parallel to the proposed new lift station and sewer line connection area.
5. *Force Main near the WWTP at French Creek* - The proposed location for the new force main near the WWTP at French Creek is located in an area categorized as utilities and ground improvements.
6. *MARSOC Sewer Line and Associated Pump Stations* - The majority of the proposed MARSOC sewer line corridor and location of the proposed Verona Loop pump station are located in areas categorized as operational and training facilities (Figure 3-

Existing Land Use for Proposed Wastewater System Modifications



Proposed Wastewater System Improvements

- Sewer Line (Buried)
- Sewer Line (Horizontal Boring)
- Proposed Wastewater System Improvements (Staging Area)
- MCB Camp Lejeune

Land Use

- Administrative Facilities
- Available for Development but Pending Designation
- Hospital and Medical Facilities
- Maintenance and Production Facilities
- Operational and Training Facilities
- Real Estate

- Housing and Community Facilities
- Maintenance and Production Facilities
- Real Estate

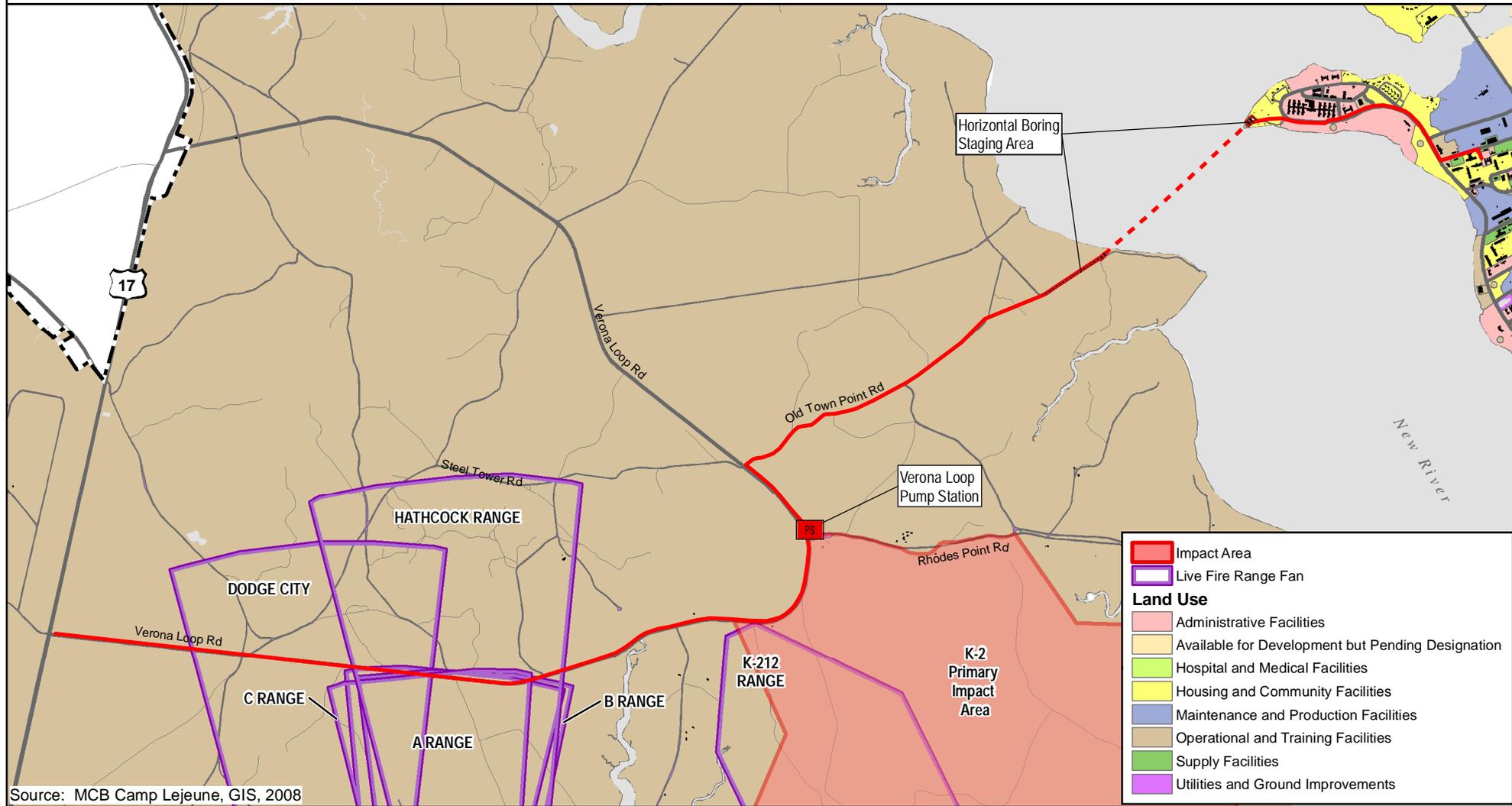
- Research, Development and Test Facilities
- Supply Facilities
- Utilities and Ground Improvements

Figure 3-1a

Source: MCB Camp Lejeune, GIS, 2008



Existing Land Use for Proposed MARSOC Sewer Line and Pump Station



Source: MCB Camp Lejeune, GIS, 2008

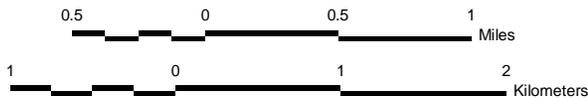


Figure 3-1b

1b). A section of the proposed force main corridor located to the east of the New River transects several areas categorized as administrative facilities, housing and community facilities, supply facilities, and utilities and ground improvements. Overhead electric lines are located adjacent to a section of the proposed force main corridor that follows Verona Loop Road.

There are several training areas located in the vicinity of the proposed MARSOC sewer line corridor. Training areas surrounding the proposed project areas are generally used for maneuver training, small units training, and command post exercise training. These areas are designated for approved field training exercises using blank ammunition, certain pyrotechnics, and limited demolitions. Near the intersection of Verona Loop Road and Old Town Point Road is Tactical Landing Zone Cardinal, which provides air and ground units a site for helicopter operations and Artillery Gun Position 34, where artillery and mortars engage in high ordinate indirect firing exercises.

Range fans identify hazard areas assigned to weapons firing activities occurring at a military installation. These fans are configured based on the weapon system, range design, and the maximum distance the ammunition can travel down range to encompass the area in which projectiles will land, either through direct fire or as a result of a ricochet (DoN 2006). Use of these areas is prohibited during live fire exercises. The proposed MARSOC sewer line corridor is located within the following range fans: Dodge City, Hathcock Range, A Range, B Range, C Range, and K-212 Range. The K-2 Primary Impact Area is located directly south of the proposed corridor for the MARSOC sewer line (Figure 3-1b). The D-9 range is located near the proposed Parachute Tower Road lift station (see Section 3.6.2) and is pending closure.

3.1.2 Coastal Zone Management

The Coastal Zone Management Act (CZMA) of 1972 (16 United States Code §1451, et seq., as amended) was enacted because there is a “natural interest in the effective management, beneficial use, protection, and development of the coastal zone” (CZMA §1451). CZMA policy is implemented through state coastal zone management programs.

The foundation of a state’s coastal management program is a list of enforceable policies. An enforceable policy is a legally binding state policy codified in constitutional provisions, laws, regulations, land use plans, ordinances, or judicial or administrative decisions. The enforceable policies allow the state to exert control over private and public land and water uses and natural resources in the coastal zone. These policies have to be incorporated into the state’s coastal zone management programs.

Federal lands are excluded from the jurisdiction of these state programs. However, activities on federal lands are subject to CZMA federal consistency requirements if the federal activity would affect any land or water or natural resource of the coastal zone, including reasonably foreseeable effects.

As a federal agency, MCB Camp Lejeune is required to determine whether its proposed activities would affect the coastal zone. This determination is made in the form of a Negative Determination or as a federal CCD. A Negative Determination (along with the basis for the

determination) is submitted to North Carolina's program when MCB Camp Lejeune determines that there would be no effects on any coastal uses or resources. According to 15 Code of Federal Regulations 930.35, there are three instances when a Negative Determination is to be submitted. They are when the proposed activity:

- is identified by the state on its list, or through case-by-case monitoring of unlisted activities;
- is the same as, or is similar to, activities for which federal Coastal Consistency Determinations have been prepared in the past; or
- has been thoroughly assessed for consistency and initial findings on the coastal effect of the activity have concluded there are no foreseeable effects.

For a proposed activity that would affect coastal resources, a federal CCD is required. A federal CCD is a determination supported by findings that a proposed activity in or affecting the resources of a coastal zone complies with, and would be conducted in a manner that is consistent to the maximum extent practicable with, the state's coastal zone enforceable policies unless "...full consistency is prohibited by existing law applicable to the federal government." Thus, federal actions occurring in a state's coastal zone need to be consistent with that program, specifically the program's enforceable policies. In this case, MCB Camp Lejeune would submit a statement and supporting documentation (i.e., the CCD) to the state's program indicating that the action is consistent with the program. The state reviews the determination and either provides concurrence or objection.

In North Carolina, the NCDENR is the lead agency for coastal management, which is regulated under the North Carolina Coastal Area Management Act of 1974. Chapter 7 of this Act identifies the enforceable policies. Each of the 20 coastal counties in North Carolina develops local plans and upon approval by the North Carolina Coastal Resources Commission, each local plan becomes part of the North Carolina Coastal Management Plan. The NCDENR Division of Coastal Management uses the Coastal Management Plan to issue CZMA permit decisions and federal Coastal Consistency Determination concurrences. The procedure for assessing whether MCB Camp Lejeune's proposed activities meet the requirements of the North Carolina Coastal Management Program is as follows:

- MCB Camp Lejeune determines whether the proposed activity is "consistent" with the enforceable policies of the North Carolina Coastal Management Program and submits it to the NCDENR Division of Coastal Management.
- NCDENR Division of Coastal Management reviews the determination and circulates it for review/comment to state agencies that would have a regulatory interest in the proposed project.
- Following review, NCDENR Division of Coastal Management concurs or disagrees with the determination and notifies MCB Camp Lejeune in writing.

The enforceable policies issued by North Carolina for the coastal area address the following items:

- Shoreline erosion policies;
- Shorefront access policies;
- Coastal energy policies;
- Post-disaster policies;
- Floating structure policies;
- Mitigation policy;
- Coastal water quality policies;
- Policies on use of coastal airspace;
- Policies on water and wetland based target areas for military training areas;
- Policies on beneficial use and availability of materials resulting from the excavation or maintenance of navigational channels; and
- Policies on ocean mining.

North Carolina's coastal zone includes the 20 counties that are adjacent to, adjoining, intersected by or bounded by the Atlantic Ocean or any coastal sound, including Onslow County. There are two tiers within this boundary. The first tier is comprised of Areas of Environmental Concern (AECs) designated by the state. AECs have more thorough regulatory controls and include coastal wetlands, coastal estuarine waters, public trust areas, coastal estuarine shorelines, ocean beaches, frontal dunes, ocean erosion areas, inlet lands, small surface water supply watersheds, public water supply wellfields, and fragile natural resource areas. The second tier includes land uses with the potential to affect coastal waters, even though they are not defined as AECs. The coastal zone extends seaward to the three nautical mile territorial sea.

An AEC is an area of natural importance and its classification protects the area from uncontrolled development. AECs include almost all coastal waters and about three percent of the land in the 20 coastal counties. The four categories of AECs are:

- The Estuarine and Ocean System, which includes public trust areas, estuarine coastal waters, coastal shorelines, and coastal wetlands;
- The Ocean Hazard System, which includes components of barrier island systems;
- Public Water Supplies, which include certain small surface water supply watersheds and public water supply wellfields; and

- Natural and Cultural Resource Areas, which include coastal complex natural areas; areas providing habitat for federal or state designated rare, threatened or endangered species; unique coastal geologic formations; or significant coastal archaeological or historic resources.

MCB Camp Lejeune includes coastal resources designated as AECs, including estuarine coastal waters, coastal shorelines, and coastal wetlands of the Estuarine and Ocean System AEC, as well as habitat for federal or state designated species and archaeological or historic resources of the Natural and Cultural Resource Area AEC. The New River, Northeast Creek, and Scales Creek are designated as coastal estuarine water and Wallace Creek is designated as inland water. Furthermore, all land located within 23 m (75 ft) of the normal high water level of coastal waters and within 9 m (30 ft) of the normal high water level of inland water is also considered to be coastal shoreline within the Estuarine and Ocean System AEC. Horizontal boring would take place underneath the coastal shoreline AEC and staging area for drilling equipment for the horizontal boring would be situated outside of these AECs. A portion of the MARSOC sewer line is parallel to the border of a coastal shoreline but is not located within it. Coastal wetlands are located along much of MCB Camp Lejeune's estuarine waters including within the vicinity of most of the proposed project areas. Several wetland system types are located within the vicinity of the proposed action areas, including estuarine, palustrine, and riverine. Habitat that supports threatened and endangered species are considered a coastal resource under the Natural and Cultural Resource Area AEC. Installation of the proposed MARSOC sewer line would result in the loss of approximately 1.7 ha (4.2 ac) of red-cockaded woodpecker foraging habitat; however, MCB Camp Lejeune does not expect this loss to jeopardize the Base's ability to maintain sufficient foraging habitat.

Other coastal resources not designated as AECs in the vicinity of the project area include primary nursery areas and special secondary nursery areas. Horizontal drilling would take place in the upper New River, Scales Creek, and Northeast Creek which are considered primary nursery areas and in the lower New River which is considered a special secondary nursery area. See Figures 1a, 1b, 2a, and 2b in Appendix C of this EA for the locations of coastal resources in the vicinity of the proposed action.

3.2 SOCIOECONOMICS

Socioeconomics comprise the basic attributes of population and economic activity within a particular area and typically encompass population, employment and income, and housing. Impacts on these fundamental socioeconomic resources can also influence other components such as public services provisions. The Region of Influence is defined as those areas mostly likely to be affected by the proposed action. For the purpose of this EA, the Region of Influence for MCB Camp Lejeune is Onslow County and the city of Jacksonville, North Carolina. Socioeconomics is discussed in this EA because the proposed action could have a short-term beneficial impact on the local economy.

3.2.1 Demographics

There are several major USMC commands and one Navy command aboard MCB Camp Lejeune, making it one of the largest populated bases in the world. Total active duty population of the

Base is 43,116, of which 37,560 are assigned to MCB Camp Lejeune and 5,556 to MCAS New River. (The baseline population includes the recent establishment of a Marine Special Operations Command at MCB Camp Lejeune.) On-base civilian employees add 4,627 personnel. There are a total of 46,025 family members of active duty personnel (MCB Camp Lejeune 2007d as adjusted in accordance with DoN 2007 and MCB Camp Lejeune 2008). In addition, the current estimated annual through-put of students attending military training/schools at MCB Camp Lejeune is 19,000 (Marine Corps Installations East 2007).

The military population of MCB Camp Lejeune has long been an essential element of the demography and economy of both Jacksonville and Onslow County. Table 3-1 shows more than two decades worth of estimates of the military population associated with MCB Camp Lejeune. In the context of a total county population of 150,355 in 2000 (US Census Bureau 2007), the predominance of the military population is apparent. Moreover, there has been a notable increase in the military population within Onslow County since the 2000 Census.

Table 3-1 Military Population in the MCB Camp Lejeune Vicinity 1985-2006

Month/Year	Active Duty Personnel	Total Family Members of Active Duty Personnel	Total Retired & Family Members	Civilian Employees	Total
1985 ¹	43,304	31,674	33,351	4,489	112,818
1990 ¹	44,026	52,565	25,033	4,691	126,315
1991 ¹	46,001	54,871	25,678	4,470	131,020
1996 ¹	41,110	57,000	23,970	4,800	126,880
2001 ²	37,491	53,051	42,012	4,851	137,405
2003 ³	37,220	53,614	42,564	4,883	138,280
2005 ⁴	43,974	38,719	64,891	4,321	151,905
2006 ⁵	42,241	45,160	67,967	4,627	159,995

Sources: ¹ Onslow County 2000. ² MCB Camp Lejeune 2001. ³ MCB Camp Lejeune 2007a. ⁴ MCB Camp Lejeune 2006a. ⁵ MCB Camp Lejeune 2007d.

Table 3-2 shows the total population for the Region of Influence, recent trends, and year 2010 population projections. Whereas the population of Onslow County remained relatively unchanged between 1990 and 2000, the city of Jacksonville and the state of North Carolina grew considerably. The annexation of the MCB Camp Lejeune population more than doubled the city of Jacksonville’s population between 1990 and 2000, which otherwise remained stable during the course of the last decennial census.

Table 3-2 Population Trends 1980-2010

Jurisdiction	1980 ¹	1990 ²	2000 ²	Projected 2010 ³	Difference in Population as a percentage 1980-1990	Difference in Population as a percentage 1990-2000
Onslow County	112,784	149,838	150,355	159,528	32.9	0.3
Jacksonville	18,259	30,013	66,715	N/A	64.4	122.3
North Carolina	5,880,095	6,628,637	8,049,313	9,349,175	12.7	21.4

Sources:

¹ US Census Bureau, 1990.

² US Census Bureau, 2007.

³ North Carolina State Demographics Unit 2006 and 2007.

Census data on the 2000 racial and ethnic make-up of Onslow County is shown in Table 3-3. The white and black populations of Onslow County are proportionate to North Carolina as a whole. Persons of Hispanic origin are more numerous in Onslow County (7.2 percent) and Jacksonville (10.0 percent) than in the state. Moreover, there has been a notable increase in the white population (75.8 percent) and a decrease in the black population (17.8 percent), Hispanic population (6.6 percent), and all other populations (6.3 percent) within the Region of Influence since the 2000 Census (US Census Bureau 2007).

Table 3-3 Race and Ethnicity 2000 (percent)

Jurisdiction	White	Black ¹	Other Non-White ²	Hispanic or Latino ³
Onslow County	72.1	18.5	9.4	7.2
Jacksonville	63.9	24.0	12.2	10.0
North Carolina	72.1	21.6	6.2	4.7

Notes: ¹ Having origins in any of the black racial groups of Africa.

² Includes individuals of two or more races.

³ Hispanic origin, may be of any race.

Source: US Census Bureau 2007.

3.2.2 Income and Employment

MCB Camp Lejeune serves as the leading employer of Onslow County residents. In 2003, the Base contributed more than \$5.2 billion to the local economy, of which \$384 million was for the purchase of supplies, materials and services and \$1.8 billion was for gross pay to its military and civilian employees and retirees (USMC 2005). It is anticipated that the Base's federal military workforce will remain the leading regional industry in terms of employment and earnings.

Median household and family incomes, as well as percentages of persons living below the poverty level, as reported from the 2000 Census (and projected to 2005 where available) are

shown in Table 3-4. Onslow County and the city of Jacksonville both had lower incomes and a higher percentage of persons living below the poverty level than the state in 2000. Onslow County had a median income more similar to the state as a whole in 2005; however, the percentage of persons living below the poverty level remains higher than the state.

Table 3-4 Income and Poverty

Jurisdiction	2000			2000 Per Capita Income
	Median Household Income	Median Family Income	Percent of Persons Below Poverty	
Onslow County	33,756	36,692	12.9	14,853
Jacksonville	32,544	33,763	14.1	14,237
North Carolina	39,184	46,335	12.3	20,307
Jurisdiction	2005			2005 Per Capita Income
	Median Household Income	Median Family Income	Percent of Persons Below Poverty	
Onslow County	41,242	44,956	18.2	17,123
North Carolina	40,729	49,339	15.1	20,307

Source: US Census Bureau 2007.

2005 Census data estimates the total work force for Onslow County as 98,304. Onslow County offers a different employment character than is typical for North Carolina as a whole. In 2005, government sector jobs represented 56.7 percent of the jobs in Onslow County, significantly more than the state’s share at 15.7 percent. Military jobs comprise 77.4 percent of the government jobs in Onslow County, as compared to 15.7 percent of government jobs in North Carolina as a whole (Bureau of Economic Analysis 2007). Compared to North Carolina as a whole, Onslow County is involved in less manufacturing, reflecting in part its distance from both major population centers and the state’s principal transportation networks. The educational and health and social services sector is the largest employer in Onslow County. Retail trade industries and construction provide a higher share of employment within the county than they do in the state.

Average annual pay is significantly lower in Onslow County than for North Carolina as a whole. On average, federal jobs provide the highest wages in the county and in the state. The average annual pay for federal jobs in Onslow County grew at a rate of 9.7 percent from 2004 to 2005 (Bureau of Labor Statistics 2007).

3.2.3 Housing

MCB Camp Lejeune has ten different family housing areas, which include approximately 4,300 family housing units, and approximately 22,500 on Base housing units for unaccompanied (i.e.

bachelor) personnel (USMC 2007b). Approximately 77 percent of the MCB Camp Lejeune military personnel with families and 30 percent of the bachelor military personnel live off Base (MCB Camp Lejeune 2005).

The 2000 Census recorded 55,726 total housing units in Onslow County, of which 27 percent were built during the previous decade (US Census Bureau 2007). In 2000, Onslow County occupied housing accounted for 48,122 units of which rental units accounted for almost 42 percent of the occupied units, as compared to the state proportion of 31 percent. In 2000, the average household size in Onslow County was 2.72, compared to 2.49 for the state (US Census Bureau 2007).

In 2000, the median price asked for specified vacant for-sale-only housing units was \$84,100 in Onslow County. For specified vacant for-rent housing units the median monthly rent was \$342 in Onslow County (US Census Bureau 2007).

3.2.4 Environmental Justice

Executive Order 12898, “Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations,” directs federal agencies to incorporate environmental justice into its mission and activities. Federal agencies are to accomplish this by conducting programs, policies, and activities that substantially affect human health or the environment in a manner that does not exclude communities from participation in, deny communities the benefits of, or subject communities to discrimination under such actions, because of their race, color, or national origin.

Executive Order 13045, “Protection of Children from Environmental Health Risks and Safety Risks,” requires each federal agency to identify and assess environmental health and safety risks to children. “Environmental health and safety risks” are defined as “risks to health or to safety that are attributable to products or substances that the child is likely to come in contact with or ingest.”

As mentioned in Section 3.1.1, the proposed action would be located within the following range fans: Dodge City, Hathcock Range, A Range, B Range, C Range, K-212 Range, and D-9. Use of these areas is prohibited during live fire exercises. The K-2 Primary Impact Area is located directly south of the proposed location for the MARSOC sewer line. The D-9 range is located in the vicinity of the proposed location for the new Parachute Tower Road lift station, and is pending closure (see Section 3.6.2).

Table 3-3 (shown previously) presents 2000 Census data for the racial and ethnic characteristics of Onslow County compared to the state of North Carolina, where it can be seen that the minority populations represent a relatively small proportion of the total population. Compared to the state of North Carolina as a whole, the county has similar population, racial, and ethnicity characteristics; the largest relative difference (4 percent) being in the smaller percentage of Blacks or African Americans residing in the county compared to the state. The relative proportions of American Indians and Alaska natives are lower in Onslow County in comparison to all of North Carolina.

Table 3-4 (shown previously) presents 2000 Census data for the percentages of persons living below the poverty level in Onslow County. Compared to the state of North Carolina, persons living below the poverty level are higher in Onslow County.

Children who are dependents of military personnel are authorized to access MCB Camp Lejeune, however, the proposed project areas are relatively remote and not located in areas where children are likely to be (e.g., schools, residential areas, and community facilities).

3.3 AIR QUALITY

Air quality is discussed in this EA because the proposed wastewater system modifications and upgrades could generate temporary increases in fugitive dust emissions as well as temporary emissions from operation of construction vehicles.

Seven pollutants (also known as "criteria pollutants") are commonly found in air, particularly in developed countries such as the United States. They are: particulate matter 10 microns in size, particulate matter 2.5 microns in size, ground-level ozone; carbon monoxide; sulfur oxides; nitrogen oxides; and lead. These pollutants can harm your health and the environment, and cause property damage. Particulate matter and ground-level ozone are the most widespread health threats.

Particle pollution consists of very fine dust, soot, smoke, and droplets that are formed from chemical reactions. It is also produced when fuels such as coal, wood, or oil are burned. For example, sulfur dioxide and nitrogen oxide gases from motor vehicles, electric power generation, and industrial facilities react with sunlight and water vapor to form particles. Particles may also come from fireplaces, wood stoves, unpaved roads, crushing and grinding operations, and may be blown into the air by the wind.

Ground-level ozone is a primary component of smog. Ground-level ozone can cause human health problems and damage forests and agricultural crops. The two types of chemicals that are the main ingredients in forming ground-level ozone are called volatile organic compounds and nitrogen oxides. Volatile organic compounds are released by cars burning gasoline, petroleum refineries, chemical manufacturing plants, and other industrial facilities. The solvents used in paints and other consumer and business products contain volatile organic compounds. Nitrogen oxides are produced when cars and other sources like power plants and industrial boilers burn fuels such as gasoline, coal, or oil. The reddish-brown color you sometimes see when it is smoggy comes from the nitrogen oxides.

The USEPA calls these pollutants "criteria" air pollutants because it regulates them by developing human health-based and/or environmentally-based criteria (science-based guidelines) for setting permissible levels. These guidelines are collectively called the National Ambient Air Quality Standards. The National Ambient Air Quality Standards set a primary and, in some cases, a secondary standard for each of the criteria pollutants. The primary standards are limits set based on human health. The secondary standards are another set of limits intended to prevent environmental and property damage. A geographic area with air quality that is cleaner than the primary standard is called an "attainment" area; areas that do not meet the primary standard are called "nonattainment" areas. These primary and secondary standards are listed in Table 3-

5. The NCDENR has an additional standard for total suspended particulates, which is also included in Table 3-5.

MCB Camp Lejeune and 13 surrounding counties are in an attainment area for these criteria pollutants that is identified as the Southern Coastal Plain Intrastate Air Quality Control Region (defined in 40 Code of Federal Regulations Part 81.152). However, under Title V of the Clean Air Act, MCB Camp Lejeune is required to obtain a construction and operation permit from the North Carolina Division of Air Quality for certain emission sources and their associated air pollution control equipment. This permit requires MCB Camp Lejeune to perform intensive monitoring, record keeping, and reporting for over one hundred different emission sources, such as boilers, generators, surface coating operations, and engine testing operations.

Table 3-5 National Ambient Air Quality Standards

POLLUTANT	AVERAGING TIME	PRIMARY ¹	SECONDARY
Ozone	8 Hours	0.08 ppm	Same as Primary
Carbon Monoxide	8 Hours	9.0 ppm	None
	1 Hour	35 ppm	
Nitrogen Dioxide	Annual Arithmetic Mean	0.053 ppm	Same as Primary
Sulfur Dioxide	Annual Arithmetic Mean	0.03 ppm	None
	24 Hours	0.14 ppm	
	3 Hours	---	0.5 ppm
Particulate Matter 10 microns	24 Hours	150 µg/m ³	Same as Primary
Particulate Matter 2.5 microns	Annual	15 µg/m ³	Same as Primary
	24 Hours	65 µg/m ³	---
Lead	Quarterly Arithmetic Mean	1.5 µg/m ³	Same as Primary
North Carolina Total Suspended Particulate Standard	Annual Geometric Mean	75 µg/m ³	--
	24 Hours	150 µg/m ³	--

Source: USEPA 2007a.

Notes: ¹ ppm = parts per million by volume, µg/m³ = micrograms per cubic meter.

3.4 CULTURAL RESOURCES

Cultural resources are subject to review under federal laws and regulations. Section 106 of the National Historic Preservation Act of 1966 empowers the Advisory Council on Historic Preservation to comment on federally initiated, licensed, funded, or permitted projects affecting cultural sites listed or eligible for inclusion in the National Register of Historic Places. Once cultural resources have been identified, they are evaluated for their eligibility for inclusion into the National Register. If the resource is determined to be eligible, an assessment is undertaken to identify any impacts that may result due to the proposed action. Only cultural resources determined to be noteworthy (i.e., eligible for or listed in the National Register) are protected under the National Historic Preservation Act.

MCB Camp Lejeune manages a variety of historic and prehistoric cultural resources in accordance with its Integrated Cultural Resource Management Plan. They include prehistoric and historic archaeological sites ranging from the early Archaic period to early European colonization and later settlement (MCB Camp Lejeune, EMD 2006b). In addition to extensive

archaeological resources, MCB Camp Lejeune also manages historic architectural properties. MCB Camp Lejeune was constructed during the mobilization of the Marine Corps during World War II, and many of its buildings and developed areas remain as they were originally constructed and retain a high degree of historical integrity (MCB Camp Lejeune, EMD 2006b).

3.4.1 Archaeological Resources

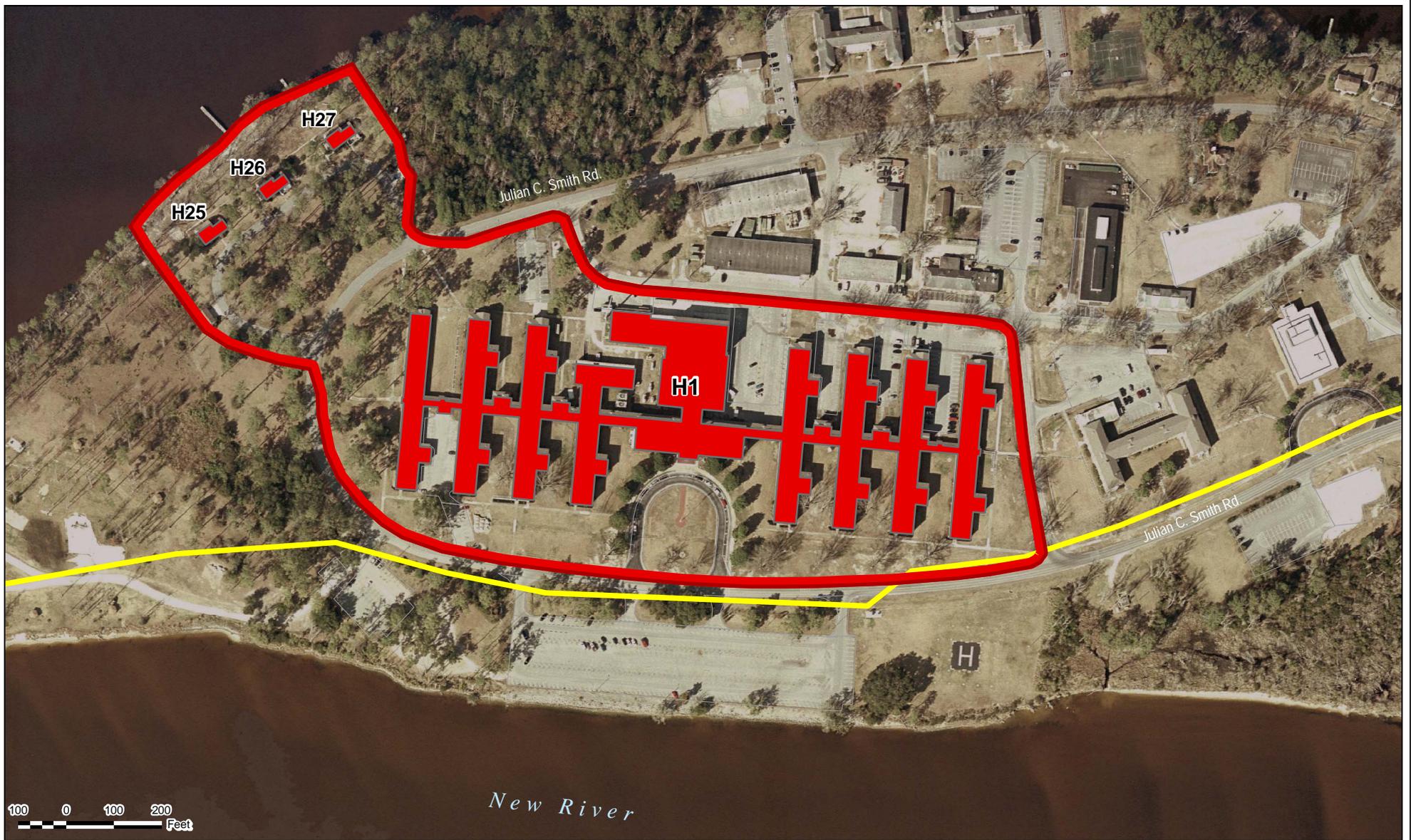
The existing sewer line corridor that is part of the Base's existing wastewater system was surveyed in 1993 by Goodwin and Associates, Inc. (Outlaw et al. 1993) in support of MCB Camp Lejeune's wastewater treatment upgrades. This survey included extensive terrestrial and underwater surveys. A review of archival data located at the State Division of Underwater Archaeology at Fort Fisher and the Office of State Archaeology determined that underwater surveys were necessary for the New River and Northeast Creek crossings only (Outlaw et al. 1993). These surveys did not identify any submerged archaeological resources and recommended no further investigations.

Based on predictive models and previous field surveys, MCB Camp Lejeune, in consultation with the North Carolina State Historic Preservation Office, has identified all the areas within the installation boundary with high probability archaeologically sensitive soils. Archaeological surveys of the existing sewer corridor and all high-probability soils within the project area have been undertaken (Richardson 2007). No archaeological sites that are eligible or potentially eligible for listing in the National Register have been identified as occurring within the project area. In addition, MCB Camp Lejeune consulted with the North Carolina State Historic Preservation Office in March 2007 regarding the proposed construction of the MARSOC complex which included the original siting area for the new sewer line crossing the New River at Rhodes Point (see Sections 1.3 and 2.2). Although the location for the sewer line has changed, a portion of the original siting area (the southern portion of Verona Loop Road) is the same. By letter dated June 2007, the North Carolina State Historic Preservation Office concurred that the proposed undertaking would have no affect on any sites eligible for inclusion on the National Register.

3.4.2 Architectural Resources

A portion of the proposed MARSOC sewer line is located in the southeast corner of the Naval Hospital/Surgeon's Row Historic District, which has been determined eligible for listing in the National Register (see Figure 3-2). The district consists of Building H-1, formerly the Naval Hospital, and several residence quarters along with their associated carports. The proposed construction would require the excavation of a sewer line trench within the grassy lawn of Building H-1, however no alterations to Building H-1 would occur as a result of the proposed action.

Naval Hospital/Surgeon's Row Historic District



-  Sewer Line (Buried)
-  Historic Building
-  Historic District

Figure 3-2



3.5 NATURAL RESOURCES

3.5.1 Topography, Soils, and Geology

Topography and soils are discussed in this EA because the proposed action would result in some ground disturbance, including clearing, grading, leveling, and placement of approved soil stabilization materials. Geology is discussed in this EA because the proposed action includes horizontal boring approximately 10.7 to 12.2 m (35 to 40 ft) under creek/river substrate.

3.5.1.1 Topography and Soils

MCB Camp Lejeune is characterized by a combination of poorly drained broad, level flatlands and gently rolling better-drained terrain. Topography ranges from an elevation of 0.6 m (2 ft) above sea level near the on land portion of the proposed project area at Wallace Creek to 21 m (70 ft) above sea level near the on land portion of the proposed MARSOC sewer line corridor.

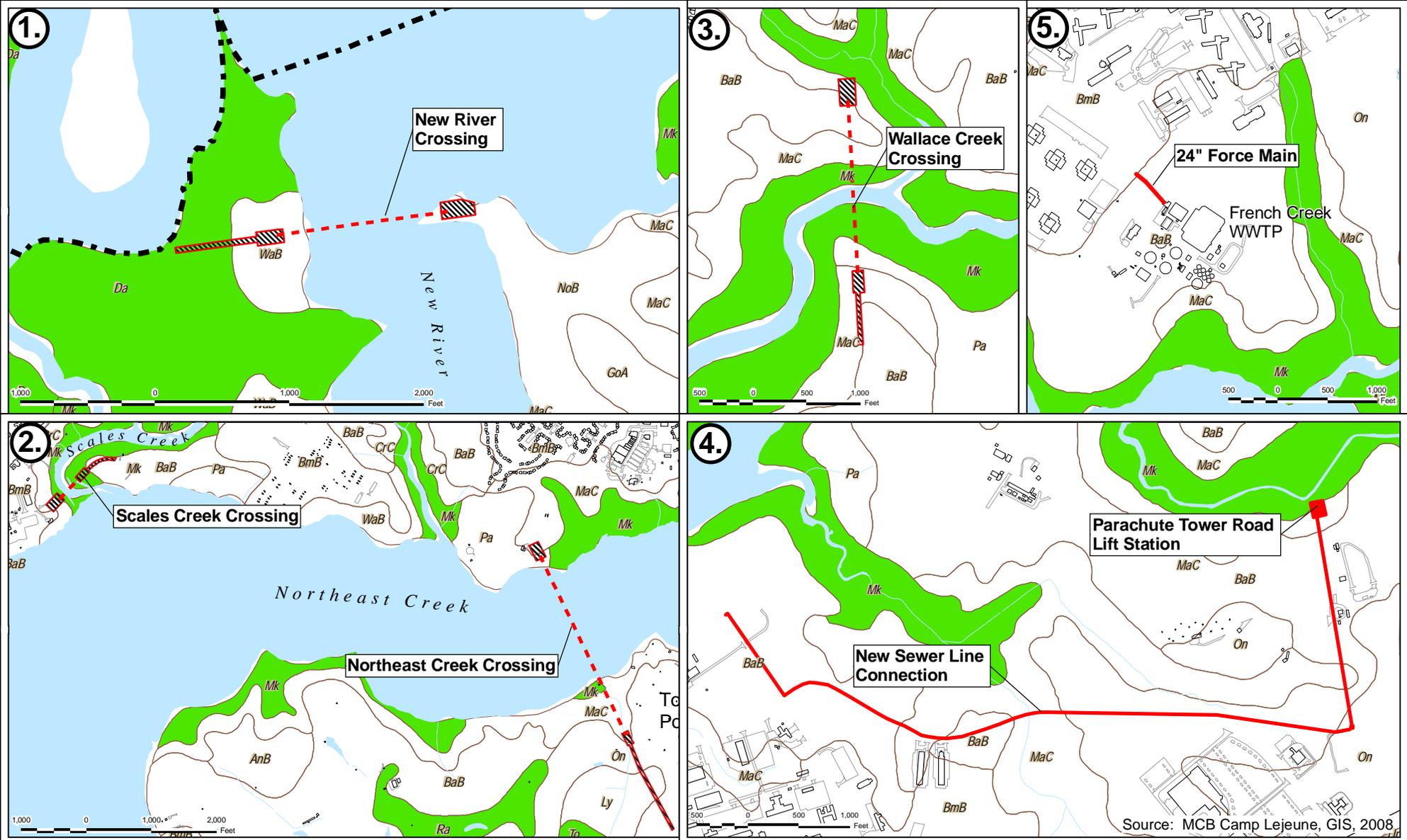
Figure 3-3a shows soil types in the vicinity of the proposed wastewater system improvements component of the proposed action. Figure 3-3b shows soil types in the vicinity of the proposed MARSOC sewer line corridor and Verona Loop pump station. The project areas contain numerous soil types, six of which are listed as hydric soils by the National Technical Committee on Hydric Soils including Croatan muck, Leon fine sand, Muckalee loam, Murville fine sand, Pantego mucky loam, and Woodington loamy fine sand. Non-hydric soils in the project area include Baymeade fine sand, Baymeade-Urban land complex, Craven fine sandy loam, Kureb fine sand, Marvyn loamy fine sand, and Onslow loamy fine sand. Table 3-6 shows hydric and non-hydric soils occurring in the vicinity of the proposed project area.

There is limited available data that characterizes the substrate of the New River, Scales Creek, Northeast Creek, Wallace Creek, and Beaverdam Creek. The bottom sediment of the New River consists of firm substrate that is more sand than mud (Carpenter 2007).

3.5.1.2 Geology

As glacial events and slight crustal movement have changed sea level over the past 66 million years, the land base has been alternately exposed and submerged. Marine deposits laid down over time on this land base formed the weakly dissected alluvial plain that MCB Camp Lejeune occupies today. The deposits are mostly clean sand and clayey sand, layered with deposits of clay and marine shells. Along the coast, stream sediment deposition, and natural shore processes develop and maintain beaches, swamps, and mud flats.

Soil Types in Vicinity of Proposed Wastewater System Modifications



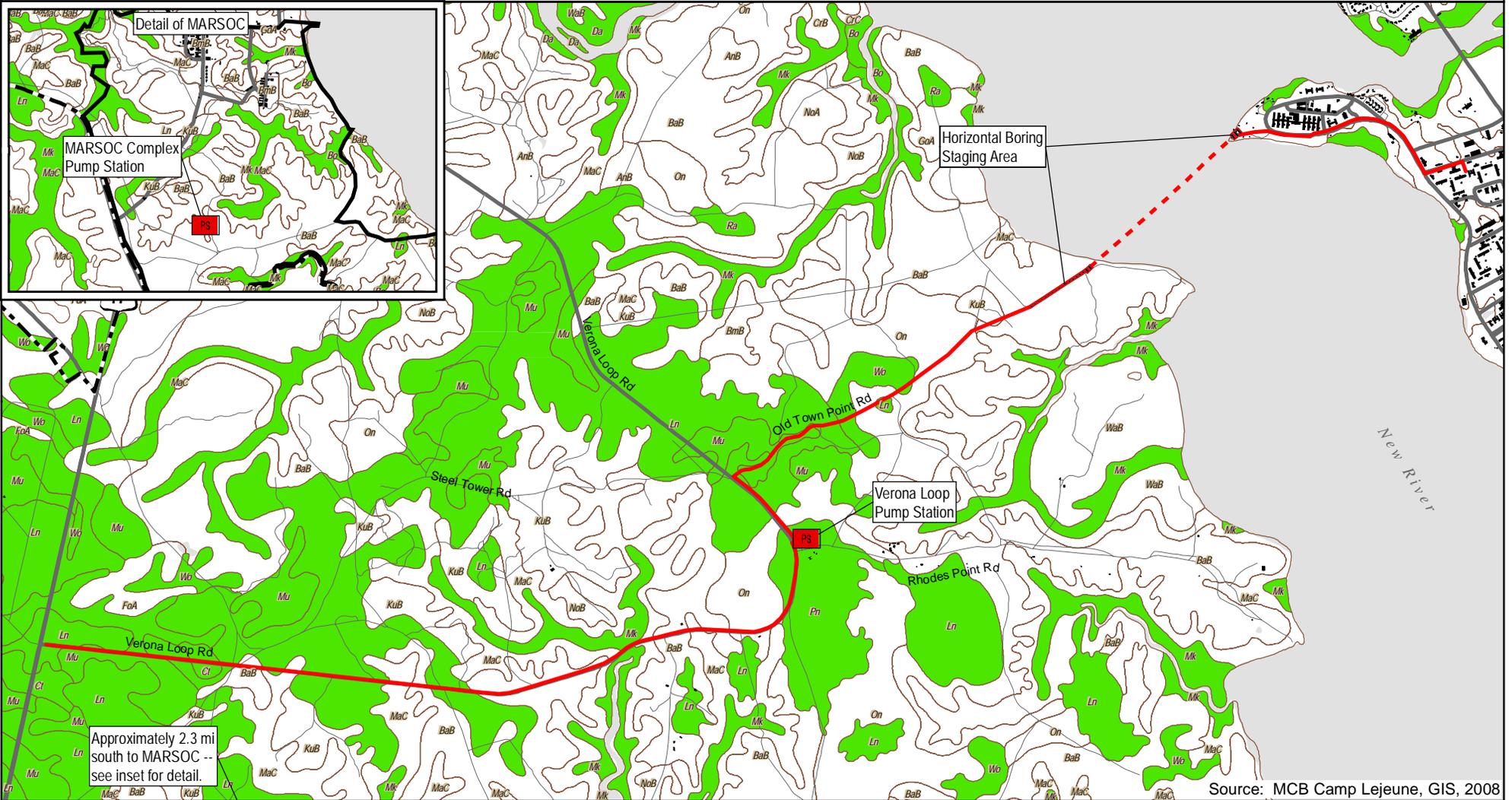
- Proposed Wastewater System Improvements
- Sewer Line (Buried)
- - - Sewer Line (Horizontal Boring)
- ▨ Proposed Wastewater System Improvements (Staging Area)
- ▣ MCB Camp Lejeune
- Hydric Soils
- Not Hydric or Partially Hydric

Source: MCB Camp Lejeune, GIS, 2008



Figure 3-3a

Soil Types in the Vicinity of Proposed MARSOC Sewer Line And Pump Station



Source: MCB Camp Lejeune, GIS, 2008

- Future Pump Station
- Horizontal Boring Staging Area
- MARSOC Sewer Line (Buried)
- MARSOC Sewer Line (Horizontal Boring)
- MCB Camp Lejeune
- Hydric Soils
- Not Hydric or Partially Hydric

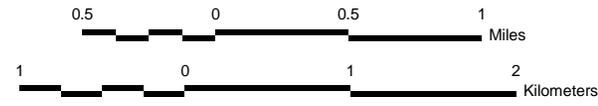


Figure 3-3b

Table 3-6 Soil Types in the Vicinity of the Proposed Action Locations

Soil Unit	Soil Definition	Description
Non-Hydric Soils		
BaB	Baymeade fine sand, 0 to 6 percent slope	These nearly level to gently sloping, very deep, well drained soils are on uplands. They formed in loamy and sandy marine sediments. They have a sandy surface layer and a loamy subsoil. Permeability is moderately rapid and shrink-swell potential is low. Seasonal high water table is within a depth of 1.2 to 1.5 m (4.0 to 5.0 ft).
BmB	Baymeade-Urban land complex, 0 to 6 percent slopes	This map unit consists of nearly level to gently sloping Baymeade soils and Urban land on uplands. Baymeade soils are very deep and well drained. They formed in loamy and sandy marine sediments. They have a sandy surface layer and a loamy subsoil. Permeability is moderately rapid and shrink-swell potential is low. Seasonal high water table is within a depth of 1.2 to 1.8 m (4.0 to 6.0 ft). Urban land consists of areas where the original soils have been cut, filled, graded, or paved to the extent that a soil type can no longer be recognized. These areas are used for shopping centers, factories, municipal buildings, parking lots, and other urban uses.
CrC	Craven fine sandy loam, 4 to 8 percent slopes	These gently sloping, very deep, moderately well drained soils are on uplands. They formed in clayey marine sediments. They have a loamy surface layer and a clayey subsoil. Permeability is slow and shrink-swell potential is moderate. Seasonal high water table is within a depth of 0.6 to 0.9 m (2.0 to 3.0 ft).
KuB	Kureb fine sand, 1 to 6 percent slopes	These nearly level to gently sloping, very deep, excessively drained soils are on uplands. They formed in sandy marine, fluvial, or eolian deposits. These soils are sandy throughout the soil profile. Permeability is rapid and shrink-swell potential is low. Seasonal high water table is below a depth of 1.8 m (6.0 ft).
MaC	Marvyn loamy fine sand, 6 to 15 percent slopes	These gently sloping to strongly sloping, very deep, well drained soils are on uplands. They formed in loamy marine sediments. They have a sandy surface layer and a loamy subsoil. Permeability is moderate and shrink-swell potential is low. Seasonal high water table is below a depth of 1.8 m (6.0 ft).
On	Onslow loamy fine sand	These nearly level, very deep, moderately well drained to somewhat poorly drained soils are on uplands. They formed in loamy marine sediments. They have a sandy surface layer and a loamy subsoil. Permeability is moderate and shrink-swell potential is low. Seasonal high water table is within a depth of 0.4 to 0.9 m (1.5 to 3.0 ft).
Hydric Soils		
Ct	Croatan muck	These nearly level, very poorly drained soils are in depressions on uplands and stream terraces. They formed in shallow to moderately deep decomposed organic material. The organic layers range from 41 to 129 cm (16 to 51 in) thick and are underlain by sandy and loamy deposits. The organic layers generally contain logs and stumps. Permeability is slow to moderately rapid and shrink-swell potential is low. Seasonal high water table is within a depth of 0.3 m (1.0 ft). These soils may pond and are subject to rare flooding.
Ln	Leon fine sand	These nearly level, very deep, poorly drained soils are on broad flats and in depressions. They formed in sandy marine sediments. These soils are sandy throughout with dark colored, weakly cemented layers in the subsoil. Permeability is moderate to moderately rapid and shrink-swell potential is low. Seasonal high water table is within a depth of 0.15 to 0.4 m (0.5 to 1.5 ft).
Mk	Muckalee loam	These nearly level, very deep, poorly drained soils are on flood plains. They formed in loamy and sandy alluvial sediments. They have a loamy surface layer. The underlying materials are loamy and sandy. Permeability is moderate and shrink-swell potential is low. Seasonal high water table is within a depth of 0.3 m (1.0 ft). These soils are subject to frequent flooding.
Mu	Murville fine sand	These nearly level, very deep, very poorly drained soils are on flats or in depressions on uplands and stream terraces. They formed in sandy marine and fluvial sediments. They have a sandy surface layer and subsoil. Permeability is rapid to moderately rapid and shrink-swell potential is low. Seasonal high water table is within a depth of 0.3 m (1.0 ft).
Pn	Pantego mucky loam	These nearly level, very deep, very poorly drained soils are on broad flats and in slight depressions on uplands. They formed in loamy marine sediments. They have a loamy surface layer and subsoil. Permeability is moderate and shrink-swell potential is low. Seasonal high water table is within a depth 0.3 m (1.0 ft).
Wo	Woodington loamy fine sand	These nearly level, very deep, poorly drained soils are on flats and in depressions on uplands. They formed in sandy and loamy marine sediments. They have a sandy surface layer and a loamy subsoil. Permeability is moderately rapid and shrink-swell potential is low. Seasonal high water table is within a depth of 0.15 to 0.3 m (0.5 to 1.0 ft).

Three primary geomorphic surfaces are identified on Base (MCB Camp Lejeune 2007a):

- Pamlico surface, elevation of 0-7.6 m (0-25 ft) in narrow strips along the Intracoastal Waterway, New River, and its tributaries.
- Wicomico surface, elevations of 14-23 m (45-75 ft) found in a few areas south of Jacksonville.
- Talbot surface, elevations of 7.6-14 m (25-45 ft) underlying most of mainside MCB Camp Lejeune.

3.5.2 Water Resources

Water resources are discussed in this EA due to the proximity of the proposed project areas to the New River, Northeast Creek, and Wallace Creek.

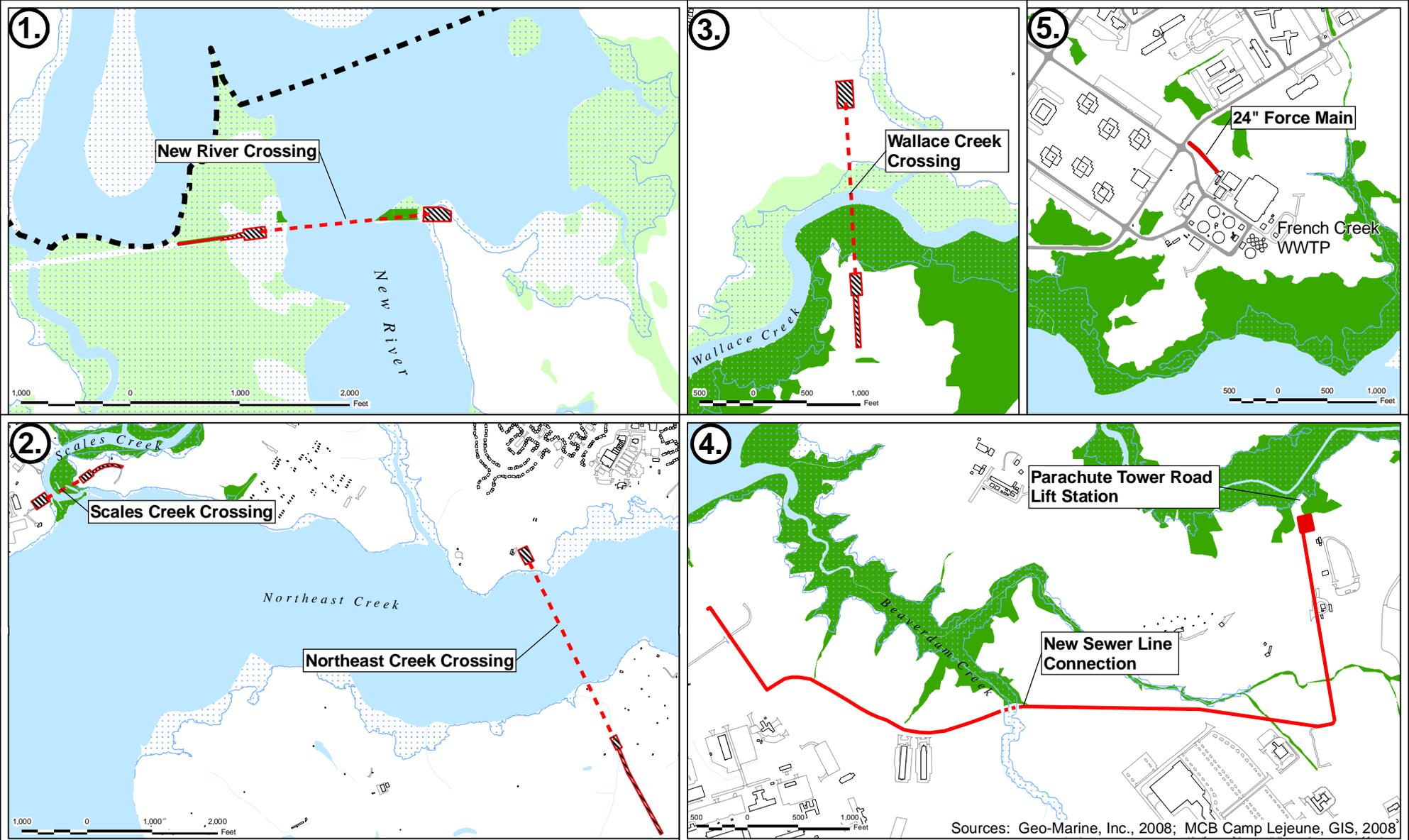
3.5.2.1 Surface Waters

The state of North Carolina has assigned water quality classifications for surface waters based on the existing and contemplated “best usage” for which the waters must be protected. Class SA waters receive the highest rating for tidal waters and are suitable for shell fishing and any of the uses specified for SB and SC classifications. The intermediate rating for tidal waters is Class SB, waters suitable for primary recreation and other uses as specified by the SC classification. Class SC waters are suitable for aquatic life propagation and survival, fishing, wildlife, and secondary recreation (15A NCAC 02B).

In addition to these principal water quality classifications, NCDENR has applied supplemental classifications to describe other attributes of the water bodies. The term “nutrient sensitive waters” identifies streams, creeks, and rivers that show decreased fish populations, decreased ambient dissolved oxygen, increased frequency of fish kills, and increased algae concentrations. “High quality waters” are waters rated as excellent based on biological or physical/chemical characteristics (15A NCAC 02B).

The North Carolina Marine Fisheries Commission has further designated certain estuarine areas as “nursery areas” to protect the habitat for juvenile populations of economically important commercial fish species. Nursery areas provide food, cover, suitable substrate, and appropriate salinity and temperature for young finfish and crustaceans over a major portion of their initial growing season (15A NCAC 3N). Primary nursery areas are located in the upper portions of creeks and bays. These areas are usually shallow with soft muddy bottoms and surrounded by marshes and wetlands. Low salinity and the abundance of food in these areas are ideal for young fish and shellfish (North Carolina Department of Marine Fisheries [NCDMF] 2006). “Special secondary nursery areas” are located adjacent to “secondary nursery areas” but closer to the open waters of our sounds and the oceans. For the majority of the year when juvenile species are abundant, these waters are closed to trawling. Figures 3-4a and 3-4b show surface waters in the vicinity of the project area. Surface water features near the proposed project areas are described as follows:

Surface Water, Wetlands, and Floodplains in Vicinity of Proposed Wastewater System Modifications



Proposed Wastewater System Improvements

— Sewer Line (Buried)

- - - Sewer Line (Horizontal Boring)

▨ Proposed Wastewater System Improvements (Staging Area)

Surface Water Area

100-Year Floodplain

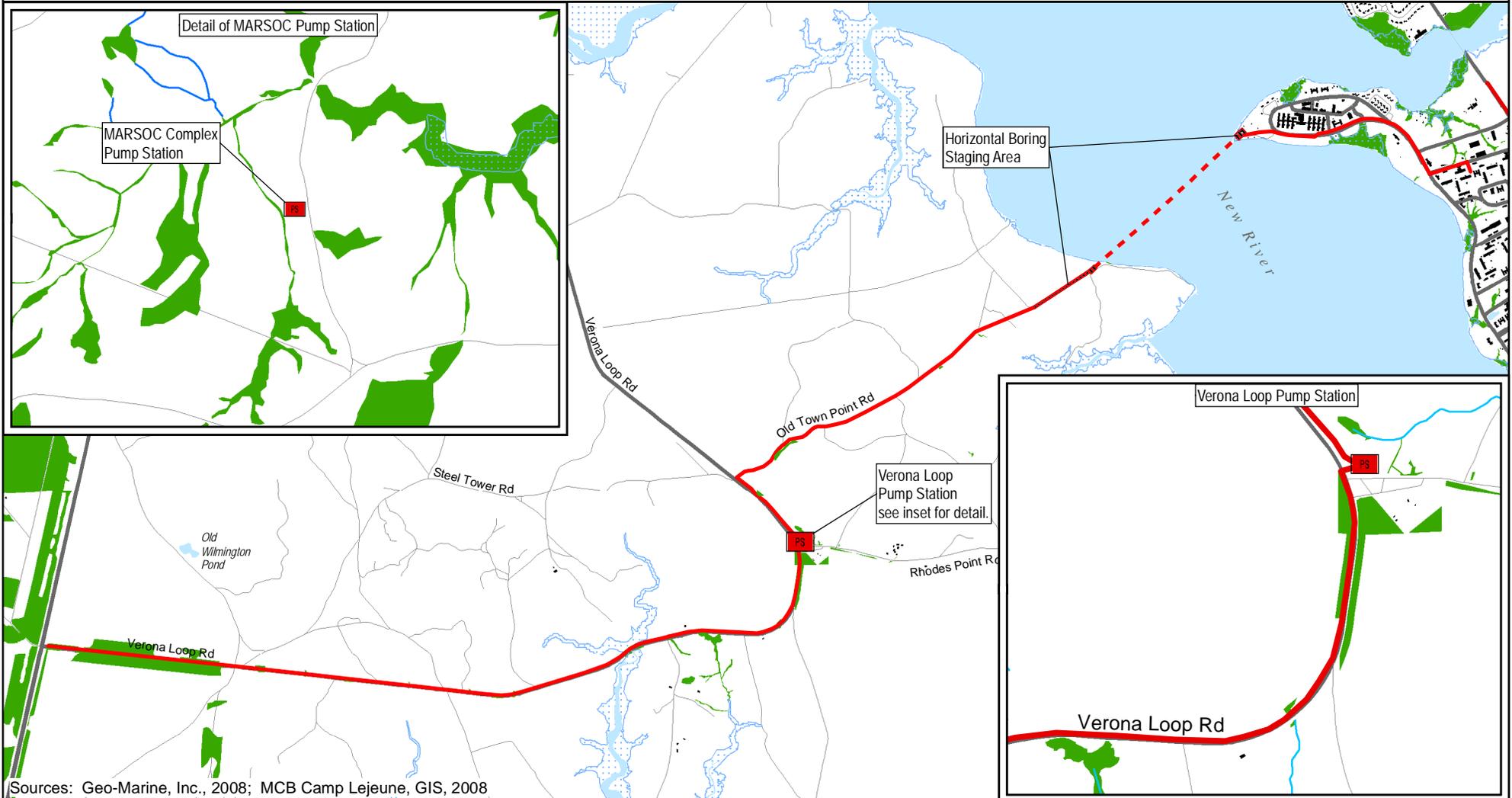
Jurisdictional Wetlands

Probable Wetland Areas

Figure 3-4a

Sources: Geo-Marine, Inc., 2008; MCB Camp Lejeune, GIS, 2008

Surface Water, Wetlands, and Floodplains in Vicinity of Proposed MARSOC Sewer Line and Pump Stations



Sources: Geo-Marine, Inc., 2008; MCB Camp Lejeune, GIS, 2008

- Future Pump Station
- Horizontal Boring Staging Area
- MARSOC Sewer Line (Buried)
- MARSOC Sewer Line (Horizontal Boring)
- Surface Water Area
- 100-Year Floodplain
- Jurisdictional Wetlands
- MARSOC Complex

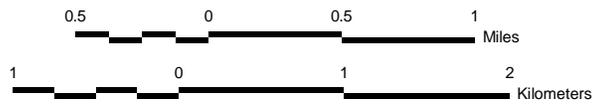


Figure 3-4b

- *New River*-All waters draining to the New River north of Grey Point are considered nutrient sensitive waters. The New River and most tributary streams of the New River south of the city of Jacksonville have the additional designation of high quality water (15A NCAC 3N.0002) and primary nursery areas (15A NCAC 3N.0002). The section of the New River nearest to the proposed project areas is considered a special secondary nursery area.
- *Scales Creek*-Scales Creek flows south into the New River at the mouth of Northeast Creek. Scales Creek is classified as SC waters and is suitable for any of the uses specified for SB and SC classifications. The creek has the additional designations of high quality water, and nutrient sensitive waters and it is a primary nursery area (NCDENR 2007a).
- *Northeast Creek*-Northeast Creek is classified as SC, tidal salt waters protected for secondary recreation such as fishing, boating and other activities involving minimal skin contact; aquatic life propagation and survival; and wildlife. This creek also has a classification of high quality water, and is considered a primary nursery area (NCDENR 2007a). An unnamed tributary of Northeast Creek is also located within the proposed project area.
- *Wallace Creek*-Wallace Creek is classified as nutrient sensitive waters, waters needing additional nutrient management due to their being subject to excessive growth of microscopic or macroscopic vegetation. Wallace Creek is classified as SB, surface waters that are used for primary recreation, including frequent or organized swimming and all SC uses (NCDENR 2007a). A portion of the creek located adjacent to Piney Green Road comprises the Wallace Creek Natural Area.
- *Beaverdam Creek*-Beaverdam Creek is classified as SB, surface waters that are used for primary recreation, including frequent or organized swimming and all SC uses. Beaverdam Creek is also classified as nutrient sensitive waters (NCDNER 2007a).
- *Unnamed Tributary*-An unnamed tributary is located within the siting area for the MARSOC complex in the vicinity of the proposed siting locations for the new pump station within the complex. This unnamed tributary is located south of Stone Creek and north of Everett Creek. It flows east into the New River and is not considered a primary nursery area (MCB Camp Lejeune 2007c).

3.5.2.2 Groundwater

All of Onslow County, including MCB Camp Lejeune, falls within the freshwater portion of the Castle Hayne aquifer. This aquifer is surficial or unconfined in that it overlies deeper aquifers confined by clay sediments. The Castle Hayne aquifer ranges in depth from 20 to 265 m (65 to 870 ft) with an average depth of 27 m (90 ft). The thickness of this aquifer ranges from 6 to 290 m (15 to 954 ft) with an average thickness of 53 m (175 ft). Composed of limestone, sandy limestone, and sand, it is the most productive aquifer in North Carolina with wells typically producing 0.8 to 1.9 kiloliters per minute (200-500 gallons per minute) (NCDENR 2007b).

3.5.3 Wetlands and Floodplains

Wetlands and floodplains are discussed in this EA because of the proximity of several wetland and floodplain areas to the proposed project areas.

3.5.3.1 Wetlands

Executive Order 11990, *Protection of Wetlands*, directs federal agencies to take action to minimize the destruction, loss, or degradation of wetlands on their property and mandates review of proposed actions on wetlands through procedures established by NEPA. It requires that federal agencies establish and implement procedures to minimize development in wetlands. In support of the Navy's goal of "no net loss of wetlands," all Navy/Marine Corps construction and operational actions must avoid adverse impacts to, or destruction of, wetlands. If this is impossible, then designs shall be made to minimize wetland degradation and shall include mitigation to replace impacted wetlands in another location.

A Wetlands Study was conducted to determine the wetland boundaries within the proposed project vicinity. The USACE, Wilmington District personnel field verified the delineated wetland boundaries for a portion of the project area on 31 January 2008. Results indicate there are approximately 1.9 ha (4.6 ac) of wetlands within the wetland field survey area. An additional 0.002 ha (0.004 ac) of wetlands are present within the vicinity of the proposed location for the new pump station that would be constructed within the MARSOC complex. Several wetland system types are located near the proposed project areas, including estuarine, palustrine, and riverine. Table 3-7 provides a brief overview of the wetlands in the vicinity of each proposed project area. Appendix A provides more detailed information for the wetland delineation.

3.5.3.2 Floodplains

Executive Order 11988, *Floodplain Management*, sets forth the responsibilities of federal agencies for reducing the risk of flood loss or damage to personal property, minimizing the impacts of flood loss, and restoring the natural and beneficial functions of floodplains. This order was issued in furtherance of the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. Floodplains and flood hazard zones are generally present throughout MCB Camp Lejeune near the New River and its creeks and estuaries. There are approximately 0.91 ha (2.25 ac) of floodplains in the vicinity of the proposed project areas.

Table 3-7 Summary of Wetlands Located in Vicinity of Proposed Project Areas

Project Location	Area Surveyed ha (ac)	Wetland Area ha (ac)	Wetland Types ¹	Jurisdiction ²
New River Crossing	1.9 (4.7)	0.59 (1.46)	Estuarine intertidal emergent/forested (E2EM/FO)	Abuts a TNW
Scales Creek Crossing	0.93 (2.3)	0.28 (0.68)	Estuarine intertidal emergent/scrub shrub (E2EM/SS)	Abuts a TNW
Northeast Creek Crossing	3.32 (8.2)	0.07 (0.18)	Estuarine intertidal emergent/palustrine forested (E2EM/PFO)	Abuts a TNW
Wallace Creek Crossing	1.0 (2.5)	0.18 (0.44)	Palustrine scrub shrub/palustrine forested (PSS/PFO)	Abuts a TNW
Parachute Tower Road Lift Station	0.16 (0.4)	0.06 (0.15)	Palustrine scrub shrub/palustrine forested (PSS/PFO)	Abuts a TNW
Sewer Line Connection from Parachute Tower Road Lift Station	0.8 (2.0)	0.00 (0.00)	Riverine upper perennial unconsolidated bottom (R3UB)	Tributary to Wallace Cr.
MARSOC Sewer Line and Verona Loop Road Pump Station	18.3 (45.3)	0.68 (1.69)	Palustrine forested/palustrine scrub shrub (PFO/PSS)	Adjacent and abutting an RPW.
WWTP Improvements	0.04 (0.1)	00.0 (0.00)	NA	NA
MARSOC Pump Station	759 (1,857)	0.002 (0.004)	NA	NA
TOTALS	785.5 (1900.2)	1.86 (4.60)		

¹ Refers to dominant, vegetated wetland types following the *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin et al. 1979). ² A Jurisdictional Determination has been issued by USACE and is included in Appendix A. Traditional Navigable Waterway = TNW and RPW = Relatively Permanent Water. Source: Geo-Marine, Inc. 2008.

3.5.4 Vegetation

Vegetation is discussed in this EA because the proposed action would impact forest and herbaceous areas. The predominant vegetation types that are located within the proposed project areas are mixed pine and hardwood species, as described in greater detail below. A brief discussion of wetland vegetation is also included due to the proximity of several wetland areas to the proposed project sites.

MCB Camp Lejeune encompasses approximately 38,445 ha (95,000 ac) of forest, 7,001 ha (17,300 ac) of non-forested land, 5,059 ha (12,500 ac) of impact areas, and 10,522 ha (26,000 ac) of the New River. All forested land is managed by the Base's Forest Management Program. The Forest Management Program staff is responsible for all timber harvests associated with timber management and construction projects involving the removal of merchantable timber. The Base utilizes the proceeds from the sale of timber products to fund the forest

management program. Fire also plays a deciding role in the communities of MCB Camp Lejeune, affecting canopy and understory density and species composition.

On the sections of the Base where the proposed project areas are located, the landscape is characterized by mixed pine-hardwood forest. The most common tree species in this area is the loblolly pine (*Pinus taeda*) with several species of hardwoods including the black gum (*Nyssa sylvatica*), sweet gum (*Liquidambar styraciflua*), southern red oak (*Quercus falcata*), white oak (*Quercus alba*), and red maple (*Acer rubrum*). The shrub layer varies with wetness, but generally consists of wax myrtle (*Myrica cerifera*), blue huckleberry (*Gaylussacia frondosa*), and sparkleberry (*Vaccinium arboreum*). Groundcover species vary with the degree of land disturbance and fire regimes but can include wiregrass (*Aristida stricta*), bracken fern (*Pteridium aquinimum*), and bluestems (*Schizachyrium spp.*), along with more disturbance tolerant species like green briar (*Smilax spp.*) and broomsedge (*Andropogon virginicus*). The proposed project areas include a mixture of arboreal and herbaceous vegetation. Table 3-8 provides a brief summary of the general type of forest and production value of the forested areas located within the proposed project areas.

As described in Section 3.5.3, estuarine, palustrine, and riverine wetlands are found in the vicinity of the proposed project areas. Forested palustrine wetlands are dominated by trees and are sometimes called wooded swamps. Red maple (*Acer rubrum*), and white cedar (*Chamaecyparis thyoides*) are often found in palustrine forested wetlands. Typical shrubs include highbush blueberry (*Vaccinium corymbosum*), and silky dogwood (*Cornus amomum*). Cinnamon fern (*Osmunda cinnamomea*), as well as touch-me-not jewelweed (*Impatiens capensis*), arrow arum (*Peltandra virginica*) and royal fern (*Osmunda regalis*) inhabit forested palustrine wetlands. The palustrine emergent category includes all freshwater (containing less than 0.5 parts per thousand ocean-derived salts) wetlands dominated by rooted erect soft-stemmed plants. Most habitats in this category are freshwater marshes vegetated by plants such as cattail (*Typha spp.*), arrowhead (*Sagittaria spp.*) and pickerelweed (*Pontederia cordata*). Also included are wet prairies, wet meadows and pitcher plant (*Sarracenia spp.*) bogs, each of which may be vegetated by a diverse assemblage of non-woody plant species.

Forested estuarine wetlands are dominated by trees and are known as estuarine fringe forests. Red maple (*Acer rubrum*), sweetgum (*Liquidambar styraciflua*), loblolly pine (*Pinus taeda*), and swamp black gum (*Nyssa biflora*) are often found in estuarine forested wetlands. Typical shrubs include wax myrtle (*Myrica cerifera*) and gallberry (*Ilex glabra*). Laurel-leaved greenbrier (*Smilax laurifolia*), netted chainfern (*Woodwardia areolata*), cinnamon fern (*Osmunda cinnamomea*), and black needlerush (*Juncus roemerianus*) are additional vegetation which inhabit forested estuarine wetlands. The estuarine emergent wetland category includes what are commonly called salt marshes and brackish marshes. Grasses dominant these wetlands and include smooth cordgrass (*Spartina alterniflora*), glasswort (*Salicornia virginica*), salt meadow cordgrass (*Spartina virginica*), saltgrass (*Distichlis spicata*), giant cordgrass (*Spartina cynosuroides*), and sawgrass (*Cladium mariscus jamaicense*). Typical shrubs within estuarine emergent wetlands include marsh elder (*Iva frutescens*), silverling (*Baccharis halimifolia*), wax myrtle (*Myrica cerifera*), and sea ox-eye (*Borrchia frutescens*) (NCDENR 2008b).

Table 3-8 Forest Types and Production Values for Project Areas

Project Area	Forest Impacted in Project Area	Percent of Similar Forest Impacted due to Proposed Action	Type of Forest (Ecologic Classification)	Age of Forest	Production Value (in board feet [bf])
New River Crossing	0.5 ha (1.3 ac)	0.004% (30,393 total acres on Base)	Poorly drained, mucky, small stream swamp-mostly hardwood with some pine and Well-drained to Moderately well-drained, sandy, pine savanna	72-47 yrs old	250 bf
Scales Creek Crossing	0.45 ha (1.1 ac)	0.04% (3029 total acres on Base)	Poorly drained, mucky, small stream swamp-mostly hardwood with some pine and Well-drained to Moderately well-drained, sandy, pine savanna	60 yrs old	0 bf (40%), 250 bf (4%), 300 bf (48%), 500 bf (8%)
Northeast Creek Crossing	0.16 ha (0.4 ac)	0.01% (3759 total acres on Base)	Well-drained, sandy, pine-hardwood slope-mostly hardwood	75 yrs old	275 bf
Wallace Creek Crossing	0	0%	Site follows cleared utility corridor.	N/A	0 bf
Parachute Tower Road Lift Station and New Sewer Line Connection	0.04 ha (0.1 ac)	0.01% (3759 total acres on base)	Well-drained, sandy, mixed hardwood slope.	88 yrs old	150 bf
French Creek Wastewater Treatment Plant 24" Force Main	0	0%	Site occurs in a cleared area.	N/A	0 bf
MARSOC Crossing	0.22 ha (0.55 ac)	0.001% (30,211 total acres on Base)	Well-drained, sandy, pine-hardwood slope-mostly hardwood	63 yrs old	0 bf (30%), 250 bf (14%), 800 bf (56%)
MARSOC Utility Line	1.1 ha (2.65 ac)	0.04% (28,943 total acres on Base)	Well-drained to Moderately well-drained, sandy, pine savanna and	45 to 11 yrs old	100 bf (25%), 300 bf (35%), 800 bf (40%)
Verona Loop Pump Station	0.28 ha (0.70 ac)	0.002% (27,804 total acres on Base)	Well-drained to Moderately well-drained, sandy, pine savanna	52 yrs old	100 bf
MARSOC Pump Station	0.008 ha (0.02 ac)	0.0% (27,804 total acres on Base)	Well-drained, sandy, pine-hardwood slope-mostly pine	63 yrs old	250 bf

Source: MCB Camp Lejeune GIS 2008.

Riverine wetlands are directly flooded by river and stream flow. These wetlands are inhabited with predominantly hardwood tree species such as sweet gum (*Liquidambar styraciflua*), green ash (*Fraxinus pennsylvanica*), river birch (*Betula nigra*), bald cypress (*Taxodium distichum*), swamp black gum (*Nyssa aquatic*), red maple (*Acer rubrum*), swamp chesnut oak (*Quercus michauxii*), water oak (*Quercus nigra*), willow oak (*Quercus phellos*), and Virginia willow (*Itea virginica*). Other vegetation include ti-ti (*Cyrilla racemiflora*), Virginia chainfern (*Woodwardia virginica*), and sweet pepperbrush (*Clethra alnifolia*) (NCDENR 2008b). Submerged aquatic vegetation are typically not present at any of the proposed parallel force main river/creek crossings; however submerged aquatic vegetation has been found in Wilson Bay, which is located to the north of the New River crossing (Carpenter 2007).

3.5.5 Wildlife

A discussion of wildlife is included in this EA because various wildlife species would be expected to occur within the proposed project areas for the temporary facilities and could therefore be displaced by the proposed action.

Wildlife at MCB Camp Lejeune is typical of that found in the southeastern Coastal Plain of North Carolina. Mammals commonly found include white-tailed deer (*Odocoileus virginianus*), eastern gray squirrel (*Sciurus carolinensis*), eastern cottontail (*Sylvilagus floridanus*), opossum (*Didelphis virginiana*), southern flying squirrel (*Glaucomys volans*), and raccoon (*Procyon lotor*). Many reptiles and amphibians, from the diminutive pine wood snake (*Rhadinaea flavilata*) to the oak toad (*Bufo quercicus*), are abundant throughout the Base.

Birds common to the area include mourning dove (*Zenaida macroura*), northern bobwhite quail (*Colinus virginianus*), mockingbird (*Mimus polyglottos*), American robin (*Turdus migratorius*), catbird (*Dumetella carolinensis*), and various sparrows (*Fringillidae*) and warblers (*Parulidae*). Pairs of osprey (*Pandion haliaetus*) occupy nests scattered along the shores of the New River and its larger tributaries. Virtually all birds that occupy MCB Camp Lejeune throughout the year are protected under the Migratory Bird Treaty Act (MBTA). The MBTA of 1918 is the primary legislation in the United States established to conserve migratory birds. The MBTA prohibits the taking, killing or possessing of migratory birds unless permitted by regulation. Migratory birds are viewed as a shared resource, and collaboration with other nations (Canada, Mexico, Russia, and Japan) is aimed at cooperatively protecting this resource. Eastern North Carolina sees a wide array of migratory birds because it is part of the Atlantic Flyway. Additionally, within the area of eastern North Carolina, there are 10 National Wildlife Refuges aimed to preserve the natural environment and protect areas from impacting human behavior.

The Department of Defense operates under a Memorandum of Understanding with the USFWS for MBTA coordination on activities, such as the proposed action, that are not specifically related to military readiness. The Memorandum of Understanding states that the Department of Defense shall accomplish the following prior to starting any activity that is likely to affect populations of migratory birds:

- 1) Identify the migratory bird species likely to occur in the area of the proposed action and determine if any species of concern could be affected by the activity;

- 2) Assess and document, through the project planning process, using NEPA when applicable, the effect of the proposed action on species of concern; and
- 3) Engage in early planning and scoping with the USFWS relative to potential impacts of a proposed action, to proactively address migratory bird conservation, and to initiate appropriate actions to avoid or minimize the taking of migratory birds.

The Memorandum of Understanding points to several regional reports and plans to identify species of concern. MCB Camp Lejeune biologists compiled these reports and used them to prepare a list of the species of concern that could potentially occupy the habitat provided in the area of the proposed action. This list is provided in Appendix B of this EA. Chapter 4 of this EA provides assessment of the likelihood of population level effects on these species.

A multi-species scientific management strategy is used to maintain habitat requirements for several game and non-game species within MCB Camp Lejeune. Game species include eastern wild turkey (*Meleagris gallopavo*), white-tailed deer (*Odocoileus virginianus*), black bear (*Ursus americanus*), squirrel [such as eastern gray squirrel (*Sciurus carolinensis*)], northern bobwhite quail (*Colinus virginianus*), eastern cottontail (*Sylvilagus floridanus*), raccoon (*Procyon lotor*), wood duck (*Aix sponsa*), largemouth bass (*Micropterus salmoides*), bluegill (*Lepomis macrochirus*), red-ear sunfish (*Lepomis miniatus*), and channel catfish (*Ictalurus punctatus*). Non-game species under management plans include the eastern bluebird (*Sialia sialis*), purple martin (*Progne subis*), least tern (*Sterna antillarum*), various neo-tropical migrant birds, and a variety of reptiles and amphibians (MCB Camp Lejeune 2007a).

Wildlife present in the vicinity of the terrestrial portion of the proposed project area would be expected to be similar to the typical wildlife species found throughout other similar forested habitat at MCB Camp Lejeune. Given that the terrestrial portion of the proposed action locations would occur primarily within existing sewer line rights-of-way, it is likely that species favoring forested edge habitat would be more likely to be present rather than those species favoring more interior forested habitat.

Species in Estuarine Habitats

Tidal

In general, species common to the New River are also typical of Scales Creek and Northeast Creek, as these waters are tributaries of the New River. The New River Estuary and its tributary streams and tidal flats are highly productive areas in terms of species abundance and diversity. Common species found in the river include flounder (*Pleuronectiformes*), croaker (*Sciaenidae*), weakfish (*Cynoscion regalis*), bluefish (*Pomatomus saltatrix*), and black bass (*Micropterus*). Common species of shellfish found in the New River include blue crab, shrimp, hard clams, and American oyster (*Crassostrea virginica*). Oyster and clam fisheries in the New River are restricted to areas down river of Grey Point in Class SA water, and therefore are not typically found in the proposed project area. The soft substrate of the New River estuary provides habitat for a wide variety of benthic invertebrates that provide a food source for many fishes in the river. Some flats are intermittently exposed during periods of low tide, and these areas, along with tidal marshes provide foraging habitat for a variety of terrestrial vertebrates. There are a wide variety

of vertebrates typically associated with the estuarine environment. Birds that are common in this area include waterfowl such as Canada goose (*Branta Canadensis*), mallard (*Anas platyrhynchos*) gadwall (*Anas strepera*), green-winged teal (*Anas crecca*), and American widgeon (*Anas Americana*) (DoN 1996).

Non-Tidal

Wallace Creek and Beaverdam Creek are considered non-tidal waters and contain freshwater habitats. Species typical of non-tidal waters include, but are not limited to, wood duck (*Aix sponsa*), common moorhen (*Gallinula chloropus*), American coot (*Fulica americana*), American woodcock (*Scolopax minor*), and American bittern (*Botaurus lentiginosus*). Common invertebrates include caddisflies (*Trichoptera*), beetles (*Coleoptera*), worms (*Oligochaeta*), snails (*Gastropoda*) and crayfish (*Decapoda*). Common freshwater fish associated with the creeks include sunfish (*Lepomis spp.*), catfish (*Ictalurus spp.*), shiners (*Notropis spp.*), darters (*Etheostoma spp.*), and suckers (*Moxostoma spp.*) (DoN 1996).

3.5.6 Threatened and Endangered Species

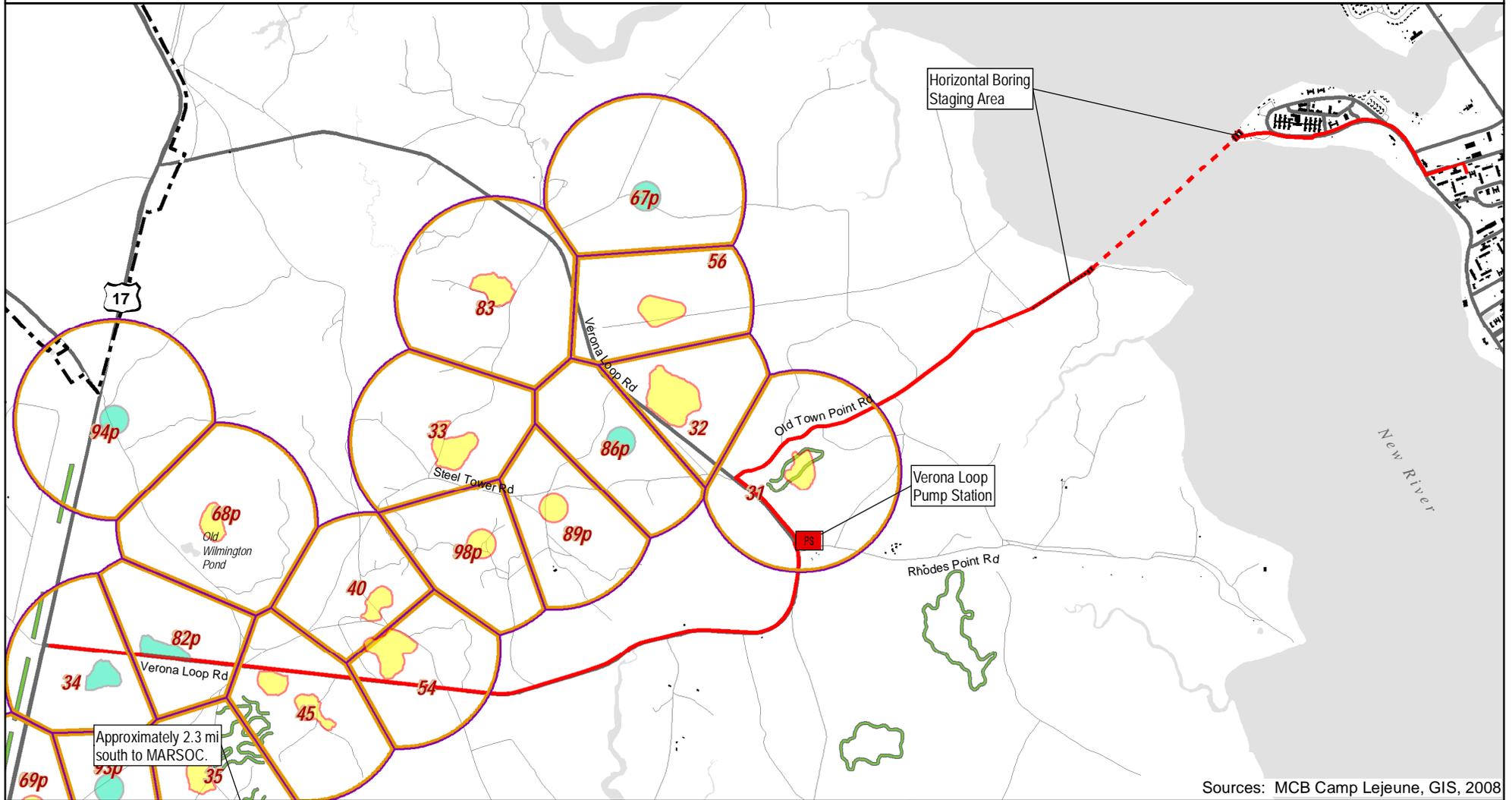
Threatened and endangered species are discussed in this EA because several are known to occur or potentially occur at MCB Camp Lejeune. Additionally, the route of the proposed MARSOC sewer line crosses five partitions that have been designated as RCW foraging areas (site #34, #82, #45, #54, and #31). There are four RCW nesting areas adjacent to the proposed project area along Verona Loop Road (site #34, #82, #45, and #54).

The Endangered Species Act of 1973 and subsequent amendments provide for the conservation of threatened and endangered species of animals and plants, and the habitats in which they are found. The Endangered Species Act prohibits jeopardizing endangered and threatened species or adversely modifying critical habitats essential to their survival. Section 7 of the act requires consultation with the National Marine Fisheries Service (NMFS) and USFWS to determine whether any endangered or threatened species under their jurisdiction may be affected by the proposed action. The USMC ensures that consultations are conducted as required with USFWS and NMFS under Section 7 for any action which “may affect” a threatened or endangered species according to guidance provided in the Environmental Compliance and Protection Manual, Marine Corps Order P5090.2A.

MCB Camp Lejeune is home to several federally listed threatened and endangered species. MCB Camp Lejeune’s threatened and endangered species program focuses on protection, management, and monitoring of the federally listed species found at the Base and listed in Table 3-9 (MCB Camp Lejeune 2007a). There is no designated critical habitat on MCB Camp Lejeune. Of the listed species, the RCW and rough-leaved loosestrife are known to occur in the vicinity of the proposed project area. Figure 3-5 shows threatened and endangered species occurring in the vicinity of the proposed project area.

There are currently 84 active RCW clusters at MCB Camp Lejeune. The 2006 RCW Camp Lejeune Recovery Plan was developed to manage and direct continuing RCW growth on the Base. MCB Camp Lejeune will maintain an established recovery goal of 173 RCW clusters (MCB Camp Lejeune 2007a). The route of the proposed MARSOC sewer line crosses five

Threatened and Endangered Species Occurring in Vicinity of Project Area



Sources: MCB Camp Lejeune, GIS, 2008

- PS Future Pump Station
- Active Nesting Area
- Inactive Nesting Area
- RCW Forage Areas
- Probable Loosestrife Area
- MARSOC Sewer Line (Buried)
- MARSOC Sewer Line (Horizontal Boring)
- MARSOC Complex
- MCB Camp Lejeune

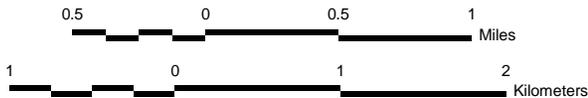


Figure 3-5

partitions that have been designated as RCW foraging areas (site #34, #82, #45, #54, and #31). There are four RCW nesting areas adjacent to the proposed project area along Verona Loop Road (site #34, #82, #45, and #54); three are active and one is inactive.

Rough-leaved loosestrife is present in specific habitat types on approximately 9 ha (22 ac) at MCB Camp Lejeune. This plant is managed through the application of prescribed fire and is protected with designated buffer zones. A plant survey was previously conducted in high-probability habitat along the original proposed MARSOC sewer line route (see Sections 1.3 and 2.2), including a 25 m (82 ft) buffer on either side of the proposed route. No rough-leaved loosestrife was found along the proposed corridor. The proposed MARSOC sewer line analyzed in this EA would be installed along a route that is located approximately 88 m (82 ft) from an area of high probability habitat for rough-leaved loosestrife.

The proposed project areas likely do not support habitat for the remaining federally listed species in Table 3-9. There are no natural heritage areas within the proposed project areas.

Table 3-9 Federal Threatened and Endangered Species – MCB Camp Lejeune

Common Name	Scientific Name	Status
Leatherback sea turtle	<i>Dermochelys coriacea</i>	Endangered
Loggerhead sea turtle	<i>Caretta caretta</i>	Threatened
Green sea turtle	<i>Chelonia mydas</i>	Threatened
Piping plover	<i>Charadrius meladus</i>	Threatened
American alligator ¹	<i>Alligator mississippiensis</i>	Threatened
Red-cockaded woodpecker	<i>Picoides borealis</i>	Endangered
Seabeach amaranth	<i>Amaranthus pumila</i>	Threatened
Rough-leaved loosestrife	<i>Lysimachia asperulaefolia</i>	Endangered
Coastal goldenrod	<i>Solidago villosicarpa</i>	Species of Concern
Hirst's panic grass	<i>Dichantheium hirstii</i>	Candidate for listing

Note:

¹ Although still listed as federally threatened, the American alligator is considered recovered.

Source: MCB Camp Lejeune 2007a.

3.5.7 Other Species at Risk

In addition to the federally listed threatened and endangered species described above, several additional species at risk may occur at MCB Camp Lejeune. According to MCB Camp Lejeune's Integrated Natural Resources Management Plan, the Base defines species at risk as those species that are not federally listed, but are a conservation concern because of several factors including the species' rarity, proportion of the species population occurring on-base, and the potential of the species to impact training missions if it were to become listed (MCB Camp Lejeune 2007a). MCB Camp Lejeune protects populations of species at risk by designating conservation areas as defined in the Protected Species Base Order (BO 5090.11) where such restrictions do not negatively impact training. MCB Camp Lejeune works with the North Carolina Natural Heritage Program on pilot programs designed to proactively manage coastal goldenrod (*Solidago villosicarpa*), a federal species of concern. There are no coastal goldenrod (*Solidago villosicarpa*) populations within any of the proposed project areas.

In addition to the species at risk previously mentioned, there are several state protected species that may occur or have been recorded in Onslow County. Based on the predominant habitat types found throughout MCB Camp Lejeune, Table 3-10 shows a list of state protected species that could occur at the Base. MCB Camp Lejeune has not conducted site-specific surveys to determine the presence or absence of these species within the proposed project areas.

Table 3-10 State-Listed Species Potentially Occurring in Onslow County and MCB Camp Lejeune

Type	Latin Name	Common Name	State/(Federal) Listing
Plants	<i>Asplenium heteroresiliens</i>	Carolina Spleenwort	E (FSC)
	<i>Carex lutea</i>	Golden Sedge	E (E)
	<i>Calopogon multiflorus</i>	Many-flower Grass Pink	E (FSC)
	<i>Cystopteris tennesseensis</i>	Tennessee Bladder-fern	E
	<i>Dichanthelium hirstii</i>	Hirsts' Panic Grass	E (C)
	<i>Lophiola aurea</i>	Golden Crest	E
	<i>Lysmachia asperulifolia</i>	Rough-leaved Loosestrife	E (E)
	<i>Muhlenbergia torreyana</i>	Pinebarren Smokegrass	E
	<i>Myriophyllum laxum</i>	Loose Watermilfoil	T (FSC)
	<i>Parnassia caroliniana</i>	Carolina Grass-of-Parnassus	E
	<i>Plantago sparsiflora</i>	Pineland Plantain	E (FSC)
	<i>Platanthera integra</i>	Yellow Fringeless Orchid	T
	<i>Rhexia aristosa</i>	Awed Meadow-beauty	T (FSC)
	<i>Solidago pulchra</i>	Carolina Goldenrod	E
	<i>Solidago verna</i>	Spring-flowering Goldenrod	SR (FSC)
	<i>Thalictrum cooleyi</i>	Cooley's meadowrue	E (E)
	<i>Utricularia olivacea</i>	Dwarf Bladderwort	T
Birds	<i>Aimophila aestivalis</i>	Bachman's Sparrow	SC (FSC)
	<i>Haliaeetus leucocephalus</i>	Bald Eagle ¹	T
	<i>Mycteria americana</i>	Wood Stork	E (E)
	<i>Passerine ciris</i>	Painted Bunting	(FSC)
	<i>Picoides borealis</i>	Red-cockaded Woodpecker	E (E)
Mammals	<i>Corynorhinus rafinesquii</i>	Rafinesque's Big-eared Bat	SC
	<i>Neotoma floridana floridana</i>	Eastern Woodrat	T
	<i>Puma concolor cougar</i>	Eastern Cougar	E (E)
Amphibians	<i>Rana capito capito</i>	Carolina Gopher Frog	T (FSC)
Reptiles	<i>Crotalus adamanteus</i>	Eastern Diamondback Rattlesnake	E
	<i>Crotalus horridus</i>	Timber Rattlesnake	SC
	<i>Heterodon simus</i>	Southern Hognose Snake	SC (FSC)
	<i>Malaclemys terrapin centrata</i>	Carolina Diamondback Terrapin	SC
	<i>Micrurus fulvius</i>	Eastern Coral Snake	E
	<i>Ophisaurus mimicus</i>	Mimic Glass Lizard	SC (FSC)
	<i>Sistrurus miliarius</i>	Pigmy Rattlesnake	SC

E = Endangered, T = Threatened, SC = Special Concern, SR = State Rare.

Source: MCB Camp Lejeune 2007a.

Notes: ¹Bald eagles would only likely occur as a transient species, if present within the proposed project areas. A bald eagle nest was first documented on Base in 2000 along the New River where it meets Sneads Creek. Protective buffers have been established around the nest site with restrictions on both ground and air-use activities (MCB Camp Lejeune 2007a). Bald eagles are no longer federally listed.

Although three species, coastal goldenrod (*Solidago villosicarpa*), Hirst's panic grass (*Dichanthellium hirstii*), and rough-leaved loosestrife are included in Table 3-10, they likely do not occur within any of the proposed project areas. MCB Camp Lejeune has conducted surveys to determine high probability areas for rough-leaved loosestrife (*Lysmachia asperulifolia*) and Hirst's panic grass (*Dichanthellium hirstii*) and there are no high probability areas for these species located within any of the proposed project areas. Additionally, as previously mentioned, MCB Camp Lejeune has not identified any populations of coastal goldenrod (*Solidago villosicarpa*), within any of the proposed project areas.

3.5.8 Natural Heritage Areas

In 1985, MCB Camp Lejeune entered into a memorandum of understanding with the North Carolina Natural Heritage Program to designate and manage two highly significant natural areas occurring on Base. These natural areas are registered as part of the list of natural heritage areas for which voluntary agreement has been made between the owner of the area and the North Carolina Natural Heritage Program for the purposes of protecting and managing the natural area for its specified natural values (MCB Camp Lejeune 2007a).

One of the natural heritage areas at MCB Camp Lejeune is the C.F Russell Longleaf Pine Natural Area, which represents one of the few old-growth, natural regenerating longleaf pine forests remaining on the Coastal Plain region. The second natural heritage area, the Wallace Creek Natural Area, is comprised of an old-growth bald cypress stand and survives as a remnant of the historic millpond that was impounded on Wallace Creek by the Montford Dam, which was destroyed by Hurricane Hazel in 1954 (MCB Camp Lejeune 2007a). One of the proposed parallel force main crossings is located at Wallace Creek; however the crossing is located downstream of the Wallace Creek Natural Area. Therefore, there are no natural heritage sites in the vicinity of the proposed project area.

3.6 HAZARDOUS MATERIALS AND WASTE

Hazardous materials and waste including Installation Restoration sites are discussed in this EA because several of the proposed project areas border historic ranges.

3.6.1 Installation Restoration Program Sites

The mission of the Installation Restoration Section is to assess and remediate contaminated sites aboard MCB Camp Lejeune that resulted from past disposal practices, and spills and leaks of hazardous materials and waste. Over the years, the contaminants have spread in the soils and groundwater beneath the Base and if left in place can provide a risk to human health and the environment. There are three remedial action programs currently active. They include the Installation Restoration Program for the cleanup of sites identified prior to 1986; the Solid Waste Management Unit Program which deals with sites identified after 1986 or where a continued operation has released contamination into the environment, and the Underground Storage Tank Program that deals with the identification and removal of petroleum contamination resulting from the operation of underground tanks (MCB Camp Lejeune, EMD 2007).

There are no Installation Restoration sites located in the vicinity of the proposed project area.

3.6.2 Historic Range Areas

Along the entire length of the proposed route for the MARSOC sewer line from US 17 to the New River, there are several historic ranges including one unknown range, all of which may contain unexploded ordnance (Lowder 2007). A section of the proposed new force main from McHugh Boulevard to the Base Skeet Range transects a closed range area (ASR #2.78) (Lowder 2007). In addition, the section of the proposed sewer line route that extends from Parachute Tower Road to the proposed new lift station (including the lift station) transects the D-9 Skeet Range that is currently pending closure (Lowder 2007). Figure 3-6 shows the location of these ranges. The following is a brief description of the historic ranges.

Artillery Training Area-This range appears on an August 1941 map which shows proposed ranges on MCB, New River (Camp Lejeune). The range contains artillery firing points and an impact area used between 1941 and 1943. Multiple ranges share the impact area. The training area was most likely used for firing 75 millimeter (mm) (2.95 inch), 105 mm (4.13 inch), and 155 mm (6.1 inch) Howitzers, however other weapons may have been used.

M-5 Artillery Range and M-5A Range-These ranges appear on range maps from 1953. This range was most likely used for firing 75 mm (2.95 inch), 105 mm (4.13 inch), and 155 mm (6.1 inch) howitzers.

Artillery Demonstration Firing Point-No available information is known regarding this firing point, however the firing range within the proposed project area is completely overlapped by Range M-1, a historic hand grenade range.

Impact Area L-2-This range appears on an August 1951 map and is defined in Base Order 11102.1B, dated 5 May 1960. This range was used from 1951 to approximately 1962 and was most likely an Artillery Impact Area.

Impact Area M-This range appears on a map dated 20 August 1941. The range was used from 1941 to approximately 1945 predominately as an artillery range. Documents have been uncovered that indicate that Live Fire and Maneuver Exercises were conducted in this area and the use of mortars, recoilless rifles, 60 mm (2.36 inch) rockets, and hand and rifle grenades in this area was possible.

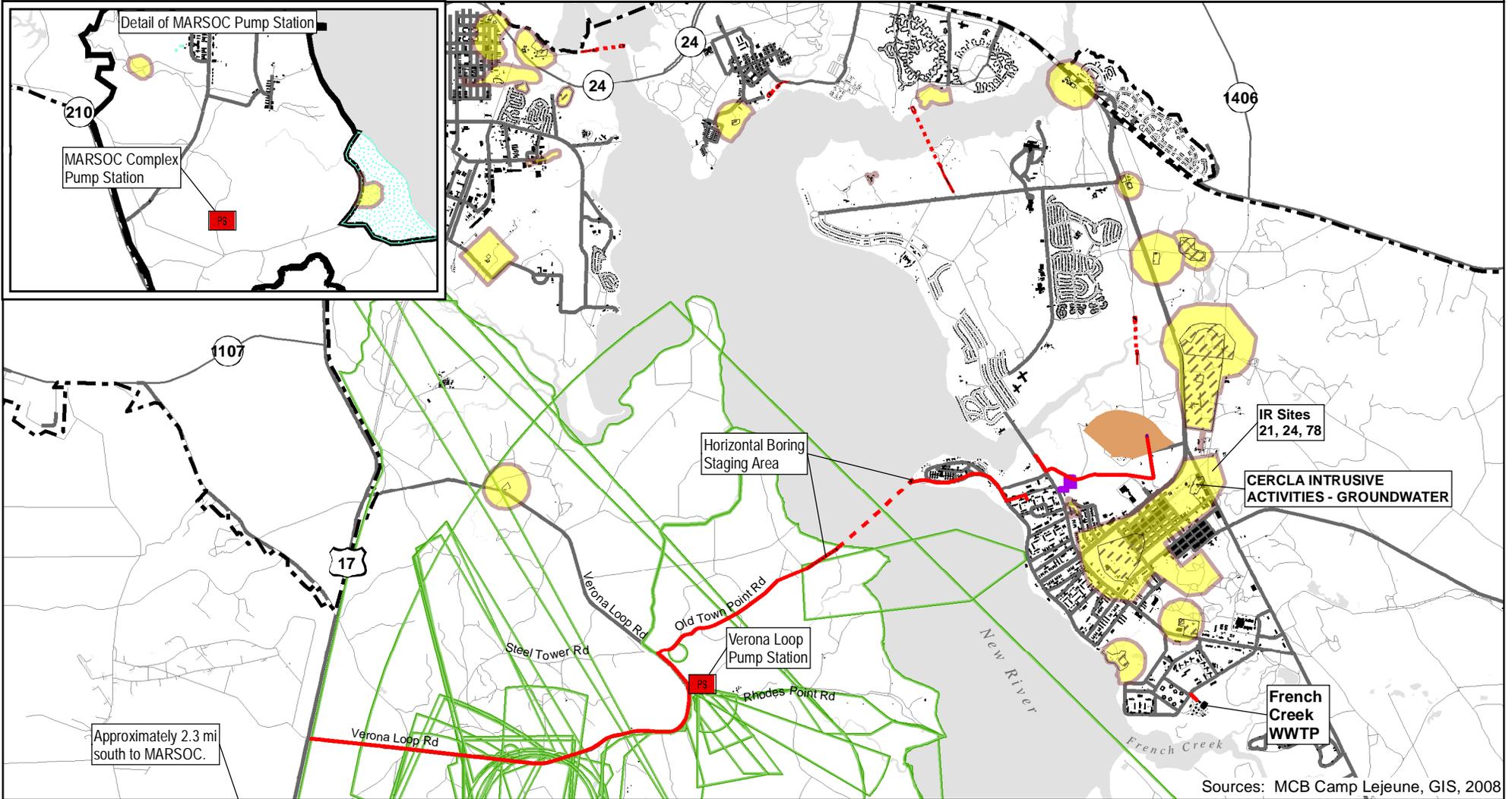
Gun Position 52-No available information is known regarding this gun position, however the firing range is completely overlapped by the M-5 Artillery Range.

Gun Position 54-No available information is known regarding this gun position, however, the firing range is completely overlapped by the L-5 Multi-purpose Machine Gun Range as well as several other ranges.

M-4 Field Firing Range-This range appears on 1953 and 1954 range maps. This range was used from 1953 to approximately 1955 most likely for small arms training.

L-5 Multi-Purpose Machine Gun Range-This range appears in Base Order 11102.1B, dated 5 May 1960. The range has been used from 1957 to present. Previous Base Orders have authorized the use of 0.30 caliber, 0.38 caliber, 0.45 caliber, 0.50 caliber, 5.56 mm (0.22 inch),

IR Sites, Closed Ranges, Ranges Pending Closure, and Historic Ranges in Vicinity of Project Area



Sources: MCB Camp Lejeune, GIS, 2008

- Future Pump Station
- Horizontal Boring Staging Area
- Environmental Restoration Area
- Sewer Line (Buried)
- Sewer Line (Horizontal Boring)
- IR Sites
- D-9 Skeet Range ASR # 2.82
- Closed Range Area ASR # 2.78
- Proposed Range Closure Area for ASR Site 2.201
- Historic Ranges
- MCB Camp Lejeune

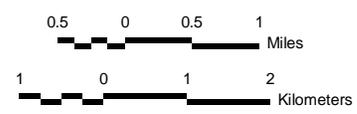


Figure 3-6

7.62 mm (0.3 inch), 9 mm (0.35 inch), hand and rifle grenades, small arms, pistols, rifles, shotguns, and M-60 machine guns at the range.

K-405, Combat Pistol Marksmanship Range-This range appears in Base Order P11102.1G, dated 6 February 1970. This range was used from 1970 to approximately 1974 for small arms training.

D-29 50 Foot Small Bore Range-This range appears in Base Order 11102.1B, dated 5 May 1960. The range was in use from 1958 to present and has been predominately used for small arms training.

Mortar Range M-1-This range was identified in Camp Training Order Number 5-1946 in 1946. The range was most likely used for firing 60 mm (2.36 inch) and 81 mm (3.19 inch) mortars (high explosive, white phosphorous, illumination).

D-3 Practice Hand Grenade Course- This range appears on range maps from the 1950s. This range was used from 1953 to approximately 1959 and was most likely used to practice hand grenades.

3.7 HUMAN HEALTH AND SAFETY

Human health and safety issues associated with a wastewater system are generally associated with the potential for environmental impacts resulting from spills and releases from overflows, leaks, and collection system breaks. The existing wastewater collection and treatment system has experienced several overflows and near spill-over events at three wet wells and currently does not have a backup system in the event of breakage or damage to the existing force mains. Without the wastewater system modifications, sanitary sewer overflows would continue to be a serious concern for MCB Camp Lejeune. Currently, there are no alternative routes to transfer sewage to the WWTP at French Creek should any of the existing underwater force mains crossing the New River, Scales Creek, Wallace Creek, or Northeast Creek break. Not having a backup system in place should a breakage occur could have major environmental impacts to the Base and surrounding Onslow County communities. Additionally, having a wastewater collection and treatment system that is not operating at maximum efficiency would reduce the ability of the Base to meet its current and future wastewater needs, thereby creating a potential environmental hazard for all tenant commands, Base operations, and residents.

Section 3.6 of this EA documents the handling of hazardous materials and wastes and discusses formerly contaminated sites in proximity of the proposed wastewater system modifications project areas and the proposed MARSOC sewer line and pump stations at MCB Camp Lejeune.

3.8 AESTHETICS

The aesthetic environment at MCB Camp Lejeune is typical of a military installation. Most of the Base is devoted to land and water training ranges, impact areas, and maneuver and training areas. The aesthetic environment in and around the river/creek areas can be described as scenic wetlands.

4.0 ENVIRONMENTAL CONSEQUENCES

This chapter presents an analysis of the potential impacts upon various components of the environment that could result from the proposed action. The proposed action includes: installing parallel force mains by boring under the New River, Scales Creek, Northeast Creek, and Wallace Creek; constructing a new lift station near Parachute Tower Road with a connection to the existing wastewater line; and replacing approximately 122 m (400 LF) of 46 cm (18 inch) diameter force main with 61 cm (24 inch) diameter force main near the WWTP at French Creek. The proposed action also includes construction of a new force main from US 17 along Verona Loop Road through the K Range area, under the New River and connecting to an existing force main that ultimately discharges to the WWTP at French Creek. Two new pump stations would also be constructed; one within the existing MARSOC complex and one near Verona Loop Road. Minor internal upgrades would be made to two existing pump stations (RR150 and SR61) located near the MARSOC complex.

As discussed in Chapters 1 and 2, final NEPA documentation for the MARSOC complex at MCB Camp Lejeune was completed in August 2007 (MCB Camp Lejeune 2007c). The Final MARSOC EA evaluated a large enough footprint to sufficiently characterize impacts associated with minor wastewater utility upgrades, including the proposed pump station within the MARSOC complex for nearly all resource areas. This EA only provides a discussion on wetlands, floodplains, and water resources associated with the proposed MARSOC pump station, due to the specificity in which these resources are regulated. All other resource areas will be fully analyzed as appropriate for the remaining components of the proposed action.

This chapter discusses the potential impacts associated with the proposed action and the No Action Alternative.

4.1 LAND USE AND COASTAL ZONE MANAGEMENT

4.1.1 Land Use

4.1.1.1 Proposed Action

The proposed project areas are located entirely within the boundary of MCB Camp Lejeune. The proposed wastewater improvements and upgrades that would occur on land would affect approximately 13 ha (32 ac), most of which is wooded, herbaceous, or located in existing sewer line rights-of-way. The force mains that would be installed at each of the proposed river/creek crossing locations would not result in any land use impacts, as the force mains would be placed approximately 10.7 m to 12.2 m (35 ft to 40 ft) below the river/creek substrate.

The predominant land use classification in the proposed project areas is operational and training facilities. The proposed action would have minor impacts on training and operations by temporarily limiting the use of training areas during construction activities. Internal coordination with Base Range Control would be required to mitigate the effects of the proposed action on ongoing training and operations. For example, most range fans project the maximum distance a round could travel depending on the caliber of the weapon. This could be mitigated by restricting the ranges from shooting rounds that travel longer distances during construction

activities. In addition, the use of Tactical Landing Zone Cardinal and Gun Position 34 would temporarily be prohibited during construction activities, however, use of these areas would resume after construction was complete. Therefore, the proposed action is not expected to adversely impact training and operations within the project area.

There is approximately 38,445 ha (95,000 ac) of managed forested land at MCB Camp Lejeune, most of which is used for military training (MCB Camp Lejeune 2007a). The disturbance of approximately 13 ha (32 ac) under the proposed action would be approximately 0.03 percent of the remaining forested area within the Base.

The permanent conversion of forested areas to developed areas would result in a loss of future timber revenues. The proceeds from the sale of forest products on MCB Camp Lejeune are used solely for forest management such as wildland fire suppression and timber management. Forest management on MCB Camp Lejeune serves the USMC mission by supporting natural resource stewardship programs that maintain the sustainability of MCB Camp Lejeune's training environment.

Since the proposed projects would not change the overall land use at the installation, only a small percentage of forested land would be lost, and the actions are consistent with the operations currently taking place at MCB Camp Lejeune, there would not be adverse impacts to land use as a result of implementing the proposed action.

4.1.1.2 No Action Alternative

There would be no impact to land use under the No Action Alternative because land use patterns would not change. If this alternative were to be implemented, the proposed wastewater system modifications and upgrades would not be constructed. Without the proposed action, sanitary sewer overflows would continue to be a serious concern for MCB Camp Lejeune. Additionally, the Base would not have a wastewater disposal system fully capable of meeting the future wastewater disposal needs of tenant commands, Base operations, and residents.

4.1.2 Coastal Zone Management

4.1.2.1 Proposed Action

Demands placed on lands and waters of the coastal zone from existing economic development and population growth in the region require that new projects or actions be carefully planned to avoid stress on the coastal zone. This planning involves a review of state and local enforceable policies, which are designed to provide effective protection and use of land and water resources of the coastal zone. The USMC has prepared a CCD and has concluded that the proposed action is consistent with the coastal zone management program enforceable policies of the state of North Carolina and Onslow County.

As detailed in the CCD (Appendix C), there are eleven general policy guidelines issued by North Carolina for the coastal area. Of these eleven, four policies are applicable to the proposed action. Consistency with these four applicable policies is *briefly* summarized in the following paragraphs.

- **Shoreline Erosion Policies (15A NCAC 07M.0200)** - The proposed action would involve horizontal boring of new force mains under Northeast Creek, Wallace Creek, Scales Creek, and New River. Temporary staging areas for drilling and construction equipment at each river/creek crossing would range in size from approximately 0.7 ha to 1.05 ha (1.73 ac to 2.6 ac). The staging areas would be located at least 30 m (100 ft) from the shorelines. An erosion and sediment control plan would be implemented during construction activities. Location of the staging area away from the immediate shoreline would be consistent with the policy that directs development to be conducted in a manner that avoids loss of life, property, and amenities.
- **Mitigation Policy (15A NCAC 7M.0700)** – Implementing the proposed action along with mitigation measures to minimize potential environmental impacts would be consistent with North Carolina’s policy that requires mitigation for adverse impacts to coastal lands. Impacts to natural resource areas would be mitigated for as outlined in Section 4.9.4 of this EA.
- **Coastal Water Quality Policies (15A NCAC 7M.0800)** – Stormwater runoff would be managed and controlled in accordance with MCB Camp Lejeune’s 2002 Stormwater Pollution Prevention Plan and the Stormwater Management National Pollutant Discharge Elimination System Phase II requirements. At each river/creek crossing, the proposed new force mains would be installed approximately 10.7 m to 12.2 m (35 ft to 40 ft) below the substrate, thereby reducing impacts to the water column. The staging area for horizontal boring equipment would also be placed at least 30 m (100 ft) from the shore. As a result, the proposed action is not expected to impair coastal water quality.
- **Beneficial Use and Availability of Materials Resulting From the Excavation or Maintenance of Navigational Channels Policies (15A NCAC 07M.1000)** - Excavation or maintenance of navigational channels would not be taking place; however, approximately 46 to 54 cubic meters (60 to 70 cubic yards) of sediment would be generated from horizontal boring activities. The disposal of this material cannot harm coastal resources and should be used in a beneficial way wherever practicable. It is assumed the drill material would not be of beach-quality sand and would be disposed of properly in the Base landfill on Piney Green Road in accordance with regulations.

In addition to the eleven general policy guidelines, there are also five AECs afforded protection under North Carolina’s Coastal Area Management Act because they are areas of statewide concern within the coastal area. The following paragraphs *briefly* summarize the applicability of policies designed to protect AECs and consistency with those policies when applicable. Further detail is provided in Appendix C of this EA.

- **Estuarine and Ocean Systems (15A NCAC 07H.0200)** – Some of the proposed project areas are located directly within an estuarine system. Under the proposed action, new force mains would be installed by horizontal boring under the upper New River, Scales Creek, and Northeast Creek which are considered primary nursery areas for estuarine habitats and under the lower New River which is considered a special secondary nursery area. The proposed action would not adversely impact these areas, since the force mains

would be installed approximately 10.7 m to 12.2 m (35 ft to 40 ft) below the river/creek substrate, with minimal to no increased turbidity in the water column.

Wetlands (including estuarine system wetlands) and tributaries are present in the vicinity of the proposed project location areas, especially in the vicinity of the proposed staging areas for horizontal boring. The proposed projects would be designed and adjusted as needed to avoid construction within wetland areas. Temporary staging areas for drilling and construction equipment at each river/creek crossing would range in size from approximately 0.7 ha to 1.05 ha (1.73 ac to 2.6 ac). The staging areas would be located at least 30 m (100 ft) from the shorelines. Stormwater management plans, including the use of BMPs during landside construction, would control surface water runoff into the adjacent waterways. Therefore, the proposed action is not expected to cause any adverse runoff that might enter estuarine waters.

Public rights for navigation and recreation of public trust waters would be protected as no loss of public trust waters would result from this proposed project. The proposed construction projects would not cause a change in the public's current ability to access coastal resources in Onslow County.

- **Ocean Hazard Areas (15A NCAC 07H.0300)** – The project area for the proposed action is not within an ocean hazard area. Therefore, policies on ocean hazard areas are not applicable.
- **Public Water Supplies (15A NCAC 7H.0400)** - There are no public water supply wells within the project areas; therefore the proposed action would be consistent with policies designed to protect groundwater and public water supplies.
- **Natural and Cultural Resource Areas (15A NCAC 7H.0500)** – One of the proposed parallel force main crossings is located at Wallace Creek; however the crossing is located upstream of the Wallace Creek Natural Area. Stormwater management plans, including the use of BMPs would control surface water runoff into nearby creeks and rivers. Although installation of the proposed MARSOC sewer line would result in the loss of approximately 1.7 ha (4.2 ac) of RCW foraging habitat, MCB Camp Lejeune does not expect this loss to jeopardize the Base's ability to maintain sufficient foraging habitat. MCB Camp Lejeune would obtain concurrence from the USFWS that the proposed action would not adversely affect any threatened and endangered species. No unique geological formations are located within the proposed project area.

With regard to cultural resources, a portion of the proposed corridor for the MARSOC sewer line is located in the southeast corner of the Naval Hospital/Surgeon's Row Historic District. The USMC has determined that the proposed action would not adversely affect any historic properties. MCB Camp Lejeune would obtain concurrence from the North Carolina State Historic Preservation Office prior to implementing the proposed action.

As the proposed action would not impact fragile coastal natural or cultural resources, the proposed action would be consistent with policies designed to protect natural and cultural resource areas of environmental concern.

Implementation of the proposed action would not result in adverse impacts to the coastal zone. The USMC, through the CCD process, has determined that implementing the proposed action would be fully consistent with the applicable policies of the North Carolina's Coastal Management Program (see Appendix C).

4.1.2.2 No Action Alternative

The coastal zone would not be affected under the No Action Alternative. Other new projects at MCB Camp Lejeune would continue to be carefully planned to avoid stress on the coastal zone. If this alternative were to be implemented, the proposed wastewater system modifications and upgrades would not occur. The potential for sanitary sewer overflows would continue to be a concern for MCB Camp Lejeune, which could impact the coastal zone.

4.2 SOCIOECONOMICS

4.2.1 Proposed Action

Under the proposed action, there would be no adverse socioeconomic impacts. The proposed action would not involve an increase or relocation of any personnel, thus the demographics at MCB Camp Lejeune and the surrounding community would not change. Construction activities could contribute in a minor way to the local economy through the purchase of construction materials and the generation of construction wages. Short-term beneficial impacts from construction would be easily absorbed into the local economy. Implementation of the proposed action would benefit tenant commands, Base operations, and residents by improving the existing wastewater collection and treatment system in order to maintain a system fully capable of meeting future wastewater disposal needs and reducing the likelihood of a sanitary sewer overflow.

As evaluated in accordance with Executive Orders 12898 and 13045, the direct and indirect effects of the proposed action would not cause disproportionately adverse environmental, economic, or health impacts specific to any groups or individuals at MCB Camp Lejeune or in Onslow County, including minorities, low-income populations, or children. The proposed action would take place entirely within the boundary of MCB Camp Lejeune and would not result in any adverse impacts. Therefore, there would be no adverse impacts to minority or low-income populations as a result of the proposed action.

As stated in Section 3.2.4, children who are dependents of military personnel are authorized to access MCB Camp Lejeune. Children are not likely to be present within the proposed project areas. Standard construction site safety precautions (e.g., fencing and patrolling) would be employed. Construction-related noise would be introduced to the environment, but could be mitigated through the use of equipment sound mufflers and restricted hours of construction. Fugitive dust associated with construction and demolition would be mitigated through BMPs such as watering of exposed soils, soil stockpiling, and soil stabilization. As a

result, the proposed action would not result in any adverse impacts to minority populations, low-income populations, and children.

4.2.2 No Action Alternative

Implementation of the No Action Alternative would maintain the status quo at MCB Camp Lejeune. No changes would occur that would result in socioeconomic impacts, including impacts to minority populations, low-income populations, or children. If this alternative were to be implemented, the proposed wastewater system modifications and upgrades would not be constructed and the existing facilities would continue to be operational under present conditions.

4.3 AIR QUALITY

4.3.1 Approach to Analysis

The Region of Influence for direct and indirect effects of air emissions associated with the proposed action includes the Jacksonville Metropolitan Statistical Area of Onslow County, North Carolina and the city of Jacksonville. The Jacksonville Metropolitan Statistical Area, including MCB Camp Lejeune, is designated as in attainment for all criteria pollutants.

Criteria pollutant emissions resulting from proposed construction activities have been evaluated for the proposed action and No Action Alternative. Air quality impacts would be significant if emissions associated with the proposed action would: 1) increase ambient air pollution concentrations above the National Ambient Air Quality Standards, 2) contribute to an existing violation of the National Ambient Air Quality Standards, 3) interfere with, or delay timely attainment of the National Ambient Air Quality Standards, or 4) impair visibility within federally-mandated Pollutant of Significant Deterioration Class I areas.

Pollutants considered in this EA analysis include the criteria pollutants measured by state and federal standards. These criteria pollutants are generated by the types of activities (e.g., construction) associated with the proposed action. Airborne emissions of lead are not included because there are no known significant lead emission sources in the region or associated with the proposed action and the No Action Alternative.

Determining the effects of the proposed action on local air quality and visibility involved two basic steps. First, construction emissions were calculated for the proposed action (in tons per year) to determine air emissions increases or decreases relative to baseline conditions at MCB Camp Lejeune and to qualitatively assess the potential for air quality effects. Second, total emissions from the proposed action were compared to regional emissions for the surrounding area. Air quality analysis data are contained in Appendix D.

4.3.2 Proposed Action

Construction activities associated with the proposed action would result in minor, temporary increases in criteria pollutant emissions. Specifically, emissions from construction and construction-related vehicles used during wastewater infrastructure construction activities would increase.

Factors needed to derive the construction source emission rates were obtained from *Median Life, Annual Activity, and Load Factor Values for Nonroad Engine Emissions Modeling* (USEPA 2004a); *Exhaust and Crankcase Emission Factors for Nonroad Engine Modeling—Compression-Ignition* (USEPA 2004b); *Nonroad Engine and Vehicle Emission Study—Report* (USEPA 1991); *Conversion Factors for Hydrocarbon Emission Components* (USEPA 2004c); *Comparison; WRAP Fugitive Dust Handbook* (WRAP 2004); and *EMFAC 2002 (v2.2) Emission Factors (On-Road)* (California Air Resources Board 2002). The analysis assumed that all construction equipment was manufactured before 2000 and therefore emission factors are either Tier 0 or Tier 1.

Emission rates for fugitive dust were estimated using guidelines outlined in the Western Regional Air Partnership (WRAP) fugitive dust handbook (WRAP 2004). These guidelines were developed for use in western states and they assume standard dust mitigation best practices activities of 50 percent from wetting.

After Particulate Matter₁₀ is estimated, the fraction of fugitive dust emitted as Particulate Matter_{2.5} is estimated, and the most recent WRAP study (MRI 2005) recommends the use of a fractional factor of 0.10 to estimate the Particulate Matter_{2.5} portion of the Particulate Matter₁₀.

Diesel exhaust is a primary, well-documented source of particulate matter emissions. The vast majority of particulate matter emissions in diesel exhaust is Particulate Matter_{2.5}. Therefore, all calculated particulates is assumed to be Particulate Matter_{2.5}. A corollary result of this is that the Particulate Matter₁₀ fraction of diesel exhaust is estimated very conservatively as only a small fraction of Particulate Matter₁₀ is present in the exhaust. However, ratios of Particulate Matter₁₀ Particulate Matter_{2.5} in diesel exhaust are not yet published and therefore for the purposes of the EA calculations, all particulate emissions are equally distributed as Particulate Matter₁₀ and Particulate Matter_{2.5}.

Mobile source emissions were calculated for construction workers driving on the Base. These emissions assumed that each construction worker drove their own car, and that the average mileage driven each workday was 16 km (10 mi) (to include driving during lunch break) and at a rate not exceeding 48 kilometers per hour (kph) (30 miles per hour [mph]). Emission factors were derived from the California Air Resources Board EMFAC 2002 mobile emissions model, Scenario Year: 2006 – Passenger Vehicle Model Years: 1965 to 2006.

Emissions have been estimated based upon proposed separation of the wastewater system modifications component of the proposed action from the MARSOC sewer line upgrade component, resulting in a phased two year construction period. Total emissions resulting from proposed construction activities have been estimated and compared to the most recent county emission inventory. These comparisons can be found in Table 4-1.

Table 4-1 Estimated Air Emissions Associated with the Proposed Action (tons/year) Compared to Regional Emissions.

	Volatile Organic Compounds	Carbon Monoxide	Nitrogen Oxides	Sulfur Oxides ¹	Particulate Matter ₁₀	Particulate Matter _{2.5}
MCB Camp Lejeune						
Year 1 Construction Emissions General Wastewater System Modifications	0.07	0.41	0.51	0.06	0.66	0.10
Year 2 Construction Emissions MARSOC Sewer Line Upgrades	0.34	1.68	2.73	0.31	7.40	0.90
Regional (Onslow County) Emissions ²	7,013	42,340	4,729	1,407	3,331	1,282
% of Action Emissions Compared to Regional Emissions	0.00	0.00	0.06	0.02	0.22	0.07

¹Oxides of sulfur measured as sulfur dioxide.

²from EPA's National Emission Inventory database (1999 NEI Version 3).

Construction-related emissions would have a temporary impact on local air quality. Emissions from the construction activity scenario are predominantly associated with mobile diesel equipment and fugitive dust emissions from earth moving, grading and similar activities.

Although emissions would increase during construction activities, the percentage increase on a county-wide basis would only result in negligible impacts to the regional air quality, as seen in Table 4-1.

Operationally, there would be minimal changes to air emissions. The proposed action institutes replacements to existing wastewater facilities and construction of new wastewater lines underground. Additionally, one new pump station would be constructed within the MARSOC complex and one at Verona Loop Road but air emissions associated with these operations would be minor.

In summary, estimated criteria pollutant emissions would not violate the National Ambient Air Quality Standards. Therefore, implementation of the proposed action would not adversely impact air quality in or around MCB Camp Lejeune.

4.3.3 No Action Alternative

The existing wastewater collection and treatment system would remain the same under the No Action Alternative. Accordingly, levels of air emissions currently generated by activities on the Base and existing air quality conditions at MCB Camp Lejeune would remain approximately the same. Similarly, the Southern Coastal Plain Intrastate Air Quality Control Region is expected to remain in attainment for all criteria pollutants.

4.4 CULTURAL RESOURCES

4.4.1 Proposed Action

No archaeological sites that are eligible or potentially eligible for listing in the National Register have been identified as occurring within the proposed project area. If during construction and site grading any archaeological resources were discovered, the installation commander would be notified. The unit commander would order actions in the vicinity halted and the area marked. The unit commander would immediately notify the Base archaeologist. Section 3.4 identifies one historic district in the vicinity of the proposed corridor for the MARSOC sewer line (known as the Naval Hospital/Surgeon's Row Historic District). The proposed construction would require the excavation of a sewer line trench within the grassy lawn of Building H-1 which would be backfilled and reseeded. In addition, any sidewalks disturbed by the proposed construction would be repaired. These impacts would be short-term, reversible, and are considered not adverse. No alternations to Building H-1 would occur as a result of the proposed action. In a letter dated May 15, 2008 to the North Carolina State Historic Preservation Officer, the USMC determined that the proposed wastewater system modification and upgrade at MCB Camp Lejeune would not adversely affect any historic properties. MCB Camp Lejeune would obtain concurrence prior to implementing the proposed undertaking (Appendix E). Therefore, historic properties at MCB Camp Lejeune would not be adversely affected as a result of implementing the proposed action.

4.4.2 No Action Alternative

Cultural resources would not be affected under the No Action Alternative because there would be no construction or ground disturbing activities. Development at MCB Camp Lejeune would continue to be carried out in accordance with the Base Integrated Cultural Resource Management Plan, which addresses National Historic Preservation Act compliance and provides guidance on management of historic properties.

4.5 NATURAL RESOURCES

4.5.1 Topography, Soils, and Geology

4.5.1.1 Proposed Action

The proposed action would not result in adverse impacts to geology, topography, and soils. Minor impacts to existing topography would occur during clearing and grading of proposed construction site areas. Construction activities would have no direct impact on geological formations at MCB Camp Lejeune.

Soils would be disturbed during clearing and grading activities associated with the proposed action. However, implementation of BMPs during construction would reduce impacts to soils associated with grading, clearing, and trenching activities. In addition, standard erosion control measures (e.g., silt fencing, sediment traps, application of water sprays, and revegetation of disturbed soils) would be implemented to reduce potential impacts. Additionally, the areas where the new force mains would be installed on land would be revegetated, thereby reducing

the likelihood of soil erosion. Prior to construction, approval would be obtained by the NCDENR on all Erosion and Sediment Control Plans for the proposed activities. Since the new force mains at each river/creek crossing would be installed by horizontal drilling techniques and would be placed approximately 10.7 m to 12.2 m (35 to 40 ft) below the river/creek bottom, there would be no impact to the substrate.

4.5.1.2 No Action Alternative

The No Action Alternative would not result in any impacts to geology, topography, or soils. Without the proposed wastewater system modifications and upgrades, soil profiles and vegetative cover would remain intact at MCB Camp Lejeune.

4.5.2 Water Resources

4.5.2.1 Proposed Action

Implementation of the proposed action would have no adverse impacts on surface water resources. All of the proposed force mains that would be installed at the New River, Scales, Creek, Northeast Creek, Wallace Creek, and possibly Beaverdam Creek would not impact the water column, as the force mains would be installed by horizontal boring and placed approximately 10.7 m to 12.2 m (35 to 40 ft) below the substrate. This type of technology is commonly used to install force mains, since it minimizes disturbance to the river/creek. There would be minimal to no additional turbidity in the water column as a result of implementing the proposed action. Additionally, the staging area for the horizontal drilling equipment would be located at least 30 m (100 ft) away from the shore. Water resources would not be affected by the proposed new pump station within the MARSOC complex. According to the preliminary results of the Wetlands Study conducted as part of this EA, there are approximately 137 linear m (448 LF) of tributaries near the proposed project areas. However, MCB Camp Lejeune would adjust the final designs for the proposed staging areas for construction and drilling equipment to avoid and minimize impacts to these resources to the maximum extent practicable. If the water resources could not be avoided, MCB Camp Lejeune would mitigate and acquire all necessary permits (see also Section 4.5.3).

In order to minimize impacts to surface water due to stormwater runoff and erosion, MCB Camp Lejeune would adhere to standards and BMPs contained in the Base's Storm Water Pollution Prevention Plan. During construction activities associated with the proposed action, appropriate BMPs to control erosion and sedimentation would be implemented. Groundwater resources would not be impacted during the proposed construction activities. Compliance with all necessary permit requirements and implementation of BMPs and mitigation measures would ensure that stormwater is adequately controlled at the construction sites to minimize potential impacts on surrounding surface water resources and water quality.

4.5.2.2 No Action Alternative

Neither surface water nor groundwater resources would be impacted under the No Action Alternative because there would not be any construction activities. Groundwater levels and quality would remain in their current condition.

4.5.3 Wetlands and Floodplains

4.5.3.1 Proposed Action

A Wetlands Study was completed in January 2008 and results indicated that there were approximately 1.9 ha (4.6 ac) of wetlands delineated in the vicinity of the proposed project location areas (Geo-Marine, Inc. 2008 and Appendix A) (see Figures 3-4a and 3-4b). There are also approximately 0.91 ha (2.25 ac) of floodplains near the proposed project siting areas. Where wetlands or floodplains occur near proposed construction areas, the proposed projects would be designed and adjusted as needed to avoid construction within these resource areas. Wetland protection measures as outlined in the *Memorandum of Agreement Between the Department of the Army and the Environmental Protection Agency, The Determination of Mitigation under the Clean Water Act Section 404 (b)(1) Guidelines* (USACE and USEPA, 1990) would be followed:

- **Avoidance** - avoid potential impacts to the maximum extent practicable;
- **Minimization** - take appropriate and practicable steps to minimize the adverse impacts (e.g., limit the anticipated impact to an area of the wetland with lesser value than other areas, or reduce the actual size of the impacted area); and
- **Compensatory mitigation** - take appropriate and practicable compensatory mitigation action for unavoidable adverse impacts that remain after all appropriate and practicable minimization has been made (e.g., create a new wetland area, restore existing degraded wetland, or enhance low value wetland).

Since wetlands and floodplains are present near the proposed project areas, MCB Camp Lejeune would design each proposed construction project to avoid and minimize impacts to wetlands, floodplains, and associated water resources to the maximum extent practicable. For example, the initial surface entry point for horizontal boring would occur at least 30 m (100 ft) from the shoreline to avoid potential impacts to coastal wetlands. There is sufficient upland area near the proposed new lift station and pump stations to avoid encroachment on wetland areas. There would be no open trenching through wetlands for the proposed MARSOC sewer line, as there is sufficient area along the roadway shoulder to avoid impacting wetlands. All surface water crossings would be conducted by directional boring. Finally, the staging areas would be sited outside of wetland areas. All construction activity would be designed to take place outside of wetland areas.

Wetlands act as an efficient and cost-effective filtration system for waters making their way to the ocean and provide vital protection of the quality of coastal waters because they remove upstream pollutants. Moreover, they provide protection from floods by absorbing enormous amounts of water and provide shoreline-erosion protection by the plants that grow in the wetlands. Wetlands also provide essential habitat for numerous diverse species ranging from fish to birds to mammals to amphibious animals. Wetlands provide a diversity of habitats for varying foods, nesting sites, resting areas and escape cover (NCDENR 2008a). Construction activities in the vicinity of wetlands could cause short-term impacts such as siltation of surface water due to an increased erosion potential from clearing and minor grading activities. This

erosion would be a short-term impact that would be minimized by the use of BMPs (such as siltation fencing and stormwater management structures) in accordance with an approved erosion and sediment control plan.

Adverse impacts to wetlands and floodplains are not expected because wetland protection measures would be followed, and the project would be designed to avoid construction within wetlands.

4.5.3.2 No Action Alternative

Under the No Action Alternative, no construction activities would occur. Baseline conditions would remain unchanged.

4.5.4 Vegetation

4.5.4.1 Proposed Action

The majority of the proposed siting areas for the new MARSOC sewer line, pump stations, and a portion of the Parachute Tower Road lift station are forested, with the remaining project areas occurring in disturbed areas or within existing sewer line rights-of-way. The proposed construction activities would impact approximately 13 ha (32 ac) of forest and herbaceous species, or 0.03 percent of MCB Camp Lejeune's total forested areas. Approximately 1.7 ha (4.2 ac) of RCW foraging habitat would be removed to construct the proposed MARSOC sewer line and Verona Loop pump station.

The proposed action would require land clearing for the proposed improvements and upgrades. However, the area of clearing represents a small fraction of similar habitats on the Base. Table 4-2 shows the percent of the various types of forest that would be removed from implementation of the proposed action compared to the total amount of similar habitat on-base. As the table demonstrates, the overall impact to forested areas would be minor. After construction, mitigation would include planting grass along the proposed sewer line route and landscaping in select areas, especially those areas that were trenched.

Since horizontal drilling would occur approximately 10.7 m to 12.2 m (35 ft to 40 ft) below the river and creek substrate, no effect to submerged aquatic vegetation potentially occurring in the project area are anticipated. In addition, the initial surface entry point for horizontal boring would occur at least 30 m (100 ft) from the shoreline to minimize potential impacts to coastal wetland vegetation.

4.5.4.2 No Action Alternative

The No Action Alternative would not affect vegetation. The Base's Forest Management Program would continue to support the military mission, enhance the ecological integrity of forestlands, and generate revenue to support active forest management.

Table 4-2 Forest Types and Percent Loss of Various Forest Habitats

Project Area	Forest Impacted in Project Area	Percent of Similar Forest Impacted due to Proposed Action	Type of Forest (Ecologic Classification)	Overstory Description	Understory Description	Age of Forest
New River Crossing	0.5 ha (1.3 ac)	0.004% (30,393 total acres on Base)	Poorly drained, mucky, small stream swamp- mostly hardwood with some pine and Well-drained to Moderately well-drained, sandy, pine savanna	Scattered loblolly pine, Hickory, and red maple	Sweetgum, red maple, American holly, and dogwood	72 to 47 yrs old
Scales Creek Crossing	0.45 ha (1.1 ac)	0.04% (3029 total acres on Base)	Poorly drained, mucky, small stream swamp- mostly hardwood with some pine and Well-drained to Moderately well-drained, sandy, pine savanna	Scattered loblolly pine, Hickory, and White Oak	Red maple, sweetgum, and blackgum and tall cane.	60 yrs old
Northeast Creek Crossing	0.16 ha (0.4 ac)	0.01% (3759 total acres on base)	Well-drained, sandy, pine-hardwood slope- mostly hardwood	Scattered loblolly pine, Hickory, and Red Oak	Sweetgum, red maple, American holly, and dogwood	75 yrs old
Wallace Creek Crossing	0	0%	Site follows cleared utility corridor.	N/A	N/A	N/A
Parachute Tower Road Lift Station and New Sewer Line Connection	0.04 ha (0.1 ac)	0.01% (3759 total acres on base)	Well-drained, sandy, mixed hardwood slope.	Black Gum and Hickory	Sweetgum, red oak, and dogwood. Wax myrtle and Vitus spp. (grapevines)	88 yrs old
French Creek Wastewater Treatment Plant 24" Force Main	0	0%	Site occurs in a cleared area.	N/A	N/A	N/A
MARSOC Crossing	0.22 ha (0.55 ac)	0.001% (30,211 total acres on Base)	Well-drained, sandy, pine-hardwood slope- mostly hardwood	Scattered loblolly pine, Hickory, and Red Oak	Sweetgum, red maple, American holly, and dogwood	63 yrs old
MARSOC Utility Line	1.1 ha (2.65 ac)	0.04% (28,943 total acres on Base)	Well-drained to Moderately well-drained, sandy, pine savanna and	Loblolly pine, and Sweetgum	Maple, sweetgum, red oak, dogwood, and American holly	45 to 11 yrs old
Verona Loop Pump Station	0.28 ha (0.70 ac)	0.002% (27,804 total acres on Base)	Well-drained to Moderately well-drained, sandy, pine savanna	Loblolly pine	Maple, sweetgum, red oak, dogwood, and American holly	52 yrs old
MARSOC Pump Station	0.008 ha (0.02 ac)	0.0% (27,804 total acres on Base)	Well-drained, sandy, pine-hardwood slope- mostly pine	Loblolly pine	Maple, sweetgum, red oak, dogwood, and American holly	63 yrs old

Source: MCB Camp Lejeune GIS 2008.

4.5.5 Wildlife

4.5.5.1 Proposed Action

The proposed action would require land clearing for improvements and upgrades to the wastewater system. However, the area of clearing represents a small fraction of similar habitats on the Base. The removal of mixed pine-hardwood forest in the proposed project areas would cause forest and ground cover dwelling birds, mammals, reptiles, and amphibians to be permanently displaced once the land is cleared and disturbed. Less mobile species at the project area would experience direct mortality. Wildlife residing in the periphery of the proposed construction sites may be temporarily displaced as a result of the noise and activity of the construction. The proposed action would remove approximately 1.7 ha (4.2 ac) of RCW foraging habitat, but this is not expected to result in adverse impacts to the species (see Section 4.5.6.1 for additional discussion).

Movement of wildlife species within MCB Camp Lejeune would not be severely impacted by the proposed action. While there would be an adverse impact to individual animals and an obstruction to the movement of some large mammal species under the proposed action, these impacts are not expected to affect the stability of wildlife populations at the Base.

Since horizontal drilling would occur approximately 10.7 m to 12.2 m (35 ft to 40 ft) below the river and creek substrate, effects to estuarine species or habitats occurring in the river or creek substrate or water column would be minor. In addition, the entry and exit points as well as the staging area for construction equipment for horizontal boring would be located at least 30 m (100 ft) from the shoreline to minimize potential impacts to coastal wetlands that may provide habitat for a variety of vertebrates and invertebrates.

As stated in Chapter 3 of this EA, the Department of Defense operates under a Memorandum of Understanding with the USFWS for MBTA coordination on activities, with specific requirements placed on the Department of Defense when proposed actions are likely to affect migratory birds. MCB Camp Lejeune has identified the migratory bird species that have the potential to occur in the vicinity of the proposed action. These species are listed in Appendix B of this EA. MCB Camp Lejeune has determined that the proposed action addressed within this EA would have minor impacts to migratory birds, and that this impact would occur due to destruction of habitat. Population level effects would not occur because the proposed action area represents a minor portion of the habitat available on a Base-wide and regional basis. Therefore, the proposed action would be compliant with the intent of the Memorandum of Understanding and implementation of the proposed action would not require prior coordination with the USFWS regarding MBTA issues.

4.5.5.2 No Action Alternative

The No Action Alternative would not result in adverse impacts to wildlife. Wildlife throughout the Base would continue to be managed under the Wildlife Management Program, with a strategy of restoring and maintaining native landscapes in an ecosystem and adaptive management framework.

4.5.6 Threatened and Endangered Species

4.5.6.1 Proposed Action

The route of the proposed MARSOC sewer line crosses five partitions that have been designated as RCW foraging areas (site #34, #82, #45, #54, and #31). There are four RCW nesting areas adjacent to the project area along Verona Loop Road (site #34, #82, #45, and #54); three of which are active and one is inactive. The proposed action would not adversely affect these nesting areas because the proposed force main from US 17 to the proposed Verona Loop pump station would be buried within an existing grass-covered right-of-way along Verona Loop Road. From the intersection of Verona Loop Road and Old Town Point Road to the New River, the sewer line would follow Old Town Point Road to the New River. Except for a stretch of approximately 400 m (1,312 ft), the sewer line would be buried beneath Old Town Point Road. For that 400 m (1,312 ft) stretch, a new 12 m (40 ft) wide right-of-way would be cut through mostly loblolly pine forest. In addition, the MARSOC Complex pump station would also require clearing of loblolly pine. Although the installation of the proposed MARSOC sewer line and pump station would result in the loss of approximately 1.7 ha (4.2 ac) of RCW foraging habitat (site #31), MCB Camp Lejeune does not expect this loss to jeopardize the Base's ability to maintain sufficient foraging habitat. After the loss of this foraging habitat, approximately 167 ha (414 ac) of suitable or potentially suitable RCW foraging habitat will remain in the partition surrounding cluster #31. When future clusters are taken into account, 99 ha (245 ac) of suitable or potentially suitable habitat will remain after completion of this project.

In addition, the proposed MARSOC sewer line would be installed along a route that is located in the vicinity of areas of high probability habitat for rough-leaved loosestrife, however, MCB Camp Lejeune anticipates that no plants or habitat would be affected. The proposed MARSOC sewer line would be buried within an existing right-of-way along Verona Loop Road. As previously discussed, most of the sewer line along Old Town Point Road would be buried under the road. The 400 m (1,312 ft) section that would not be buried under the road is approximately 1,450 m (0.9 mi) from the nearest high-probability habitat for rough-leaved loosestrife and traverses an area that is mostly 24 to 45 year old loblolly pine. A plant survey was conducted in high-probability habitat along the original route of the proposed sewer line, including a 25 m (82 ft) buffer on either side of the original proposed route. No rough-leaved loosestrife was found along the proposed route. In addition, no listed plants were found in the survey area. Although the route of the proposed sewer line would be located close to high probability habitat for rough-leaved loosestrife, MCB Camp Lejeune does not anticipate any impact to this species for reasons discussed previously.

Prior to implementing the proposed action, MCB Camp Lejeune would obtain concurrence from the USFWS that the proposed action may affect, but is not likely to adversely affect, any threatened or endangered species (Appendix F).

The project area does not encompass any natural heritage sites; therefore no effects to natural heritage sites are anticipated as a result of implementing the proposed action.

4.5.6.2 No Action Alternative

There would be no impacts to threatened and endangered species under the No Action Alternative. Protected species and their habitats would continue to be managed under MCB Camp Lejeune's Threatened and Endangered Species Management program for conservation and recovery in accordance with all environmental laws, regulations, terms and conditions in applicable USFWS biological opinions.

4.6 HAZARDOUS MATERIALS AND WASTE

Hazardous materials, toxic substances, and hazardous wastes are regulated under federal programs administered by USEPA, as well as state and local laws and Department of Defense regulations that address the storage, transportation, and disposal of hazardous materials and wastes. These laws have been established to protect human health and the environment from potential impacts. The significance of impacts associated with hazardous materials and wastes is based on the toxicity of the substance, transportation and storage risk, and the method of waste disposal. Impacts are considered significant if the storage, use, transportation, or disposal of these substances increases human health risks or environmental exposure.

Programs have been established at MCB Camp Lejeune to control entry of hazardous materials to the Base; to safely manage their handling and transportation within the Base; to inform military and civilian employees of their dangers; to minimize the risk of human exposure and release to the environment associated with these substances; and to dispose of these substances in an environmentally sound manner when they are no longer useful.

4.6.1 Proposed Action

There are no Installation Restoration sites located within the project area; therefore no effects to Installation Restoration sites are anticipated. The section of force main that would be routed through closed range area ASR #2.78 would require a Preliminary Assessment/Site Investigation be performed as required by the Comprehensive Environmental Response, Compensation and Liability Act process. Remediation of any contamination would be completed as needed prior to construction activities. In addition, a n unexploded ordnance technician would be on site during construction, primarily in the proposed construction area for the MARSOC sewer line and Verona Loop pump station since this area transects several historic ranges (see Section 3.6.2). Usual BMPs would be employed in the handling, removal, and disposal of potentially hazardous substances. MCB Camp Lejeune would consult with the appropriate Base program managers to establish an appropriate course of action for each proposed construction project to ensure that federal and state agency notification requirements are met and to arrange for agency consultation as necessary where areas of potential contamination could be affected. During the bidding and scoping processes for each project, contractors would be notified of the nature and extent of known contamination so that they can inform their employees in advance of onsite activities and take appropriate precautions to protect health and safety and prevent the spread of contamination.

Implementing the proposed action would not result in adverse impacts from hazardous materials, waste management, or existing contaminated sites. In summary, the handling and disposal of hazardous materials, toxic substances, and hazardous wastes under the proposed action alternative would not substantially increase the risk to human health due to direct exposure, would not substantially increase the risk of environmental contamination, and would not violate applicable federal, state, local, or Department of Defense regulations.

4.6.2 No Action Alternative

The existing conditions in hazardous materials and waste management and at contaminated sites would not change from baseline conditions under the No Action Alternative. MCB Camp Lejeune would continue with currently scheduled remedial actions and environmental pollution abatement as outlined in the Base Order on *Oil and Hazardous Substance Pollution Prevention and Pollution Abatement Facility Management*. No adverse impacts are expected to hazardous materials and waste management under the No Action Alternative.

4.7 HUMAN HEALTH AND SAFETY

The proposed action would have a beneficial effect on human health and safety. The proposed action would provide an alternative route and improve the means of transferring sewage to the WWTP at French Creek should any of the existing underwater force mains crossing the New River, Scales Creek, Wallace Creek, or Northeast Creek break. Not having a backup system in place should a breakage occur could have adverse environmental impacts to the Base and surrounding Onslow County communities. The proposed action would provide the Base with a wastewater collection and treatment system fully capable of meeting the future wastewater needs of all tenant commands, Base operations, and residents.

As stated in Section 3.2.4, children who are dependents of military personnel are authorized to access MCB Camp Lejeune. Although children are not likely to be present within the proposed project areas, several facilities that support children are located nearby, including parks and residential areas. During construction there could be increased risks to the safety of children, due to the proximity of facilities where children are present. However, these activities would be short-term in duration and increased risks would be mitigated through the use of standard construction site safety precautions (e.g., fencing and patrolling). Construction-related noise would be introduced to the environment, but could be mitigated through the use of equipment sound mufflers and restricted hours of construction. Fugitive dust associated with construction and demolition would be mitigated through BMPs such as watering of exposed soils, soil stockpiling, and soil stabilization. As a result, the proposed action would not result in adverse impacts to minority populations, low-income populations, and children. For these reasons, no adverse impacts to human health and safety are anticipated.

4.8 AESTHETICS

The aesthetic environment at MCB Camp Lejeune is typical of a military installation. The areas in and around the proposed locations for the river/creek crossings can be described as scenic wetlands. Temporary minor effects to aesthetics are anticipated during construction activities. After construction, mitigation would include planting grass along the proposed sewer line route where trenching occurred and landscaping in select areas. All new force mains at the river/creek crossings would be routed below the surface and therefore would not be visible. There would be no adverse effects to historic structures within the vicinity of the proposed project area (see Section 4.4). For these reasons, no adverse effects to aesthetics are anticipated as a result of implementing the proposed action.

4.9 CUMULATIVE IMPACTS

Cumulative impacts are defined by the Council on Environmental Quality in 40 Code of Federal Regulations 1508.7 as:

Impacts on the environment which result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions.

These regulations further require that NEPA environmental analyses address connected, cumulative, and similar actions in the same document (40 Code of Federal Regulations 1508.25). There are several recent, present, and future planned projects at MCB Camp Lejeune to be considered when analyzing the cumulative effects of the proposed wastewater system modifications and MARSOC sewer line. These projects primarily are related to reorganization within the USMC as required to meet world conditions and the Marine Corps mission that has resulted in, or may result in, on-Base development at MCB Camp Lejeune to accommodate the needs of the Commandant of the Marine Corps. These projects have been, or are being, evaluated in separate NEPA documentation, and are considered when analyzing the cumulative effects of the proposed action, as follows:

- EA for MARSOC complex;
- EA for Wallace Creek Regimental Area;
- EA and EIS for USMC Grow the Force initiative at MCB Camp Lejeune; and
- Onslow Water and Sewer Authority (ONWASA) Sewer Line Extension at MCB Camp Lejeune.

An EA was prepared for construction, operation, and maintenance of the proposed MARSOC Complex within an 816 ha (2,017 ac) project area at the Stone Bay Rifle Range part of MCB Camp Lejeune. Associated with the proposed action is an influx of approximately 875 active duty personnel to the Base. The combined size of the proposed complex facilities would be approximately 144,462 m² (1,554,976 SF). Development of the facilities would take place on approximately 220 ha (544 ac) of the entire 816 ha (2,017 ac) complex project area. Nine

buildings and structures would be demolished under the proposed action. In addition, military training would be conducted at proposed training facilities within the complex. Training at the complex would begin once the training facilities have been constructed. The complex would be built over a period of several years, beginning in 2007. The EA evaluated this proposed action and concluded that while there would be some adverse impacts, there would be no adverse environmental impacts if the proposed action were to be implemented.

An EA is currently being prepared for construction, operation, and maintenance of a four-battalion regimental complex in the Wallace Creek area of MCB Camp Lejeune. This proposed complex would accommodate an influx of approximately 2,100 personnel to MCB Camp Lejeune. The proposed project area for the Wallace Creek Regimental Area is approximately 223 ha (551 ac). No facilities exist at MCB Camp Lejeune to support the introduction of the new units even on an interim or short-term basis, thus the proposed Wallace Creek Regimental Area would provide the facilities and infrastructure needed to meet the operational and training requirements of the battalions. These include buildings, training facilities, roads, infrastructure, and utilities.

An EA and an EIS are also being prepared at MCB Camp Lejeune to address the proposed Grow the Force initiative to increase the USMC end strength from approximately 180,000 to 202,000 Marines by 2011. At MCB Camp Lejeune, this initiative could result in the assignment of approximately 7,700 additional active duty personnel by 2011. The Grow the Force EA will evaluate the impacts of construction and operation of temporary facilities required to support the additional personnel in the short-term, and the EIS will address in detail the permanent assignment of the personnel and the construction and operation of permanent facilities and infrastructure. The Grow the Force EIS will also address in detail potential impacts on the region from similar Grow the Force initiatives proposed for MCAS New River (approximately 1,400 additional active duty personnel) and MCAS Cherry Point (approximately 800 additional active duty personnel).

An environmental study is currently being prepared for construction and operation of a new 10.6 km (6.6 mi) sewer line connection for ONWASA. This new sewer line would be constructed from two off-Base pump stations, Hunters Creek and Rocky Run, along Lake Street until connecting to Piney Green Road on Base. From there, the new sewer line would follow Piney Green Road and Sneads Ferry Road and ultimately connect to the WWTP at French Creek. The new sewer line would provide wastewater collection service to both on-base and off-base areas. ONWASA will be limited to 13.2 mld (3.5 mgd) that can be pumped to the WWTP through this new sewer line.

This EA for the proposed wastewater system modifications and MARSOC sewer line evaluated information relevant to environmental concerns associated with the construction, operations, and maintenance of those projects. The analyses conclude that while there would be some impacts, there would be no adverse environmental impacts if the proposed action were to be implemented.

The other major projects proposed for MCB Camp Lejeune (MARSOC complex, Wallace Creek Regimental Area, and Grow the Force initiative) have been or are being evaluated in accordance with NEPA. These projects cumulatively could result in the assignment of approximately 10,000 additional active duty personnel to MCB Camp Lejeune. Construction required for facilities,

roads, and other infrastructure to support the new commands and additional personnel would be conducted in accordance with all applicable regulations, permits, and mitigation measures. Furthermore, while some impacts from construction are anticipated (loss of vegetation), it is expected that none would be adverse based on proper land use planning, consideration of sensitive natural resources, BMPs, and mitigation efforts. The influx of approximately 10,000 additional active duty personnel by 2011 has potential for adverse effects on local traffic, schools, and other public resources, but these impacts are being evaluated in detail in the Grow the Force EIS, which will include public scoping and public review of the EIS as part of the NEPA process.

The ONWASA sewer line would reduce the capacity of the WWTP at French Creek by 13.2 mld (3.5 mgd). The WWTP's process and handling systems were designed for an average daily flow of 56.8 mld (15 mgd), but are currently processing approximately 22.7 mld (6 mgd). Even with the additional flow from the ONWASA sewer line the WWTP would still be well below its available capacity. Although construction of the ONWASA sewer line could support additional development, this would occur incrementally and additions to the wastewater system would be considered in accordance with the overall capacity of the system.

The existing wastewater handling capacity at MCB Camp Lejeune is sufficient to meet future growth plans. The primary factor limiting wastewater capacity, beyond the hydraulic capacity of 15 mgd, is nitrogen. MCB Camp Lejeune is consistently well below their designated nitrogen limit of 250,000 pounds per year. The major projects (MARSOC complex, Wallace Creek Regimental Area, and Grow the Force initiative) will increase wastewater flow to the plant by approximately 17 percent. With the additional flow from ONWASA, the WWTP at French Creek would be treating approximately 9 mgd. The ONWASA inputs will increase the flow to 3.5 mgd over time and changes to infrastructure will need to be made to allow collection of the additional 3.5 mgd of wastewater. When the WWTP is most efficient at removing nitrogen, approximately 12 mgd of wastewater can be treated. When the WWTP is least efficient at removing nitrogen, approximately 9.5 mgd of wastewater can be treated. A nitrogen removal study is currently underway to determine modifications that can be made to the WWTP to increase nitrogen removal efficiency.

With proper land use planning, consideration of sensitive natural resources, BMPs, and mitigation efforts, it is anticipated that the cumulative impacts associated with the proposed action in conjunction with past, present, and reasonably foreseeable future actions within MCB Camp Lejeune would be minor.

4.9.1 Unavoidable Adverse Impacts

The primary unavoidable, adverse impacts on the environment resulting from the implementation of the proposed action would be the long-term effects of the removal of up to 13 ha (32 ac) of mixed pine-hardwood forest habitats and herbaceous vegetation, including approximately 1.7 ha (4.2 ac) of RCW foraging habitat. This would reduce the carrying capacity for wildlife species associated with those types of habitat but would be minor in the context of all similar forested and grassy areas within MCB Camp Lejeune. The loss of approximately 1.7 ha (4.2 ac) of RCW foraging habitat is not expected to jeopardize the Base's ability to maintain sufficient foraging habitat. In addition, noise generating activities would occur during the construction phases of the

project. The proposed action also includes several actions that would result in temporary increased air emissions.

There would be minor short-term impacts, such as increases in dust, noise levels, and traffic at the project areas associated with construction activities. Grading and clearing would make the site more vulnerable to erosion, and make nearby waters more vulnerable to siltation effects. The latter impacts would be minimized through use of erosion and sedimentation controls and stormwater BMPs.

4.9.2 Relationship between Local Short-Term uses of the Environment and Enhancement of Long-term Productivity

NEPA requires that environmental analysis include identification of "...any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented." Irreversible and irretrievable resource commitments are related to the use of non-renewable resources and the effects that the uses of these resources have on future generations. Irreversible effects primarily result from the use or destruction of a specific resource (e.g., energy or minerals) that cannot be replaced within a reasonable time frame. Irretrievable resource commitments involve the loss in value of an affected resource that cannot be restored as a result of the action (e.g., the disturbance of a cultural site).

Short-term uses of the environment are those that occur over a period of less than the life of the proposed action. Long-term uses include those impacts that would persist for a period of five years or more, or for the life of the proposed action. The activities addressed in this EA that would be categorized as short-term include the land clearing and disturbance that would occur from trenching and constructing the new wastewater facilities.

Most impacts are short-term during the periods of construction activities. Implementation of this action would result in a minor increase in fuels used by ground-based vehicles, particularly during the construction and horizontal boring activities, and the materials used in construction. Therefore, minor amounts of these nonrenewable resources would be irretrievably lost or depleted. In addition, up to approximately 13 ha (32 ac) of forest and herbaceous grass would be removed or disturbed as a result of the proposed action. The loss of forested habitat results in a long-term, though minimal reduction in commodity production and revenues.

4.9.3 Irreversible and Irretrievable Commitments of Resources

Fuel, construction materials, and labor would be expended during construction activities. Operating and maintaining the new wastewater system facilities, especially the new pump stations and lift station would require small amounts of energy to light the buildings. Commitment of these resources are minor. Moreover, the proposed action would not result in the destruction of environmental resources such that the range of potential uses of the environment would be limited, nor impact the biodiversity of the region.

4.9.4 Mitigation Measures

The following measures would be implemented as part of the proposed action:

Fugitive dust emissions from construction would be controlled using standard management practices such as routine sweeping and wetting to reduce air emissions, as needed.

If during construction and site grading any site of potential historical or archaeological significance is encountered, the Director, Environmental Management would be notified. The Base commander would order actions in the vicinity halted and the area marked. The Base commander would immediately notify the Base archaeologist at telephone (910) 451-7230.

BMPs would be used to avoid and minimize the release of sediments into stormwater, with mitigation plans including both short-term (construction phase) and long-term (project life) features to meet the requirements of the Base's Stormwater Pollution Prevention Plan.

All projects would be designed to avoid and minimize impacts to wetlands and waters of the United States to the maximum extent practicable. The project has been designed to avoid construction within wetlands, and BMPs would be utilized to prevent siltation of nearby wetland areas.

All projects would be designed to avoid impacting any Installation Restoration sites. Should this be unavoidable, MCB Camp Lejeune would consult with the appropriate Base Program Managers to establish an appropriate course of action for each proposed construction project to ensure that federal and state agency notification requirements are met and to arrange for agency consultation as necessary where existing Installation Restoration sites would be affected.

All river crossings would be conducted with directional boring, which minimizes impacts on physical and natural resources.

Reseeding of disturbed areas would be with native, warm season grass mixtures.

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**Appendix A Wetland Delineation and
USACE Notification of Jurisdictional Determination**

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Wetland Delineation Summary

Project Area Jurisdictional Wetland & Stream Resources	Site Area (ac.)	Resource Type ²	Wetland Area ¹ (ac.)	Tributary (lft) ³	Jurisdiction ⁴
New River Crossing	4.7		1.46		
Wetland		E1UB	0.07		Abuts a TNW
Wetland		E2EM1/FO4	1.36		Abuts a TNW
Wetland		PFO4	0.03		Abuts a TNW
Scales Creek Crossing	2.3		0.68		
Wetland		E2EM1	0.13		Abuts a TNW
Wetland		E2EM1/FO4	0.03		Abuts a TNW
Wetland		E2EM1/SS4	0.20		Abuts a TNW
Wetland		PF04/SS1	0.20		Abuts a TNW
Wetland		PFO4/SS3	0.08		Abuts a TNW
Wetland		R2UBH	0.04		Abuts a TNW
Northeast Creek Crossing	8.2		0.18	158	
Wetland		PFO1	0.08		Abuts a TNW
Wetland		PFO4/1	0.05		Abuts a TNW
Wetland		E1UB	0.04		Abuts a TNW
Wetland		E2EM1/FO4	0.00		Abuts a TNW
Tributary BS-2		Perennial		158	Is an RPW
Wetland		PFO4	0.08		Abuts a RPW
Wallace Creek Crossing	2.5		0.44		
Wetland		E1UB	0.06		Abuts a TNW
Wetland		PFO4	0.16		Abuts a TNW
Wetland		PSS4	0.23		Abuts a TNW
Parachute Tower Rd Lift Station	0.4	PSS/PFO	0.15		Abuts a TNW
Wetland		PFO1	0.12		Abuts a TNW
Wetland		PSS1	0.02		Abuts a TNW
Connection from Parachute Tower Rd Lift Station	2.0		0.00	34	Tributary to Wallace Cr.
Tributary Vehicle Impound		Intermittent		10	Is an RPW
Tributary Holcomb Blvd #2		Perennial		16	Is an RPW
Tributary Birch St #3		Intermittent		8	Is an RPW
MARSOC Sewer Line and Verona Loop Rd Pump Station	45.3		1.69	256	Adjacent to RPW
Tributary OTS-3		Perennial		256	Is an RPW
Wetland			0.25		Adjacent to RPW
Wetland			1.10		Adjacent to RPW
Wetland			0.12		Adjacent to RPW
Wetland			0.12		Adjacent to RPW
Wetland			0.10		Abuts a RPW
WWTP Improvements (24" Sewer Line)	0.1	NA	0.00	NA	NA
Totals	65.5		4.59	448	

¹Based upon draft wetland survey information field verified by USACE on 1/31/08. ² Refers to dominant, vegetated wetland types following the Classification of Wetlands and Deepwater Habitats of the United States (Cowardin *et al.* 1979). ³ Estimated linear feet of stream channel based upon preliminary survey data. ⁴ A Jurisdictional Determination has not been issued by USACE for all of the project areas. Traditional Navigable Waterways = TNW and RPW = Relatively Permanent Waters

**U.S. ARMY CORPS OF ENGINEERS
WILMINGTON DISTRICT**

Action Id. 2008 900

County: Onslow

U.S.G.S. Quad: Camp Lejeune

NOTIFICATION OF JURISDICTIONAL DETERMINATION

Property Owner: Marine Corps Base Camp Lejeune Agent: GeoMarine, Inc.
Address: attn: Marty Korenek attn: Jeffrey DeBerry
PSC 20004 2713 Magruder Blvd., Suite D
Camp Lejeune, NC 28542 Hampton, VA 23666

Property description:
Size (acres) _____ Nearest Town Jacksonville
Nearest Waterway New River, Northeast/Wallace Creek River Basin White Oak
USGS HUC 03030001 Coordinates N 34.6965 W 77.3415
Location description This determination covers three waterbodies (New River, Wallace Creek, and Northeast Creek) and wetlands adjacent to these waters associated with the specific P 1147 project area in Camp Lejeune.

Indicate Which of the Following Apply:

A. Preliminary Determination

- Based on preliminary information, there may be wetlands on the above described property. We strongly suggest you have this property inspected to determine the extent of Department of the Army (DA) jurisdiction. To be considered final, a jurisdictional determination must be verified by the Corps. This preliminary determination is not an appealable action under the Regulatory Program Administrative Appeal Process (Reference 33 CFR Part 331).

B. Approved Determination

- There are Navigable Waters of the United States within the above described property subject to the permit requirements of Section 10 of the Rivers and Harbors Act and Section 404 of the Clean Water Act. Unless there is a change in the law or our published regulations, this determination may be relied upon for a period not to exceed five years from the date of this notification.
- There are wetlands on the above described property subject to the permit requirements of Section 404 of the Clean Water Act (CWA)(33 USC § 1344). Unless there is a change in the law or our published regulations, this determination may be relied upon for a period not to exceed five years from the date of this notification.
 - We strongly suggest you have the wetlands on your property delineated. Due to the size of your property and/or our present workload, the Corps may not be able to accomplish this wetland delineation in a timely manner. For a more timely delineation, you may wish to obtain a consultant. To be considered final, any delineation must be verified by the Corps.
 - The wetland on your property have been delineated and the delineation has been verified by the Corps. We strongly suggest you have this delineation surveyed. Upon completion, this survey should be reviewed and verified by the Corps. Once verified, this survey will provide an accurate depiction of all areas subject to CWA jurisdiction on your property which, provided there is no change in the law or our published regulations, may be relied upon for a period not to exceed five years.
 - The wetlands have been delineated and surveyed and are accurately depicted on the plat signed by the Corps Regulatory Official identified below on 6/4/2008. Unless there is a change in the law or our published regulations, this determination may be relied upon for a period not to exceed five years from the date of this notification.
- There are no waters of the U.S., to include wetlands, present on the above described property which are subject to the permit requirements of Section 404 of the Clean Water Act (33 USC 1344). Unless there is a change in the law or our published regulations, this determination may be relied upon for a period not to exceed five years from the date of this notification.
- The property is located in one of the 20 Coastal Counties subject to regulation under the Coastal Area Management Act (CAMA). You should contact the Division of Coastal Management in Washington, NC, at (252) 946-6481 to determine their requirements.

Action ID: _____

Placement of dredged or fill material within waters of the US and/or wetlands without a Department of the Army permit may constitute a violation of Section 301 of the Clean Water Act (33 USC § 1311). If you have any questions regarding this determination and/or the Corps regulatory program, please contact **Brad Shaver** at **910-251-4611**.

C. Basis For Determination

The subject areas exhibit wetland criteria as described in the 1987 Corps Delineation Manual and has areas that exhibit an ordinary high water level adjacent and abutting the aforementioned waterbodies.

D. Remarks

The site was field verified on 1/31/2008.

E. Appeals Information (This information applies only to approved jurisdictional determinations as indicated in B. above)

This correspondence constitutes an approved jurisdictional determination for the above described site. If you object to this determination, you may request an administrative appeal under Corps regulations at 33 CFR part 331. Enclosed you will find a Notification of Appeal Process (NAP) fact sheet and request for appeal (RFA) form. If you request to appeal this determination you must submit a completed RFA form to the following address:

District Engineer, Wilmington Regulatory Division
Attn: Brad Shaver, Project Manager,
Wilmington Regulatory Field Office
P.O. Box 1890
Wilmington, North Carolina 28402-1890

In order for an RFA to be accepted by the Corps, the Corps must determine that it is complete, that it meets the criteria for appeal under 33 CFR part 331.5, and that it has been received by the District Office within 60 days of the date of the NAP. Should you decide to submit an RFA form, it must be received at the above address by **8/4/2008**.

It is not necessary to submit an RFA form to the District Office if you do not object to the determination in this correspondence.

Corps Regulatory Official: Brad Shaver

Date **6/4/2008**

Expiration Date **6/4/2013**

The Wilmington District is committed to providing the highest level of support to the public. To help us ensure we continue to do so, please complete the attached customer Satisfaction Survey or visit <http://www.saw.usace.army.mil/WETLANDS/index.html> to complete the survey online.

Copy furnished:
Charles F. Riggs & Associates, Inc. 202 Warlick Street Jacksonville, NC 28541

NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND REQUEST FOR APPEAL

Applicant: USMC-Camp Lejeune	File Number: 2008 900	Date: 6/4/2008
Attached is: D		See Section below
<input type="checkbox"/> INITIAL PROFFERED PERMIT (Standard Permit or Letter of permission)		A
<input type="checkbox"/> PROFFERED PERMIT (Standard Permit or Letter of permission)		B
<input type="checkbox"/> PERMIT DENIAL		C
<input checked="" type="checkbox"/> APPROVED JURISDICTIONAL DETERMINATION		D
<input type="checkbox"/> PRELIMINARY JURISDICTIONAL DETERMINATION		E

SECTION I - The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found at <http://www.usace.army.mil/inet/functions/cw/cecwo/reg> or Corps regulations at 33 CFR Part 331.

A: INITIAL PROFFERED PERMIT: You may accept or object to the permit.

- **ACCEPT:** If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- **OBJECT:** If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the district engineer. Your objections must be received by the district engineer within 60 days of the date of this notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your letter, the district engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the district engineer will send you a proffered permit for your reconsideration, as indicated in Section B below.

B: PROFFERED PERMIT: You may accept or appeal the permit

- **ACCEPT:** If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- **APPEAL:** If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

C: PERMIT DENIAL: You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

D: APPROVED JURISDICTIONAL DETERMINATION: You may accept or appeal the approved JD or provide new information.

- **ACCEPT:** You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice, means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.
- **APPEAL:** If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the district engineer. This form must be received by the division engineer within 60 days of the date of this notice.

E: PRELIMINARY JURISDICTIONAL DETERMINATION: You do not need to respond to the Corps regarding the preliminary JD. The Preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also you may provide new information for further consideration by the Corps to reevaluate the JD.

SECTION II - REQUEST FOR APPEAL or OBJECTIONS TO AN INITIAL PROFFERED PERMIT

REASONS FOR APPEAL OR OBJECTIONS: (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record.)

ADDITIONAL INFORMATION: The appeal is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the record. However, you may provide additional information to clarify the location of information that is already in the administrative record.

POINT OF CONTACT FOR QUESTIONS OR INFORMATION:

If you have questions regarding this decision and/or the appeal process you may contact:
Project Manager
Brad Shaver
P.O. Box 1890
Wilmington, NC 28402-1890

If you only have questions regarding the appeal process you may also contact:
Mr. Mike Bell, Administrative Appeal Review Officer
CESAD-ET-CO-R
U.S. Army Corps of Engineers, South Atlantic Division
60 Forsyth Street, Room 9M15
Atlanta, Georgia 30303-8801

RIGHT OF ENTRY: Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15 day notice of any site investigation, and will have the opportunity to participate in all site investigations.

_____	Date:	Telephone number:
Signature of appellant or agent.		

For appeals on Initial Proffered Permits and approved Jurisdictional Determinations send this form to:

**District Engineer, Wilmington Regulatory Division, Attn: Brad Shaver, Project Manager,
Wilmington Regulatory Field Office, P.O. Box 1890, Wilmington, North Carolina 28402-1890**

For Permit denials and Proffered Permits send this form to:

**Division Engineer, Commander, U.S. Army Engineer Division, South Atlantic, Attn: Mr. Mike Bell,
Administrative Appeal Officer, CESAD-ET-CO-R, 60 Forsyth Street, Room 9M15, Atlanta,
Georgia 30303-8801**

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Appendix B Migratory Bird Species List

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Appendix B Bird Inventory

No.	Species, Status, Family	Habitat
1	COMMON LOON (<i>Gavia immer</i>) Status: NAWCP Family: Gaviidae	Breeds on clear freshwater lakes with rocky shorelines surrounded by forest; also on subarctic tundra lakes. Stages for migration on large lakes and rivers. Winters primarily in coastal marine areas near shore; also in large freshwater lakes.
2	RED THROATED LOON (<i>Gavia stellata</i>) Status: NAWCP Family: Gaviidae	Breeds in low tundra wetlands, bogs, lakes, and ponds in forests and arctic coasts. In migration, flocks stage on large lakes. Winters in relatively shallow, sheltered marine habitat along coasts and in Great Lakes.
3	PIED-B GREBE (<i>Podilymbus podiceps</i>) Status: NAWCP Family: Podicipedidae	Breeds on seasonal or permanent ponds or lakes with dense stands of emergent vegetation, bays and sloughs. Uses most types of wetlands or sheltered saltwater bays in winter.
4	HORNED GREBE (<i>Podiceps auritus</i>) Status: NAWCP Family: Podicipedidae	Breeds on small to moderate-sized, shallow freshwater ponds and marshes. Winters along coasts and on large bodies of water.
5	D-C CORMORANT (<i>Phalacrocorax auritus</i>) Status: NAWCP Family: Phalacrocoracidae	Found in diverse aquatic habitats, such as ponds, lakes, rivers, lagoons, estuaries, and open coastline; more widespread in winter.
6	LEAST BITTERN (<i>Ixobrychus exilis</i>) Status: NAWCP Family: Ardeidae	Freshwater or brackish marshes with tall, dense emergent vegetation including sedges and cattails.
7	GT. BLUE HERON (<i>Ardea herodias</i>) Status: NAWCP Family: Ardeidae	Found along marshes, swamps, rivers, lake edges, tidal flats, mangroves, and seacoasts. Usually nests in trees near water, but colonies can be found away from water.
8	GREAT EGRET (<i>Ardea alba</i>) Status: NAWCP Family: Ardeidae	Nests in colonies with other species, in shrubs and trees over water, and on islands. Feeds in variety of wetlands, including marshes, swamps, streams, rivers, ponds, lakes, tide flats, seashores, canals, and flooded fields.
9	SNOWY EGRET (<i>Egretta thula</i>) Status: NCWRC-SC, NAWCP Family: Ardeidae	Coastal areas, marshes, river valleys, lake edges.

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10	LITTLE BLUE HERON (<i>Egretta caerulea</i>) Status: NCWRC-SC, BCC, NAWCP Family: Ardeidae	Swamps, inland marshes, estuaries, rivers, ponds, lakes, and coastal areas.
11	TRICOLOR HERON (<i>Egretta tricolor</i>) Status: NCWRC-SC, NAWCP Family: Ardeidae	Marshes, shores, mudflats, and tidal creeks.
12	GREEN HERON (<i>Butorides virescens</i>) Status: NAWCP Family: Ardeidae	Breeds in swampy thickets. Forages in swamps, along creeks and streams, in marshes, ponds, lake edges, salt marshes, ponds and pastures. Winters mostly in coastal areas, especially mangrove swamps.
13	BLK-CRWN NGT-HER (<i>Nycticorax nycticorax</i>) Status: NAWCP Family: Ardeidae	Various wetland habitats, including salt, brackish, and freshwater marshes, swamps, streams, lakes, and agricultural fields.
14	WHITE IBIS (<i>Eudocimus albus</i>) Status: NAWCP Family: Threskiornithidae	Salt, brackish, and fresh marshes, rice fields, mangroves. May forage in any kind of shallow water, commonly flying to feed in fresh water even in coastal regions. Foraging sites include marshes, mudflats, flooded pastures, lake edges, mangrove lagoons, grassy fields. Nests in mangroves, trees in swamps, dense thickets, sometimes on ground on islands or in marshes.
15	GLOSSY IBIS (<i>Plegadis falcinellus</i>) Status: NCWRC-SC, NAWCP Family: Threskiornithidae	At edges of fresh, brackish, and salt water.
16	CANADA GOOSE (<i>Branta canadensis</i>) Status: NAWMP, GBBDC Family: Anatidae	Breeds in a broad range of habitats from low Arctic tundra to prairies and parklands, including lakes, meadows, golf courses, and city parks.
17	WOOD DUCK (<i>Aix sponsa</i>) Status: GBBDC Family: Anatidae	Found in forested wetlands, including along rivers, swamps, marshes, ponds, and lakes.
18	AM. BLACK DUCK (<i>Anas rubripes</i>) Status: NAWMP, GBBDC Family: Anatidae	Breeds in a variety of wetland habitats, from salt marshes to beaver ponds, river islands, and boreal bogs. Winters primarily in salt water along coasts, but in a variety of freshwater areas inland.

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19	MALLARD (<i>Anas platyrhynchos</i>) Status: NAWMP, GBBDC Family: Anatidae	Found in all wetland habitats, lakes, rivers, bays, and parks.
20	BLUE-WINGED TEAL (<i>Anas discors</i>) Status: NAWMP Family: Anatidae	Shallow ponds, small lakes and open grasslands, and seasonal and permanent wetlands ; winters on marshes and protected coastal areas.
21	LONG-TAILED DUCK (<i>Clangula hyemalis</i>) Status: NAWMP Family: Anatidae	Breeds in tundra lakes, ponds, streams, coastal inlets, and other arctic wetlands . Winters on open ocean or on large freshwater lakes.
22	NORTHERN PINTAIL (<i>Anas acuta</i>) Status: GBBDC, NAWMP Family: Anatidae	Nests in open country with shallow, seasonal wetlands or ponds and low vegetation. Winters in wide variety of shallow inland freshwater and intertidal habitats such as coastal bays, lakes, and agricultural fields.
23	AM. WIGEON (<i>Anas americana</i>) Status: GBBDC, NAWMP Family: Anatidae	Shallow freshwater wetlands, including ponds, lakes, marshes, and rivers. Winters on wet meadows, lakes, protected coastal waters.
24	LESSER SCAUP (<i>Aythya affinis</i>) Status: NAWMP, GBBDC Family: Anatidae	Summers on prairie lakes and marshes; winters on lakes, sheltered coastal areas, freshwater ponds.
25	RING-NECKED DUCK (<i>Aythya collaris</i>) Status: GBBDC Family: Anatidae	Summers on open lakes, marshes; winters on large lakes and coastal areas.
26	REDHEAD (<i>Aythya americana</i>) Status: NAWMP, GBBDC Family: Anatidae	Nests in marshes, open lakes, and bays; often winters on saltwater.
27	BLACK VULTURE (<i>Coragyps atratus</i>) Status: NCWRC-SC Family: Cathartidae	Open country, dumps, and urban areas.
28	BALD EAGLE (<i>Haliaeetus leucocephalus</i>) Status: Camp Lejeune's INRMP-T, NCWRC-T Family: Accipitridae	Breeds in forested areas near large bodies of water. Winters in coastal areas, along large rivers, and large unfrozen lakes.

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29	AM. SWAL. T. KITE (<i>Elanoides forficatus</i>) Status: BCC, PIF Family: Accipitridae	Forested regions near marshes or swamps, often bottomland, or riverine forest, also open pine woodland.
30	AMERICAN KESTREL (<i>Falco sparverius</i>) Status: BCC, PIF Family: Falconidae	Breeds in a variety of open habitats, including meadows, grasslands, deserts, parkland, agricultural fields, urban and suburban areas.
31	COOPERS HAWK (<i>Accipiter cooperii</i>) Status: NCWRC-SC Family: Accipitridae	Breeds in deciduous, mixed, coniferous forests and open woodland. Becoming more common in suburban and urban areas.
32	VIRGINA RAIL (<i>Rallus limicola</i>) Status: NAWCP Family: Rallidae	Freshwater marshes; occasionally inhabits salt marshes. Lives in dense emergent vegetation.
33	SORA (<i>Porzana carolina</i>) Status: NAWCP Family: Rallidae	Breeds in shallow salt and freshwater marshes with lots of emergent vegetation.
34	COMMON MOORHEN (<i>Gallinula chloropus</i>) Status: NAWCP Family: Rallidae	Freshwater or brackish marshes with tall emergent vegetation, ponds, canals, and rice fields.
35	AMERICAN COOT (<i>Fulica americana</i>) Status: NAWCP Family: Rallidae	Summers on marshy lakes; winters also along the coast.
36	SANDHILL CRANE (<i>Grus canadensis</i>) Status: NAWCP Family: Gruinae	Breeds in open marshes or bogs, and in wet grasslands and meadows. Feed in marshes and grain fields. Summers on praires and tundra; during winter, roosts on shallow water and feeds in agricultural fields.
37	PIPING PLOVER (<i>Charadrius melodus</i>) Status: NCWRC-T, USSCP, Camp Lejeune's INRMP-T Family: Charadriidae	Open sandy beaches, especially above tideline, and alkalai flats.
38	EASTERN KINGBIRD (<i>Tyrannus tyrannus</i>) Status: Family: Tyrannidae	Breeds in open environments with scattered perches, such as fields, orchards, shelterbelts, and forest edges. Uses urban parks and golf courses. Winters in river- and lake-edge habitats and canopy of tropical forests.

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39	LOGGERHEAD SHRIKE (<i>Lanius ludovicianus</i>) Status: NCWRC-SC Family: Laniidae	Open country with some shrubs and trees.
40	FISH CROW (<i>Corvus ossifragus</i>) Status: Family: Corvidae	Primarily coastal, along beaches and marshes into forests. Usually near water, but breeds in urban areas and farmland away from coast and large bodies of water. Common at dumps and in urban areas.
41	BROWN-HD.NTHTCH (<i>Sitta pusilla</i>) Status: BCC, PIF Family: Sittidae	Pine forests, especially in open, mature forests with periodic fires.
42	BROWN CREEPER (<i>Certhia americana</i>) Status: NCWRC-SC Family: Certhiidae	Coniferous and mixed coniferous-deciduous forests.
43	WOOD THRUSH (<i>Hylocichla mustelina</i>) Status: BCC, PIF Family: Turdidae	Breeds in the interior and edges of deciduous and mixed forests, in rural to urban areas, generally in cool, moist sites, often near water.
44	NORTH. PARULA W. (<i>Parula americana</i>) Status: BCC, PIF Family: Parulidae	Deciduous and coniferous forests, usually near water.
45	PRAIRIE WARBLER (<i>Dendroica discolor</i>) Status: BCC, PIF Family: Parulidae	Various shrubby habitats, including regenerating forests, dry brushy areas, open fields, old fields, young pine plantations, mangrove swamps, and Christmas-tree farms. Florida residents live in mangrove forests.
46	WORM-EATING WARB. (<i>Helmitheros vermivorum</i>) Status: PIF Family: Parulidae	Breeds in mature deciduous or mixed deciduous-coniferous forest with patches of dense understory, usually on steep hillside. Winters in tropical forests.
47	SWAINSON'S WARB. (<i>Limnothlypis swainsonii</i>) Status: BCC, PIF Family: Parulidae	Breeds in swamps and southern forests with thick undergrowth, especially canebrakes and floodplain forests in lowlands and rhododendron-mountain laurel in Appalachians. Winters in tropical scrub, evergreen, and gallery forests.
48	AM. OYSTERCATCHER (<i>Haematopus palliatus</i>) Status: USSCP, BCC Family: Haematopodidae	Coastal islands, beaches, and mudflats.

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49	BLK-NECKED STILT (<i>Himantopus mexicanus</i>) Status: USSCP (Hawaiian population) Family: Recurvirostridae	Shallow fresh and saltwater wetlands, including salt ponds, rice fields, shallow lagoons, mangrove swamps, ditches, ponds salt ponds, or fields.
50	SOLITARY SAND. (<i>Tringa solitaria</i>) Status: USSCP Family: Scolopacidae	Breeds in taiga or boreal bogs, nesting in trees in deserted songbird nests. In migration and winter found along freshwater ponds, stream edges, temporary pools, flooded ditches and fields, more commonly in wooded regions, less frequently on mudflats and open marshes.
51	WHIMBREL (<i>Numenius phaeopus</i>) Status: BCC, USSCP Family: Scolopacidae	Breeds in various tundra habitat, from wet lowlands to dry heath. In migration, frequents various coastal and inland habitats, including fields and beaches. Winters in tidal flats and shorelines, occasionally visiting inland habitats.
52	RED KNOT (<i>Calidris canutus</i>) Status: BCC, USSCP Family: Scolopacidae	Breeds in drier tundra areas, such as sparsely vegetated hillsides. Outside of breeding season, it is found primarily in intertidal, marine habitats, especially near coastal inlets, estuaries, and bays.
53	SEMIPLAM. SAND (<i>Calidris pusilla</i>) Status: BCC Family: Scolopacidae	Breeds on open tundra, generally near water. Winters and migrates along mudflats, sandy beaches, shores of lakes and ponds, and wet meadows.
54	WESTERN SAND. (<i>Calidris mauri</i>) Status: USSCP Family: Scolopacidae	Breeds in coastal sedge-dwarf tundra. Migrates and winters along mudflats, beaches, shores or lakes and ponds, and flooded fields.
55	LEAST SANDPIPER (<i>Calidris minutilla</i>) Status: Family: Scolopacidae	Breeds in mossy or wet grassy tundra and tundra near tree line, occasionally in drier areas with scattered scrubby bushes. Migrates and winters in wet meadows, mudflats, flooded fields, shores of pools and lakes, and, less frequently, sandy beaches.
56	WHT-RUMP. SAND. (<i>Calidris fuscicollis</i>) Status: Family: Scolopacidae	Breeds in mossy or grassy tundra near water. On migration and during winter found in grassy marshes, mudflats, sandy beaches, flooded fields, and shores of ponds and lakes.
57	DUNLIN (<i>Calidris alpina</i>) Status: USSCP (Alaska-East Asian and Alaska-Pacific Coast populations) Family: Scolopacidae	Breeds in wet coastal tundra. Winters along mudflats, estuaries, marshes, flooded fields, sandy beaches, and shores of lakes and ponds.
58	STILT SAND. (<i>Calidris himantopus</i>) Status: BCC Family: Scolopacidae	Breeds in sedge tundra near water, often near wooded borders of the taiga. On migration and in winter found along mudflats, flooded fields, shallow ponds and pools, and marshes.

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59	S-BILL.DOWITCHER (<i>Limnodromus griseus</i>) Status: BCC, USSCP Family: Scolopacidae	Breeds in muskegs of taiga to timberline and on bogs at northern limit of coniferous forests, and barely onto subarctic tundra. Winters on coastal mud flats and brackish lagoons. In migration prefers saltwater tidal flats, beaches, and salt marshes. Found in freshwater mud flats and flooded agricultural fields.
60	AM. WOODCOCK (<i>Scolopax minor</i>) Status: USSCP, GBBDC Family: Scolopacidae	Forests and thickets with openings, shrubby areas, meadows.
61	LAUGHING GULL (<i>Larus atricilla</i>) Status: NAWCP Family: Laridae	Nests in marshes, on beaches, and on islands along coast. Found along coasts, in estuaries, bays, and inland lakes. Feeds along the ocean, on rivers, at landfills, and in urban parks.
62	BONAPART'S GULL (<i>Larus philadelphia</i>) Status: NAWCP Family: Laridae	Summers in northern coniferous forests. Breeds around lakes and marshes in boreal forest. Winters along lakes, rivers, marshes, bays, beaches along coasts, and inland waterways.
63	RING-BILLED GULL (<i>Larus delawarensis</i>) Status: NAWCP Family: Laridae	Nests on islands. Found around fresh water, landfills, golf courses, farm fields, shopping areas, and coastal beaches.
64	HERRING GULL (<i>Larus argentatus</i>) Status: NAWCP Family: Laridae	Breeds on islands. Forages and winters at sea, along beaches and mudflats, lakes, rivers, fields, at dumps, and other areas where human-produced food is available. Rests in open areas, including parking lots, fields, and airports.
65	GRT.BLK-BK GULL (<i>Larus marinus</i>) *Staus: NAWCP Family: Laridae	Breeds on small islands, salt marshes, spoil islands, and barrier beaches. Most common throughout the year along coast. Travels far out to sea in winter.
66	CASPIAN TERN (<i>Sterna caspia</i>) Status: NAWCP Family: Laridae	Breeds in wide variety of habitats along water, such as salt marshes, barrier islands, dredge spoil islands, freshwater lake islands, and river islands. During migration and winter found along coastlines, large rivers and lakes. Roosts on islands and isolated spits.
67	SANDWICH TERN (<i>Sterna sandvicensis</i>) Status: NAWCP Family: Laridae	Seacoasts, bays, estuaries, and mudflats, occasionally ocean far from land.
68	COMMON TERN (<i>Sterna hirundo</i>) Status: NCWRC-SC, BCC, NAWCP Family:Laridae	Nests on islands, marshes, and sometimes beaches of lakes and ocean.

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69	FORSTER'S TERN (<i>Sterna forsteri</i>) Status: NAWCP Family: Laridae	Breeds in marshes, generally with lots of open water and large stands of island-like vegetation. Winters in marshes, coastal beaches, lakes, and rivers.
70	LEAST TERN (<i>Sterna antillarum</i>) Status: NCWRC-SC, E, BCC, NAWCP Family: Laridae	Seacoasts, beaches, bays, estuaries, lagoons, lakes and rivers, breeding on sandy or gravelly beaches and banks of rivers or lakes, rarely on flat rooftops of buildings.
71	BLACK TERN (<i>Chlidonias niger</i>) Status: BCC, NAWCP Family: Laridae	Summers on wet meadows, marshes, ponds; winters on coast and at sea.
72	CHUK-WIL'S-WIDOW (<i>Caprimulgus carolinensis</i>) Status: BCC Family: Caprimulgidae	Along edges of coniferous or mixed forests; often along rivers.
73	RED-COCKAD.WOOD (<i>Picoides borealis</i>) Status: NCWRC-E, PIF Family: Picidae	Open pine forest maintained by frequent fires, especially longleaf pine forests.
74	YEL-BELL. SAPSUCKER (<i>Sphyrapicus varius</i>) Status: NCWRC-SC, FSC Family: Picidae	Breeds in young forests and along streams, especially in aspen and birch; also in orchards. Winters in variety of forests, especially semiopen woods.
75	HOODED WARBLER (<i>Wilsonia citrina</i>) Status: PIF Family: Parulidae	Dense shrubbery in mature deciduous woodlands, especially near streams.
76	PAINTED BUNTING (<i>Passerina ciris</i>) Status: BCC, PIF Family: Cardinalidae	Open brushlands, thickets, and scattered woodlands. Along Atlantic coast, also in hedges and yards.
77	BACHMAN'S SPAR. (<i>Aimophila aestivalis</i>) Status: NCWRC--SC and FSC; BCC, PIF Family: Emberizidae	Open pine or oak woods, brushy fields. Found primarily in open pine woods with understory of wiregrass, palmettos, and weeds, and in oak-palmetto scrub, grasslands.

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78	SLTMRSH SHARP-TAIL SPAR. (<i>Ammodramus caudacutus</i>) Status: BCC Family: Emberizidae	Salt and fresh-water marshes, wet meadows, lakeshores.
79	NELSON'S SHARP-TAIL SPAR. (<i>Ammodramus nelsoni</i>) Status: BCC Family: Emberizidae	Freshwater marshes, lakeshores, and wet meadows in interior and brackish marshes along coast; in winter in salt and brackish marshes.
80	SWAMP SPARROW (<i>Melospiza georgiana</i>) Status: Family: Emberizidae	Various wetlands, including freshwater and tidal marshes, bogs, meadows, and swamps. Winters also in damp fields with tall grass.
81	ORCHARD ORIOLE (<i>Icterus spurius</i>) Status: BCC Family: Icteridae	Nests in gardens, orchards, open woods, wetlands, suburban areas, parks, along streams and lakes, and in large planted trees near houses. In winter found in tropical forests.

NAWMP: North American Waterfowl Management Plan

GBBDC: Game Birds Below Desired Condition (MBTA: Migratory Bird Treaty Act)

NCWRC: NC Wildlife Resources Commiss.

(FSC-Fed Sp Concern, SC-St Sp Concern, E-endangered, or T-threatened)

BCC: Birds of Conserv Concern

PIF: Partners in Flight

USSCP: U.S. Shorebird Conserv Plan

NAWCP: North American Waterbird Conserv Plan

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Appendix C Coastal Consistency Determination

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Mr. Stephen Rynas, Consistency Program Coordinator
North Carolina Department of Environment
and Natural Resources
Division of Coastal Management
151-B Hwy 24, Hestron Plaza II
Morehead City, North Carolina 28557-2518

Dear Mr. Rynas:

The United States Marine Corps (USMC) proposes to construct a series of upgrades and modifications to the existing wastewater collection and treatment system at Marine Corps Base (MCB) Camp Lejeune, North Carolina. The primary project components would involve parallel force main crossings at five locations and construction of a new sewer line from US 17 and through the K Range area and under the New River.

The proposed force mains that would be installed on land would be installed by trenching, while the proposed force mains that would be installed at each river/creek crossing would be installed by horizontal boring and would be placed approximately 10.7 to 12.2 meters (35 to 40 feet) below the river/creek substrate. The proposed action would disturb approximately 13 hectares (32 acres) of land, consisting primarily of forest and herbaceous vegetation as well as previously disturbed areas within existing sewer line rights-of-way.

The proposed improvements to the wastewater system would improve the efficiency of the existing wastewater collection and treatment system. Specifically, the improvements would provide a backup system in the event of breakage or damage to the existing force main, while maintaining sufficient wastewater disposal capacity to support existing operations on Base as well as the future needs of tenant commands, Base operations, and residents.

In accordance with Section 307 (c) (1) of the Federal Coastal Zone Management Act of 1972 as amended, MCB Camp Lejeune has determined that the proposed action is consistent with North Carolina's Coastal Management Program. The proposed activity on MCB Camp Lejeune complies with the enforceable policies of North Carolina's approved Coastal Management Program and will be conducted in a manner consistent with the program.

This determination is based on the review of the proposed project against the enforceable policies of the State's coastal program, which are principally found in Chapter 7 of Title 15A of North Carolina's Administrative Code. The details of the consistency determination have been provided through the submission of project location plans and supportive narrative provided as an attachment. MCB Camp Lejeune requests that the Division of Coastal Management concur with this consistency determination.

Please provide the consistency concurrence to Mr. Martin Korenek, Environmental Conservation Branch, Environmental Management Department.

Sincerely,

John Townson
Director, Environmental Management
By direction of
The Commanding Officer

Enclosure: 1. Consistency Determination for MCB Camp Lejeune, Wastewater System Improvements and Upgrades

1 **FEDERAL COASTAL CONSISTENCY DETERMINATION FOR PROPOSED WASTEWATER**
2 **SYSTEM MODIFICATIONS AND UPGRADES AT MARINE CORPS BASE CAMP LEJEUNE,**
3 **NORTH CAROLINA**

4 July 2008

5 The United States Marine Corps (USMC) has determined that implementing the proposed action is
6 consistent to the maximum extent practicable with the enforceable policies of North Carolina's approved
7 Coastal Management Program.

8 **1.0 FEDERAL AGENCY ACTION**

9 The USMC proposes to construct a series of upgrades and modifications to the existing wastewater
10 collection and treatment system at Marine Corps Base (MCB) Camp Lejeune, North Carolina (see Figure
11 1a). This project would provide parallel force main river crossings at the New River, Scales Creek,
12 Northeast Creek, and Wallace Creek; construct a new lift station near Parachute Tower Road with a
13 connection to the existing wastewater line; and replace an existing force main near Gonzales Boulevard at
14 the Wastewater Treatment Plant (WWTP) at French Creek. Collectively, these project components are
15 referred to as the wastewater system modifications. Additionally, the USMC proposes to construct a new
16 force main from United States Route 17 (US 17) along Verona Loop Road through the K Range area,
17 under the New River and connecting to an existing force main that ultimately discharges to the WWTP.
18 This new force main would be used to reroute wastewater flow from the Marine Corps Air Station
19 (MCAS) New River area as well as the area south of Verona Loop to the WWTP. The USMC also
20 proposes to construct two new pump stations; one at the newly established Marine Special Operations
21 Command (MARSOC) complex and the other near Verona Loop Road. Minor internal upgrades would
22 be made to two existing pump stations (RR150 and SR61) located near the MARSOC complex.
23 Collectively, these project components are referred to as the proposed MARSOC sewer line upgrades (see
24 Figure 1b).

25 The land based portion of the proposed force mains would be installed by trenching at a depth of
26 approximately 0.9 meters (m) (3.0 feet [ft]), while the proposed force mains that would be installed at
27 each river/creek crossing would be installed by horizontal boring and would be placed approximately 10.7
28 to 12.2 m (35 to 40 ft) below the creek/river substrate. A staging area for drilling equipment would be
29 required on both sides of the waterways and would be located at least 30 m (100 ft) from the shore. The
30 proposed action would disturb a total of approximately 13 hectares (ha) (32 acres [ac]) of land, including
31 forested and herbaceous vegetation, as well as previously disturbed areas within existing sewer line
32 rights-of-way.

33 At the New River crossing, approximately 396 m (1,300 ft) of 41 centimeter (cm) (16 inch [in]) diameter
34 force main would be installed. At the Scales Creek crossing, approximately 146 m (480 ft) of 46 cm (18
35 in) diameter force main would be installed. At the Northeast Creek crossing, approximately 914 m (3,000
36 ft) of 61 cm (24 in) diameter force main would be installed. At the Wallace Creek crossing,
37 approximately 500 m (1,640 ft) of 61 cm (24 in) diameter force sewer main would be installed.

38 Onshore at MCB Camp Lejeune, the new MARSOC sewer line would be placed along the north shoulder
39 of Verona Loop Road extending through the K Range area, under the New River and connecting to the
40 WWTP at French Creek. A total of approximately 14,638 m (48,025 ft) of 41 cm (16 in) diameter force
41 main would be installed. Except for the New River crossing, the new sewer line would be installed by
42 trenching at a depth of approximately 0.9 m (3 ft). The New River crossing would be approximately 1,548
43 m (5,078 ft). The force main would continue on the opposite side of Hospital Point mostly along Julian
44 C. Smith Road for approximately 2,143 m (7,030 ft) until connecting with the existing force main. The

1 new pump stations would be constructed near Verona Loop Road and within the MARSOC complex.
2 The new pump station at Verona Loop would be approximately 3,159 square m (34,000 square ft); and
3 the pump station within MARSOC would be approximately 84 square m (900 square ft). Minor internal
4 upgrades would be made to existing pump stations RR150 and SR61, and no new disturbance would be
5 expected.

6 Several components of the proposed action would occur within coastal waters, while other components
7 would occur within “inland” areas. The New River, Scales Creek, and Northeast Creek are categorized as
8 coastal waters, while Wallace Creek is categorized as inland water. The proposed action would also
9 occur in the vicinity of waters that are classified as primary nursery areas and special secondary nursery
10 areas.

11 The purpose of the wastewater system modifications component of the proposed action is to improve the
12 efficiency of the existing wastewater collection and treatment system at MCB Camp Lejeune by
13 providing a backup system in the event of breakage or damage to the existing force main. The purpose of
14 the proposed MARSOC sewer line upgrades is to provide an alternate route to transfer wastewater from
15 the MARSOC complex and areas south of Verona Loop Road as well as to reroute wastewater from the
16 MCAS New River area to the WWTP. Collectively, the project components are necessary to support
17 existing Base operations and to meet the future needs of tenant commands, Base operations, and
18 residents.

19 **2.0 NORTH CAROLINA COASTAL AREA MANAGEMENT ACT**

20 In 1972, Congress passed the Coastal Zone Management Act, which encouraged states to keep the coasts
21 healthy by establishing programs to manage, protect, and promote the country’s fragile coastal resources.
22 Two years later, the North Carolina General Assembly passed the landmark Coastal Area Management
23 Act (CAMA). CAMA established the Coastal Resources Commission, required local land use planning
24 in 20 coastal counties, and provided for a program for regulating development. The North Carolina
25 Coastal Management Program was federally approved in 1978 by the National Oceanic and Atmospheric
26 Administration.

27 **2.1 AREAS OF ENVIRONMENTAL CONCERN**

28 North Carolina’s coastal zone includes the 20 counties that are adjacent to, adjoining, intersected by or
29 bounded by the Atlantic Ocean or any coastal sound, including Onslow County. There are two tiers
30 within this boundary. The first tier is comprised of Areas of Environmental Concern (AECs) designated
31 by the state. AECs have more thorough regulatory controls and include coastal wetlands, coastal
32 estuarine waters, public trust areas, coastal estuarine shorelines, ocean beaches, frontal dunes, ocean
33 erosion areas, inlet lands, small surface water supply watersheds, public water supply well fields, and
34 fragile natural resource areas. The second tier includes land uses with the potential to affect coastal
35 waters, even though they are not defined as AECs. The coastal zone extends seaward to the three nautical
36 mile territorial sea.

37 An AEC is an area of natural importance and its classification protects the area from uncontrolled
38 development. AECs include almost all coastal waters and about three percent of the land in the 20 coastal
39 counties. The four categories of AECs are:

- 40 • The Estuarine and Ocean System, which includes public trust areas, estuarine coastal waters,
41 coastal shorelines, and coastal wetlands;

- 1 • The Ocean Hazard System, which includes components of barrier island systems;
- 2 • Public Water Supplies, which include certain small surface water supply watersheds and public
- 3 water supply well fields; and
- 4 • Natural and Cultural Resource Areas, which include coastal complex natural areas; areas
- 5 providing habitat for federal or state designated rare, threatened or endangered species; unique
- 6 coastal geologic formations; or significant coastal archaeological or historic resources.

7 MCB Camp Lejeune includes coastal resources designated as AECs, including estuarine coastal waters,
8 coastal shorelines, and coastal wetlands of the Estuarine and Ocean System AEC, as well as habitat for
9 federal or state designated species and archaeological or historic resources of the Natural and Cultural
10 Resource Area AEC (see Figures 1a and 1b). The New River, Northeast Creek, and Scales Creek are
11 designated as coastal estuarine water and Wallace Creek is designated as inland water. Furthermore, all
12 land located within 23 m (75 ft) of the normal high water level of coastal waters and within 9 m (30 ft) of
13 the normal high water level of inland water is also considered to be coastal shoreline within the Estuarine
14 and Ocean System AEC. Horizontal boring would take place underneath the coastal shoreline AEC and
15 staging areas for the drilling equipment would be situated outside of these AECs (see Figures 2a and 2b).
16 A portion of the MARSOC sewer line is parallel to the border of a coastal shoreline but is not located
17 within it (see Figure 2b). Coastal wetlands are located along much of MCB Camp Lejeune's estuarine
18 waters including within the vicinity of most of the proposed project areas. Several wetland system types
19 are located near the proposed action areas, including estuarine, palustrine, and riverine. Habitat that
20 supports threatened and endangered species are considered a coastal resource under the Natural and
21 Cultural Resource Area AEC. Installation of the proposed MARSOC sewer line would result in the loss
22 of approximately 0.28 ha (0.7 ac) of red-cockaded woodpecker foraging habitat within an active cluster
23 (site #31); however, MCB Camp Lejeune does not expect this loss to jeopardize the Base's ability to
24 maintain sufficient foraging habitat (see Figure 1b). The proposed MARSOC sewer line would also
25 result in a loss of approximately 1.4 ha (3.5 ac) of area designated by MCB Camp Lejeune as future red-
26 cockaded woodpecker habitat, but the area currently does not support any red-cockaded woodpeckers.

27 Other coastal resources not designated as AECs in the vicinity of the project area include primary nursery
28 areas and special secondary nursery areas. Horizontal drilling would take place in the upper New River,
29 Scales Creek, and Northeast Creek which are considered primary nursery areas and in the lower New
30 River which is considered a special secondary nursery area.

31 Following is an analysis of the applicability of policies designed to protect AECs and the project's
32 consistency with those policies, when applicable. Figures 1a and 1b show the location of the
33 proposed action relative to the AECs in the project vicinity.

34 **2.1.1 15A NCAC 07H.0200 (Estuarine and Ocean Systems)**

35 15A NCAC 07H .0205 defines and establishes management objectives for coastal wetlands "to conserve
36 and manage coastal wetlands so as to safeguard and perpetuate their biological, social, and economic and
37 aesthetic values; to coordinate and establish a management system capable of conserving and utilizing
38 coastal wetlands as a natural resource essential to the functioning of the entire estuarine system." While
39 installing the new force mains, wetlands would be avoided to the maximum extent practicable by using
40 horizontal drilling techniques beginning at a distance of at least 30 m (100 ft) from the shoreline, and no
41 construction would occur within wetlands. Temporary staging areas for construction and drilling
42 equipment at each crossing location entry and exit point would be required, but would not be located
43 within wetlands.

1 15A NCAC 07H .0206 defines and establishes management objectives for estuarine waters in order “to
2 conserve and manage the important features of estuarine waters so as to safeguard and perpetuate their
3 biological, social, aesthetic, and economic values; to coordinate and establish a management system
4 capable of conserving and utilizing estuarine waters so as to maximize their benefits to man and the
5 estuarine and ocean system.” Some of the proposed project areas are located directly within an estuarine
6 system. The project would install new force mains under the upper New River, Scales Creek, and
7 Northeast Creek which are considered primary fishery nursery areas for estuarine habitats and under the
8 lower New River which is considered special secondary fishery nursery area (see Figure 1a and 2a). In
9 addition, approximately 137 linear m (448 linear feet) of tributaries are located near the proposed
10 Northeast Creek crossing and proposed sewer line extension associated with the new Parachute Tower
11 Road lift station. As described further in sections 2.2.7, the proposed action would not significantly
12 impact coastal water quality. Stormwater management plans, including the use of best management
13 practices during landside construction, would control surface water runoff into the adjacent waterways.
14 Therefore, the proposed action is not expected to cause any adverse runoff that might enter estuarine
15 waters.

16 15A NCAC 07H .0207 defines and establishes management objectives for public trust areas, in order “to
17 protect public rights for navigation, recreation, and to conserve and manage public trust areas in a manner
18 that safeguards and perpetuates their biological, economic, and aesthetic values.” Public rights for
19 navigation and recreation of public trust waters would be protected as no loss of public trust waters would
20 result from this proposed project. The proposed action would not cause a change in the public’s current
21 ability to access coastal resources in Onslow County.

22 **2.1.2 15A NCAC 07H.0300 (Ocean Hazard Areas)**

23 15A NCAC 07H .0303 defines and establishes management objectives for ocean hazard areas “to
24 eliminate unreasonable danger to life and property and achieve a balance between the financial, safety,
25 and social factors that are involved in hazard area development.” The proposed project areas are not
26 within an ocean hazard area; therefore, policies on ocean hazard areas are not applicable.

27 **2.1.3 15A NCAC 07H.0400 (Public Water Supplies)**

28 15A NCAC 07H .0403 defines and establishes management objectives for public water supplies. The
29 objective in regulating development within critical water supply areas is the “protection and preservation
30 of public water supply well fields and A-II streams and to coordinate and establish a management system
31 capable of maintaining public water supplies so as to perpetuate their values to the public health, safety,
32 and welfare.” There are no public water supply wells, well fields or small surface water supply
33 watersheds within the project area; therefore policies designed to protect public water supplies are not
34 applicable.

35 **2.1.4 15A NCAC 07H.0500 (Natural and Cultural Resource Areas)**

36 15A NCAC 07H .0501 defines fragile coastal natural and cultural resource areas as “areas containing
37 environmental, natural, or cultural resources of more than local significance in which uncontrolled or
38 incompatible development could result in major or irreversible damage to natural systems or cultural
39 resources, scientific, educational, or associative values, or aesthetic qualities.” The AECs within this
40 category are coastal complex natural areas, coastal areas that sustain remnant species, unique coastal
41 geologic formations, significant coastal architectural resources, and significant coastal historic
42 architectural resources.

1 15A NCAC 07H .0505 defines and establishes management objectives “to protect unique habitat
2 conditions that are necessary to the continued survival of threatened and endangered native plants and
3 animals and to minimize land use impacts that might jeopardize these conditions.” Although installation
4 of the proposed MARSOC sewer line would result in the loss of approximately 0.28 ha (0.7 ac) of red-
5 cockaded woodpecker foraging habitat and 1.4 ha (3.5 ac) of designated future red-cockaded woodpecker
6 habitat, MCB Camp Lejeune does not expect this loss to jeopardize the Base’s ability to maintain
7 sufficient foraging habitat. MCB Camp Lejeune would obtain concurrence from the United States Fish
8 and Wildlife Service that the proposed action would not adversely affect any threatened and endangered
9 species.

10 15A NCAC 07H .0506 defines and establishes management objectives “to protect the features of a
11 designated coastal complex natural area in order to safeguard its biological relationships, educational and
12 scientific values, and aesthetic qualities.” MCB Camp Lejeune has two designated natural areas that have
13 been registered by the North Carolina Natural Heritage Program: the CF Russell Longleaf Pine Natural
14 Area and the Wallace Creek Natural Area. One of the proposed parallel force main crossings is located at
15 Wallace Creek; however the crossing is located downstream of the Wallace Creek Natural Area. As
16 stated in Section 2.2.7, stormwater management plans, including the use of best management practices
17 during drilling, would control surface water runoff into the creek. No adverse impacts to the Wallace
18 Creek Natural Area are anticipated from implementation of the proposed action.

19 15A NCAC 07H .0507 defines and establishes management objectives “to preserve unique resources of
20 more than local significance that function as key physical components of natural systems, as important
21 scientific and educational sites, or as valuable scenic resource.” This policy is not applicable as no unique
22 geological formations are designated on MCB Camp Lejeune.

23 15A NCAC 07H .0508 defines and establishes use standards for development in designated fragile coastal
24 natural or cultural areas. The proposed project areas are not within a designated fragile coastal natural or
25 cultural resource area. Implementing the proposed action would not cause irreversible damage to natural
26 systems or cultural resources, scientific, educational, or associative values, or aesthetic qualities;
27 therefore, this policy is not applicable.

28 15A NCAC 07H .0509 defines and establishes management objectives “to conserve coastal
29 archaeological resources of more than local significance to history or prehistory that constitute important
30 scientific sites, or are valuable educational, associative, or aesthetic resources.” Based on predictive
31 models and previous field surveys, MCB Camp Lejeune, in consultation with the North Carolina State
32 Historic Preservation Office, has identified all the areas within the installation boundary with high
33 probability soils within the proposed project areas have been conducted. No archaeological sites that are
34 eligible or potentially eligible for listing in the National Register of Historic Places have been identified in
35 the project areas. MCB Camp Lejeune would obtain concurrence from the North Carolina State Historic
36 Preservation Office that the proposed action has no potential to adversely affect historic properties.
37 Therefore, no adverse effects are anticipated to archaeological resources at MCB Camp Lejeune as a
38 result of implementing the proposed action.

39 15A NCAC 07H .0510 defines and establishes management objectives “to conserve coastal historic
40 architectural resources of more than local significance which are valuable educational, scientific,
41 associative or aesthetic resources.” A portion of the proposed MARSOC sewer line is located in the
42 southeast corner of the Naval Hospital/Surgeon’s Row Historic District, which has been determined
43 eligible for listing in the National Register of Historic Places. The district consists of Building H-1,
44 formerly the Naval Hospital, and several residence quarters along with their associated carports. The
45 proposed construction would require the excavation of a sewer line trench within the grassy lawn of
46 Building H-1; however no alterations to Building H-1 would occur as a result of the proposed action.

1 MCB Camp Lejeune would obtain concurrence from the North Carolina State Historic Preservation
2 Office that the proposed action has no potential to adversely affect historic properties; therefore, no
3 adverse effects are anticipated to archaeological resources at MCB Camp Lejeune as a result of
4 implementing the proposed action.

5 As the proposed action would not impact fragile coastal natural or cultural resources, the proposed action
6 would be consistent with applicable policies designed to protect natural and cultural resource areas of
7 environmental concern.

8 **2.2 General Policy Guidelines**

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

- 10 • Shoreline erosion policies;
- 11 • Shorefront access policies;
- 12 • Coastal energy policies;
- 13 • Post-disaster policies;
- 14 • Floating structure policies;
- 15 • Mitigation policies;
- 16 • Coastal water quality policies;
- 17 • Policies on use of coastal airspace;
- 18 • Policies on water- and wetland-based target areas for military training areas;
- 19 • Policies on beneficial use and availability of materials resulting from the excavation or
20 maintenance of navigational channels; and
- 21 • Policies on ocean mining.

22 The purpose of these rules is to establish generally applicable objectives and policies to be followed in the
23 public and private use of land and water areas within the coastal area of North Carolina. The following is
24 an analysis of the applicability of the General Policy Guidelines to the proposed project and the project's
25 consistency with those policies, when applicable.

26 **2.2.1 15A NCAC 07M .0200 (Shoreline Erosion Policies)**

27 The proposed action would involve horizontal boring of new force mains under Northeast Creek, Wallace
28 Creek, Scales Creek, and New River (two locations). Temporary staging areas for drilling and
29 construction equipment at each river/creek crossing would range in size from approximately 0.7 to 1.05
30 ha (1.73 to 2.6 ac). The staging areas would be located at least 30 m (100 ft) from the shorelines. An
31 erosion and sediment control plan would be implemented during construction activities. Location of the
32 staging area away from the immediate shoreline would be consistent with the policy that directs
33 development in the vicinity of coastal shorelines to be conducted in a manner that avoids loss of life,
34 property, and amenities.

35 **2.2.2 15A NCAC 07M .0300 (Shorefront Access Policies)**

36 MCB Camp Lejeune is a military base where the public has not historically had beach access or
37 uncontrolled water access (boat launches). Additionally the proposed action does not involve any
38 activities which would change the public's ability to access the beach or water; therefore, these policies
39 are not applicable.

1 **2.2.3 15A NCAC 07M .0400 (Coastal Energy Policies)**

2 The proposed action does not involve the development of any major energy facilities; therefore, these
3 policies are not applicable.

4 **2.2.4 15A NCAC 07M .0500 (Post-disaster Policies)**

5 These policies require that all state agencies prepare for disasters and to coordinate their activities in the
6 event of a coastal disaster. MCB Camp Lejeune Base Order P3440.6E Destructive Weather Manual
7 addresses how MCB Camp Lejeune would prepare for and respond to a potential disaster which includes:
8 assigning responsibilities, and providing guidance by which the Department of Defense responds to all
9 hazards in accordance with 42 United States Code (U.S.C.) 5121, the Civil Defense Act of 1950 50
10 U.S.C., National civil defense policy, and federal and state civil defense programs in cooperation with the
11 Federal Emergency Management Agency; prescribing the basic warnings and conditions of readiness for
12 destructive weather, and providing the capstone doctrine for United States Army and USMC domestic
13 support operations, and provides general information for planning and conducting such operations, and
14 identifies relationships between federal, state, and local organizations, and military services. However,
15 these policies are not applicable as no pre-disaster planning or post-disaster recovery would be needed for
16 the proposed action.

17 **2.2.5 15A NCAC 07M .0600 (Floating Structure Policies)**

18 No floating structures are included in the proposed action; therefore, these policies are not applicable.

19 **2.2.6 15A NCAC 07M .0700 (Mitigation Policy)**

20 North Carolina's mitigation policy states that, "Coastal ecosystems shall be protected and maintained as
21 complete and functional systems by mitigating the adverse impacts of development as much as feasible,
22 by enhancing, creating, or restoring areas with the goal of improving or maintaining ecosystem function
23 and areal proportion." Impacts would also be minimized through 1) proper site planning, 2) site selection
24 and 3) compliance with development standards.

25 There would be no specific mitigation for upland forest habitat and wildlife losses due to development of
26 this site. The proposed action would impact approximately 13 ha (32 ac) of forest and herbaceous
27 species. The loss of upland forest habitat on this site is recognized as a locally important impact.
28 However, in an ecosystem context, MCB Camp Lejeune is actively working to maintain complete and
29 functional ecosystems within the state's coastal zone. MCB Camp Lejeune's participation with the state
30 of North Carolina, and other conservation partners in a long-term encroachment partnering strategy has
31 resulted in preservation of 1,546 ha (3,820 ac) of coastal lands identified by state, federal, and non-
32 governmental partners as having significant or unique natural resources. The USMC has contributed
33 over \$10 million dollars to restrict development and conserve wildlife habitat on large land tracts adjacent
34 to and in the vicinity of MCB Camp Lejeune in support of regional conservation initiatives.

35 The adverse impacts to wildlife would not be expected to affect the stability of wildlife populations on
36 Base or migratory bird populations. Horizontal drilling would take place in the upper New River, Scales
37 Creek, and Northeast Creek which are considered primary nursery areas and in the lower New River
38 which is considered a special secondary nursery area. These waters are essential to North Carolina's
39 commercial and recreational fishing industries. Since horizontal drilling would occur approximately 10.7
40 to 12.2 m (35 to 40 ft) below the river/creek substrate, estuarine species or habitats occurring in the river
41 or creek substrate or water column would not be affected. In addition, the entry and exit points as well as
42 the staging area for construction equipment for horizontal boring would be located at least 30 m (100 ft)

1 from the shoreline to minimize potential impacts to coastal wetlands that may provide habitat for a variety
2 of vertebrates and invertebrates. Installation of the proposed MARSOC sewer line would result in the loss
3 of approximately 0.28 ha (0.7 ac) of red-cockaded woodpecker foraging habitat and 1.4 ha (3.5 ac) of
4 designated future red-cockaded woodpecker foraging habitat; however, MCB Camp Lejeune does not
5 expect this loss to jeopardize the Base's ability to maintain sufficient foraging habitat. MCB Camp
6 Lejeune would obtain concurrence from the United States Fish and Wildlife Service that the proposed
7 action would not adversely affect any threatened and endangered species. State protected species may
8 also occur in the proposed project areas and less mobile species would experience direct mortality. MCB
9 Camp Lejeune would also obtain concurrence from the North Carolina Natural Heritage Program that the
10 proposed action is not likely to adversely affect any natural heritage areas on Base.

11 Based on the conceptual plan for the layout of wastewater system modifications and upgrades, the
12 proposed action would avoid construction within wetlands and water resources. Wetlands and streams in
13 the vicinity of the proposed project areas would be protected from direct and indirect impacts. These
14 areas would remain undeveloped and be managed in accordance with the installation's state and federal
15 agency-approved Integrated Natural Resources Management Plan. As stated in Section 2.2.7, stormwater
16 runoff would be managed and controlled, thereby preventing siltation of nearby wetlands and streams.

17 Permits and approvals for the proposed action include:

- 18 • Erosion and Sedimentation Control Plan approval by North Carolina Department of the
19 Environment and Natural Resources, Division of Land Resources, Land Quality Section;
- 20 • Stormwater Management Permit from the North Carolina Department of Environment
21 and Natural Resources, Division of Water Quality;
- 22 • Non-Discharge Sewer Extension Permit from the North Carolina Department of
23 Environment and Natural Resources, Division of Water Quality, Non-Discharge Branch;
- 24 • Clean Air Act, Title V Construction and Operation Permit from the North Carolina
25 Department of Environment and Natural Resources, Division of Air Quality; and
- 26 • Concurrence from the North Carolina State Historic Preservation Officer (NC SHPO) on
27 cultural resources effects findings.

28 If, during construction and site grading, any site of potential historical or archaeological significance is
29 encountered, the installation commander would be notified. The unit commander would order actions in
30 the vicinity halted and the area marked. The unit commander would immediately notify the Base
31 archaeologist.

32 Best management practices would be used to avoid and minimize the release of sediments into
33 stormwater. Mitigation plans would include both short-term (construction phase) and long-term (project
34 life) features to meet the requirements of the proposed action's state approved Erosion and Sedimentation
35 Control Plan. In addition, construction effects would be controlled using standard management practices
36 such as routine sweeping and wetting of exposed soils to reduce air emissions.

37 MCB Camp Lejeune, Base Order P5090.2A, Chapter 11, requires the use of native plants in landscaping.
38 Native plant species would be used for landscaping to the extent practicable. No non-native, invasive
39 vegetation would be used in any temporary or permanent landscaping.

40 With the above mitigation and minimization measures in place, the proposed action would be consistent
41 with this policy.

42
43

1 **2.2.7 15A NCAC 07M .0800 (Coastal Water Quality Policies)**

2 The proposed action would not result in adverse impacts to coastal water quality; however, installation of
3 the new force mains crossing the New River, Scales Creek, Northeast Creek, and Wallace Creek has the
4 potential to cause minimal, short-term impacts to water quality. The force mains would be installed using
5 horizontal drilling techniques beginning at least 30 m (100 ft) from the river/creek shore to minimize
6 potential impacts to water quality. Disturbed bottom sediments can cause increased turbidity, which
7 affects water quality. Since horizontal drilling would occur approximately 10.7 to 12.2 m (35 to 40 ft)
8 below the river/creek substrate, the river or creek substrate or water column would not be affected.
9 Approximately 137 linear m (448 linear feet) of tributaries are present near the proposed Northeast Creek
10 crossing and proposed sewer line extension associated with the new Parachute Tower Road lift station but
11 no construction would occur within these areas.

12 The proposed construction activities that would occur on land would not result in significant impacts to
13 coastal water quality. Stormwater runoff would be managed and controlled in accordance with the
14 proposed action's state approved Erosion and Sedimentation Control Plan, state issued Stormwater
15 Management Permit, and effective MCB Camp Lejeune's National Pollutant Discharge Elimination
16 System permit requirements. MCB Camp Lejeune is currently operating under a National Pollutant
17 Discharge Elimination Phase I permit. A National Pollutant Discharge Elimination System Phase II
18 permit is anticipated to be issued within 2008.

19 Best management practices be used to avoid contamination of stormwater and mitigate for both short-
20 term (construction phase) and long-term (project life) impacts. Short-term practices would include
21 erosion and sediment controls (ESC). Prior to construction, approval would be obtained from the
22 NCDENR on all plans. ESC devices could include sediment fences, silt fences, dust suppressors, and
23 temporary seeding and matting. Long-term measures would include planting grass on bare areas,
24 landscaping in select areas with native species to the maximum extent practicable, and building
25 stormwater retention ponds. The vegetation and structural stormwater control devices would aid in the
26 control of stormwater runoff and to assure effective and continuous control of erosion and pollution.
27 Impacts to water quality would be further avoided by adherence to standard procedures governing
28 hazardous materials during the construction phase and for the duration of the project.

29 All of the proposed new force mains would be constructed from high density polyethylene pipe. This
30 type of piping is made of polyethylene which has been in use as a piping material for over 35 years.
31 Polyethylene is highly resistant to corrosive, abrasive, or chemical applications. The pipes are heat fused
32 allowing for a permanent leak-proof joint. For these reasons, the likelihood of breakage occurring to any
33 of the force mains that would be installed is minimal; therefore there is minimal risk of contamination of
34 any waterway as a result of implementing the proposed action.

35 Implementation of the proposed action would be consistent with coastal water quality policies.

36 **2.2.8 15A NCAC 07M .0900 (Policies on Use of Coastal Airspace)**

37 No use of coastal airspace would be part of the proposed action; therefore, these policies are not
38 applicable.

39 **2.2.9 15A NCAC 07M .1000 (Policies on Water- and Wetland-Based Target Areas for Military**
40 **Training Areas)**

41 No water- or wetland-based target areas or military training areas would be part of the proposed action;
42 therefore, these policies are not applicable.

1 **2.2.10 15A NCAC 07M .1100 (Policies on Beneficial Use and Availability of Materials Resulting**
2 **From the Excavation or Maintenance of Navigational Channels)**

3 Excavation or maintenance of navigational channels would not be taking place; however, the new force
4 mains would be installed using horizontal drilling technology, and would be placed approximately 10.7 to
5 12.2 m (35 to 40 ft) below the creek/river substrate. Approximately 46 to 54 cubic meters (60 to 70 cubic
6 yards) of sediment would be generated from these activities. The disposal of this material cannot harm
7 coastal resources and should be used in a beneficial way wherever practicable. It is assumed the drill
8 material would not be of beach-quality sand and would be disposed of properly in the Base landfill on
9 Piney Green Road in accordance with regulations. Therefore, implementation of the proposed action
10 would be consistent with excavation policies.

11 **2.2.11 15A NCAC 07M .1200 (Policies on Ocean Mining)**

12 No ocean mining would be part of the proposed action; therefore, these policies are not applicable.

1 **3.0 ONSLOW COUNTY COASTAL MANAGEMENT POLICIES**

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

8 Onslow County’s *Citizens’ Comprehensive Plan for Onslow County*, adopted in 2003, addresses land use
 9 planning in relation to the CAMA. Table 1 contains a list of Onslow County’s comprehensive plan
 10 policies and their applicability to this project.

11 **Table 1: Onslow County Comprehensive Plan Policies**

Land Use and Development Policies	Applicability
Preferred Development Pattern	Not Applicable
Housing and Neighborhood Development	Not Applicable
Commercial and Office Development	Not Applicable
Industrial Development	Not Applicable
Agricultural and Rural Area Preservation	Not Applicable
Waterfront and Waterborne Development	Not Applicable
Infrastructure and Service Policies	Applicability
Transportation	Consistent
Water and Sewer Services	Consistent
Stormwater Management, Drainage and Flooding	Consistent
Solid Waste Management	Consistent
Natural Resources Management and Use Policies	Applicability
Areas of Environmental Concern	Consistent
Estuarine and Ocean Resources	Consistent
Ocean Hazard System Areas of Environmental Concern	Not Applicable
Public Water Supply Areas of Environmental Concern	Not Applicable
Natural and Cultural Resource Areas	Consistent
Other Important Natural Resource Areas	Consistent
Water Resources, Surface and Ground	Consistent
Wetlands and Hydric Soils	Consistent
Economy and Culture Policies	Applicability
Economic Development	Not Applicable
The Military and the Community	Consistent
Educational Facilities	Not Applicable
Parks and Recreation Facilities	Not Applicable
Cultural History, Historic Preservation/Revitalization	Not Applicable
Community Appearance	Not Applicable

1 **4.0 CONCLUSION**

2 In conclusion, after careful consideration of the proposed action, the USMC has determined that
3 implementing the proposed action in conjunction with proposed mitigation would be fully consistent with
4 the relevant enforceable policies of North Carolina's Coastal Management Program.

Wastewater System Improvements Coastal Consistency Determination

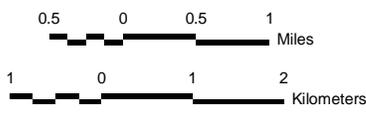
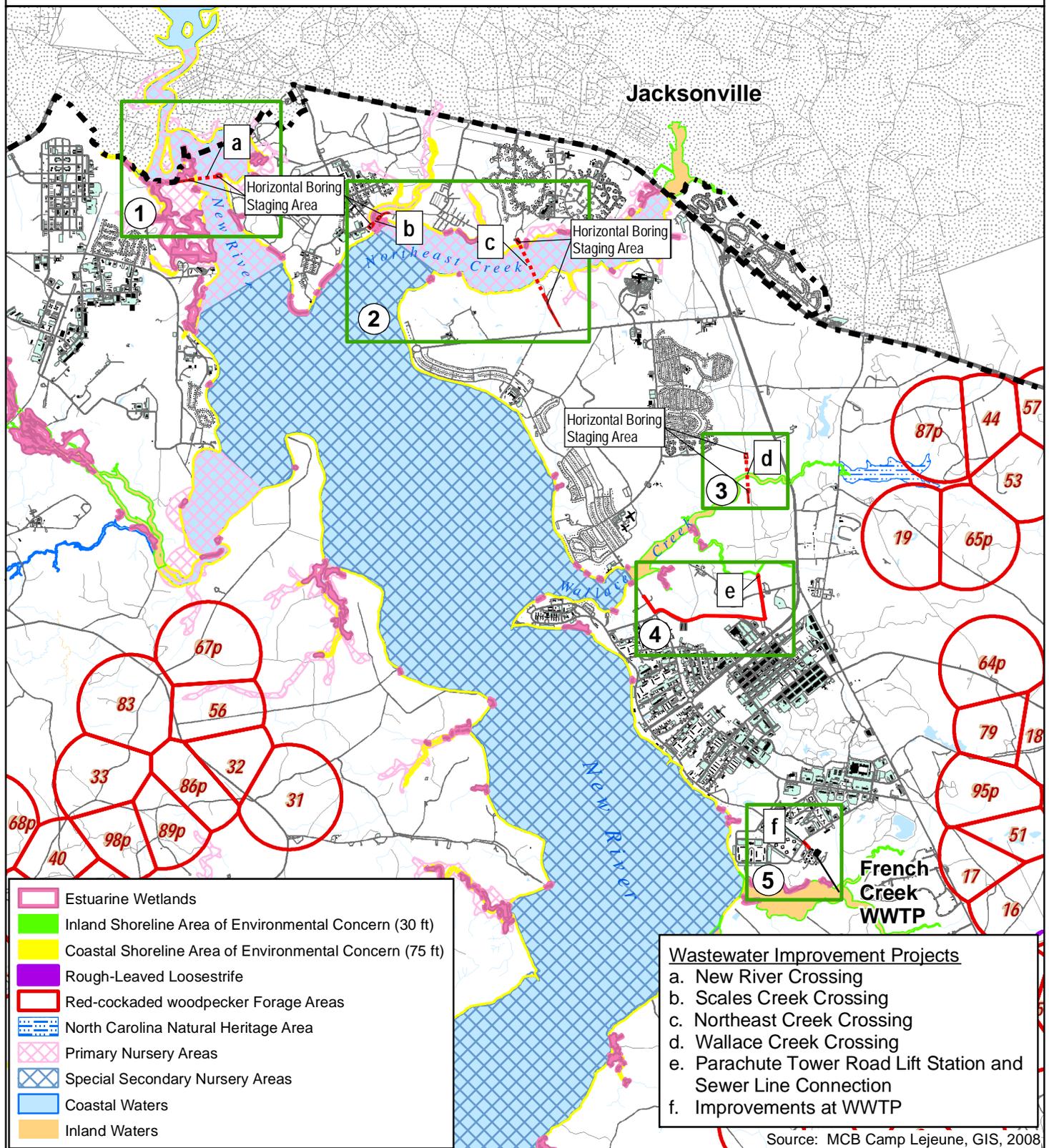
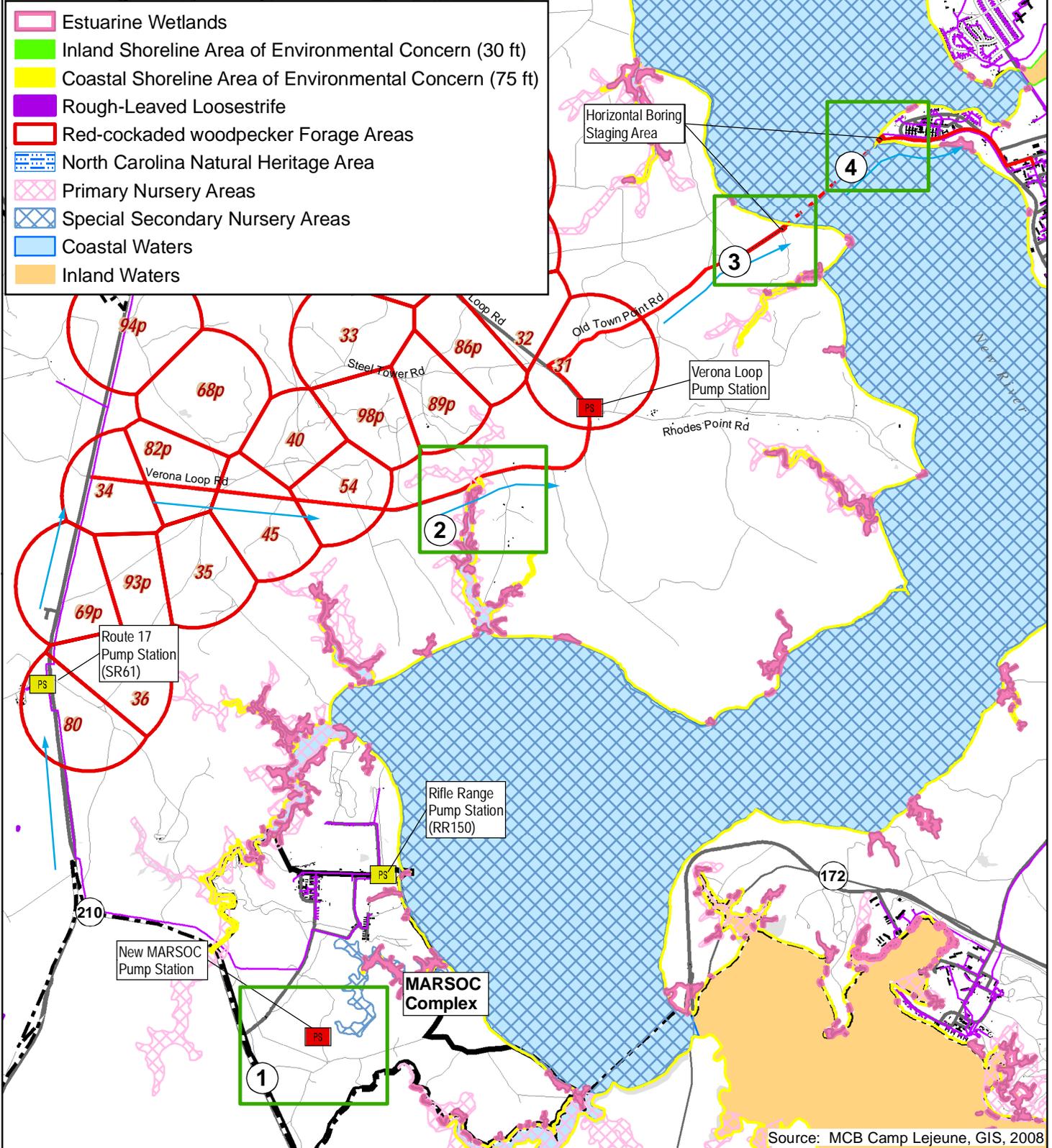


Figure 1a

Proposed MARSOC Wastewater System Improvements Coastal Consistency Determination

- Estuarine Wetlands
- Inland Shoreline Area of Environmental Concern (30 ft)
- Coastal Shoreline Area of Environmental Concern (75 ft)
- Rough-Leaved Loosestrife
- Red-cockaded woodpecker Forage Areas
- North Carolina Natural Heritage Area
- Primary Nursery Areas
- Special Secondary Nursery Areas
- Coastal Waters
- Inland Waters

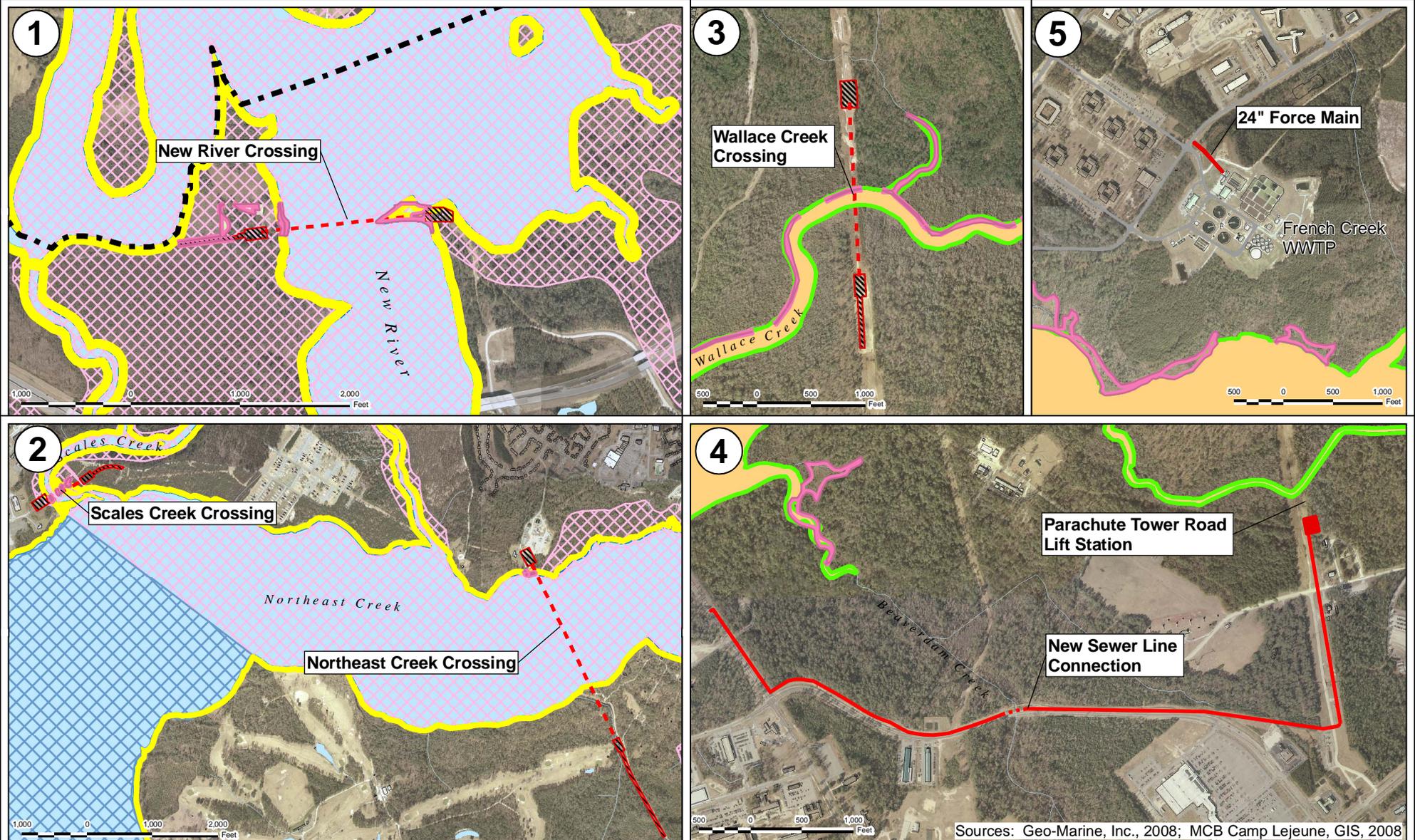


Source: MCB Camp Lejeune, GIS, 2008

<ul style="list-style-type: none"> Future Pump Station Existing Pump Station MARSOC Sewer Line (Buried) MARSOC Sewer Line (Horizontal Boring) Proposed Wastewater System Improvements (Staging Area) 	<p>0.5 0 0.5 1 Miles</p> <p>1 0 1 2 Kilometers</p>	<ul style="list-style-type: none"> Direction of Wastewater Flow Existing Sewer Line MCB Camp Lejeune MARSOC Complex Extents for Detailed Views on Figure 2b
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Figure 1b

Wastewater System Improvements Coastal Consistency Determination Detailed Views



Proposed Wastewater System Improvements

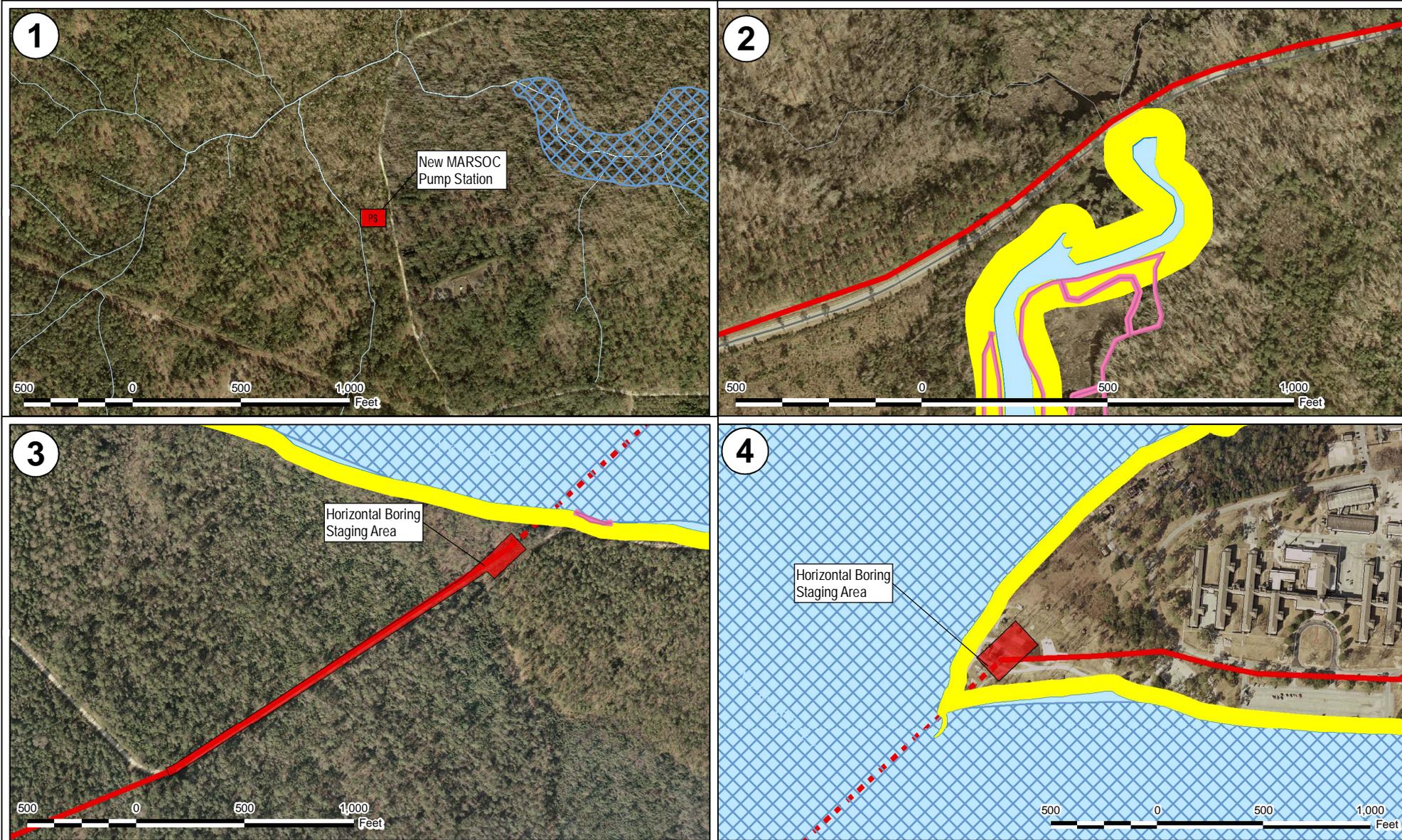
- Sewer Line (Buried)
- - - Sewer Line (Horizontal Boring)
- Proposed Wastewater System Improvements (Staging Area)**
- Inland Shoreline Area of Environmental Concern (30 ft)
- Coastal Shoreline Area of Environmental Concern (75 ft)

- Primary Nursery Areas
- Special Secondary Nursery Areas
- Estuarine Wetlands
- Coastal Waters
- Inland Waters



Figure 2a

Proposed MARSOC Wastewater System Improvements Coastal Consistency Determination Detailed Views



Proposed Wastewater System Improvements

- Sewer Line (Buried)
- - - Sewer Line (Horizontal Boring)
- Proposed Wastewater System Improvements (Staging Area)
- Coastal Shoreline Area of Environmental Concern (75 ft)

- Special Secondary Nursery Areas
- Red-cockaded woodpecker Forage Areas
- Estuarine Wetlands
- Coastal Waters



Figure 2b

Sources: Geo-Marine, Inc., 2008;
MCB Camp Lejeune, GIS, 2008

Appendix D Air Emission Calculations

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Appendix D Air Emission Calculations

Air quality impacts were estimated for constructing a series of upgrades and modifications to the existing wastewater collection and treatment system at MCB Camp Lejeune, North Carolina. The proposed action includes two primary components, the wastewater system modifications and the proposed MARSOC sewer line, which are described in detail in Chapters 1 and 2 of this EA. The following is a discussion of the assumptions, references and methods used to perform the air emission estimate calculations for construction and related activities.

CONSTRUCTION

Air quality impacts from proposed construction activities were estimated from (1) combustion emissions due to the use of fossil fuel-powered equipment; (2) fugitive dust emissions (particulate matter) during demolition activities, earth-moving activities, and the operation of equipment on bare soil; and (3) construction worker on-base mobile source emissions.

Off-Road Equipment Emissions – Land Based

The NONROAD model (USEPA, 2005) is the EPA standard method for preparing emission inventories for mobile sources that are not classified as being related to on-road traffic, railroads, air traffic, or water-going vessels. As such, it is the starting place for quantifying emissions from construction-related equipment. The NONROAD model uses the following general equation to estimate emissions separately for Carbon Monoxide, Nitrogen Oxides, Particulate Matter (essentially all of which is Particulate Matter_{2.5} from construction sources), and total hydrocarbons, nearly all of which are NMHC1:

$$EMS = EF * HP * LF * Act * DF$$

Where:

EMS = estimated emissions

EF = emissions factor in grams per horsepower hours

HP = peak horsepower

LF = load factor (assumed percentage of peak horsepower)

Act = activity in hours of operation per period of operation

DF = deterioration factor

The emissions factor is specific to the equipment type, engine size, and technology type. The technology type for diesel equipment can be “base” (before 1988), “tier 0” (1988 to 1999), or “tier 1” (2000 to 2005). Tier 2 emissions factors could be applied to equipment that satisfies 2006 national standards (or slightly earlier California standards). For this study, all diesel equipment was assumed to be either tier 0 or tier 1.

The load factor is specific to the equipment type in the NONROAD model regardless of engine size or technology type, and it represents the average fraction of peak horsepower at which the engine is assumed to operate. NONROAD model default values were used in all cases. Because Tier 0 and Tier 1 equipment was conservatively used throughout the analysis period (2009-2012), deterioration factors were not used to estimate increased emissions due to engine age.

Based on the methodology described, it is possible to make a conservative estimate of emissions from off-road equipment if the types of equipment and durations of use are known (see tables following).

Construction calculations are based upon the proposed separation of the wastewater system modifications component of the proposed action from the MARSOC sewer line upgrade component, resulting in a phased two year construction period. Information provided by Installation personnel were used to identify information on construction square footage.

Fugitive Dust

Emission rates for fugitive dust were estimated using guidelines outlined in the Western Regional Air Partnership (WRAP) fugitive dust handbook (WRAP, 2004). Although these guidelines were developed for use in western states, they assume standard dust mitigation best practices activities of 50% from wetting; therefore, they were deemed applicable but conservative for the Southeastern United States. The WRAP handbook offers several options for selecting factors for Particulate Matter₁₀ depending on what information is known about the locality and action that will produce dust.

After Particulate Matter₁₀ is estimated, the fraction of fugitive dust emitted as Particulate Matter_{2.5} is estimated, the most recent WRAP study (MRI, 2005) recommends the use of a fractional factor of 0.10 to estimate the Particulate Matter_{2.5} portion of the Particulate Matter₁₀.

For site preparation activities, the emission factor was obtained from Table 3-2 of the WRAP Fugitive Dust Handbook. The areas of disturbance and approximate durations were used in conjunction with the large scale of land-disturbing activities occurring, resulting in the selection of the first factor with worst-case conditions for use in the analysis.

Particulate Matter₁₀, Particulate Matter_{2.5} and Mobile Sources

Diesel exhaust is a primary, well-documented source of Particulate Matter_{2.5} emissions. The vast majority of Particulate Matter emissions in diesel exhaust is Particulate Matter_{2.5}. Therefore, all calculated Particulate Matter is assumed to be Particulate Matter_{2.5}. A corollary result of this is that the Particulate Matter₁₀ fraction of diesel exhaust is estimated very conservatively as only a small fraction of Particulate Matter₁₀ is present in the exhaust. However, ratios of Particulate Matter₁₀ to Particulate Matter_{2.5} in diesel exhaust are not yet published and therefore for the purposes of the EA calculations, all Particulate Matter emissions are equally distributed as Particulate Matter₁₀ and Particulate Matter_{2.5}.

Construction Workers – Mobile Sources

Mobile source emissions were calculated for construction workers for each of the construction years. These emissions assumed that each worker drove their own car, and that the average mileage driven each workday within the MCB Camp Lejeune fenceline was 16 km (10 mi) (to include driving during lunch break) and at a rate not exceeding 48 kph (30 mph). Emission factors were derived from the California Air Resources Board EMFAC 2002 mobile emissions model, Scenario Year: 2006 – Passenger Vehicle Model Years: 1965 to 2006.

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Wastewater System Modifications

Total Land Disturbance 9 AC

Equipment	Number	Hr/day	# days	Hp	LF	VOC g/hp-hr	CO g/hp-hr	NOx g/hp-hr	SO2 g/hp-hr	PM g/hp-hr	VOC lb	CO lb	NOx lb	SO2 lb	PM lb
Dozer	1	6	7	299	0.58	0.68	2.7	8.38	0.93	0.402	11	43	135	15	6
Backhoe/loader	2	8	13	98	0.21	0.99	3.49	6.9	0.85	0.722	9	33	65	8	7
Skid/steer Loader	1	8	11	67	0.23	0.5213	2.3655	5.5988	0.93	0.473	2	7	17	3	1
Dump truck (12 CY)	28	0.5	13	275	0.21	0.68	2.7	8.38	0.89	0.402	16	63	194	21	9
Subtotal											38	146	411	46	24

Install New Parallel Force Mains

New River 1,001 LF 16" 40 FT below creek/river substrate
 Scales Creek 801 LF 18" 37,500 SF for each staging area X 2
 Northeast Creek 3000 LF 24" 300,000 Total SF
 Wallace Creek 1640 LF 24"
 4,640 LF 24" Total
 7,730 Total Length

Boring 1,567 CY 42,324 CF

Equipment	Number	Hr/day	days	Hp	LF	VOC g/hp-hr	CO g/hp-hr	NOx g/hp-hr	SO2 g/hp-hr	PM g/hp-hr	VOC lb	CO lb	NOx lb	SO2 lb	PM lb
Backhoe/loader	1	8	22	98	0.21	0.99	3.49	6.9	0.85	0.722	8	28	55	7	6
Dump truck	8	1	22	275	0.21	0.68	2.7	8.38	0.89	0.402	15	61	188	20	9
Delivery truck	1	2	20	180	0.21	0.68	2.7	8.38	0.89	0.402	2	9	28	3	1
Small diesel engines	2	8	20	10	0.43	0.7628	4.1127	5.2298	0.93	0.4474	2	12	16	3	1
Boring equipment	1	8	20	100	0.21	0.99	3.49	6.9	0.85	0.722	7	26	51	6	5
Subtotal											35	136	338	39	23

Construct New Lift Station Force Mains

2,100 LF 18"
 6,600 LF 16"
 400 LF 24"
 9,100 LF Total

Assume 20 Ft width for Land Disturbance

Trenching 986 CY 26,618 CF

Equipment	Number	Hr/day	days	Hp	LF	VOC g/hp-hr	CO g/hp-hr	NOx g/hp-hr	SO2 g/hp-hr	PM g/hp-hr	VOC lb	CO lb	NOx lb	SO2 lb	PM lb
Backhoe/loader	1	8	16	98	0.21	0.99	3.49	6.9	0.85	0.722	6	20	40	5	4
Dump truck	8	1	16	275	0.21	0.68	2.7	8.38	0.89	0.402	11	44	137	15	7
Delivery truck	1	2	6	180	0.21	0.68	2.7	8.38	0.89	0.402	1	3	8	1	0
Small diesel engines	2	8	16	10	0.43	0.7628	4.1127	5.2298	0.93	0.4474	2	10	13	2	1
Trencher	1	8	12	100	0.21	0.99	3.49	6.9	0.85	0.722	4	16	31	4	3
Subtotal											24	92	228	26	15

Fugitive Dust Emissions:

PM ₁₀ tons/acre/mo	acres	days of disturbance	PM ₁₀ Total	PM _{2.5} /PM ₁₀ Ratio	PM _{2.5} Total
0.42	0.5	90	0.6	0.1	0.1

POV Emissions from Construction Workers

Assume 10 miles per day per vehicle (one vehicle per worker)

On-base POV emissions

VOC	CO	NOx	SOx	PM	VOC	CO	NOx	SOx	PM
-----	----	-----	-----	----	-----	----	-----	-----	----

# vehicles	# days	mi/day	lb/mi	lb/mi	lb/mi	lb/mi	lb/mi	lb/mi	lb	lb	lb	lb	lb
35	90	10	0.001497	0.013925	0.001489	0.000009	0.000080		47.16	438.64	46.90	0.2835	2.51
Subtotal									47	439	47	0	3

Year 1 Emission Totals:

VOC	CO	NOx	SO2	PM ₁₀	PM _{2.5}
T/yr	T/yr	T/yr	T/yr	T/yr	T/yr
0.07	0.41	0.51	0.06	0.66	0.10

MARSOC Sewer Line Additions

23 AC total land disturbance

Equipment	Number	Hr/day	# days	Hp	LF	VOC	CO	NOx	SO2	PM	VOC	CO	NOx	SO2	PM
						g/hp-hr	g/hp-hr	g/hp-hr	g/hp-hr	g/hp-hr	lb	lb	lb	lb	lb
Dozer	1	6	18	299	0.58	0.68	2.7	8.38	0.93	0.402	28	111	346	38	17
Backhoe/loader	2	8	33	98	0.21	0.99	3.49	6.9	0.85	0.722	24	84	165	20	17
Skid/steer Loader	1	8	28	67	0.23	0.5213	2.3655	5.5988	0.93	0.473	4	18	43	7	4
Dump truck (12 CY)	28	0.5	33	275	0.21	0.68	2.7	8.38	0.89	0.402	40	159	493	52	24
Subtotal											96	372	1047	118	61

42,935 LF 16" force main

Trenching

15,902 CY 429,350 CF

Equipment	Number	Hr/day	days	Hp	LF	VOC	CO	NOx	SO2	PM	VOC	CO	NOx	SO2	PM
						g/hp-hr	g/hp-hr	g/hp-hr	g/hp-hr	g/hp-hr	lb	lb	lb	lb	lb
Backhoe/loader	1	8	258	98	0.21	0.99	3.49	6.9	0.85	0.722	93	327	646	80	68
Dump truck	8	1	258	275	0.21	0.68	2.7	8.38	0.89	0.402	179	710	2,202	234	106
Delivery truck	1	2	96	180	0.21	0.68	2.7	8.38	0.89	0.402	11	43	134	14	6
Small diesel engines	2	8	258	10	0.43	0.7628	4.1127	5.2298	0.93	0.4474	30	161	205	36	18
Trencher	1	8	192	100	0.21	0.99	3.49	6.9	0.85	0.722	70	248	491	60	51
Subtotal											383	1,489	3,678	425	249

5,090 LF under the New River

Boring

754 CY 20,360 CF

Equipment	Number	Hr/day	days	Hp	LF	VOC	CO	NOx	SO2	PM	VOC	CO	NOx	SO2	PM
						g/hp-hr	g/hp-hr	g/hp-hr	g/hp-hr	g/hp-hr	lb	lb	lb	lb	lb
Backhoe/loader	1	8	11	98	0.21	0.99	3.49	6.9	0.85	0.722	4	14	28	3	3
Dump truck	8	1	11	275	0.21	0.68	2.7	8.38	0.89	0.402	8	30	94	10	5
Delivery truck	1	2	10	180	0.21	0.68	2.7	8.38	0.89	0.402	1	5	14	1	1
Small diesel engines	2	8	10	10	0.43	0.7628	4.1127	5.2298	0.93	0.4474	1	6	8	1	1
Boring equipment	1	8	10	100	0.21	0.99	3.49	6.9	0.85	0.722	4	13	26	3	3
Subtotal											18	68	169	19	11

Pump Station

68,000 SF

2266 CY 61,200 CF

Equipment	Number	Hr/day	days	Hp	LF	VOC	CO	NOx	SO2	PM	VOC	CO	NOx	SO2	PM
						g/hp-hr	g/hp-hr	g/hp-hr	g/hp-hr	g/hp-hr	lb	lb	lb	lb	lb
Backhoe/loader	1	8	34	98	0.21	0.99	3.49	6.9	0.85	0.722	12	43	85	10	9
Dump truck	8	1	34	275	0.21	0.68	2.7	8.38	0.89	0.402	24	94	290	31	14
Delivery truck	1	2	30	180	0.21	0.68	2.7	8.38	0.89	0.402	3	14	42	4	2
Small diesel engines	2	8	30	10	0.43	0.7628	4.1127	5.2298	0.93	0.4474	3	19	24	4	2
Subtotal											43	169	441	50	27

Fugitive Dust Emissions:

PM ₁₀	PM ₁₀	days of disturbance	PM ₁₀	PM _{2.5} /PM ₁₀	PM _{2.5}
tons/acre/mo	acres		Total	Ratio	Total
0.42	2.0	258	7.2	0.1	0.7

POV Emissions from Construction Workers

Assume 10 miles per day per vehicle (one vehicle per worker)

On-base POV emissions

# vehicles	# days	mi/day	VOC lb/mi	CO lb/mi	NOx lb/mi	SOx lb/mi	PM lb/mi	VOC lb	CO lb	NOx lb	SOx lb	PM lb
50	180	10	0.001497	0.013925	0.001489	0.000009	0.000080	134.73	1253.25	134.01	0.81	7.17
Subtotal								135	1,253	134	1	7

Year 2 Emission Totals:

VOC T/yr	CO T/yr	NOx T/yr	SO2 T/yr	PM ₁₀ T/yr	PM _{2.5} T/yr
0.34	1.68	2.73	0.31	7.40	0.90

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Appendix E State Historic Preservation Office Correspondence

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UNITED STATES MARINE CORPS

MARINE CORPS BASE
PSC BOX 20004
CAMP LEJEUNE, NORTH CAROLINA 28542-0004

IN REPLY REFER TO:

5090.8

BEMD

MAY 15 2008

Mr. Peter Sandbeck
Administrator, State Historic Preservation Office
North Carolina Division of Archives and History
109 East Jones Street
Raleigh, North Carolina 27601

Subj: WASTEWATER SYSTEM MODIFICATIONS AND UPGRADES AT MARINE CORPS
BASE, CAMP LEJEUNE, ONSLOW COUNTY, NORTH CAROLINA

Dear Mr. Sandbeck:

The United States Marine Corps (USMC) proposes to construct a series of upgrades and modifications to the existing wastewater collection and treatment system at Marine Corps Base (MCB) Camp Lejeune, Onslow County, North Carolina. This project would provide parallel force main stream crossings at the New River, Scales Creek, Northeast Creek, and Wallace Creek; construct a new lift station near Parachute Tower Road with a connection to the existing wastewater line; and replace an existing force main near Gonzales Boulevard at the Wastewater Treatment Plant (WWTP) at French Creek. Collectively, these upgrades are referred to as the wastewater system modifications component of the proposed action (enclosure 1).

In addition to the wastewater system modifications discussed above, the USMC proposes to construct a new force main from United States Route 17 (US 17) along Verona Loop Road through the K Range area, under the New River and connecting to an existing force main that ultimately discharges to the WWTP. This new force main would be used to reroute wastewater flow from the Marine Corps Air Station (MCAS) New River area as well as the area south of Verona Loop to the WWTP. The USMC also proposes to construct three new pump stations (two at the newly established Marine Special Operations Command (MARSOC) complex, and one near Verona Loop Road). These project components are referred to as the proposed MARSOC sewer line upgrades (enclosure 2).

Together these improvements to the wastewater system would improve the efficiency of the existing wastewater treatment and collection system. Although these projects are located in different areas of the Base, they are part of the same infrastructure system and consist of interconnected actions. Collectively, each of the

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BEMD

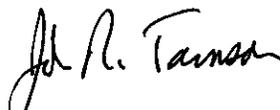
MAY 15 2008

proposed construction and upgrade projects comprise the "proposed action". Technical information concerning potential impacts to specific historic properties is provided in Enclosure 3.

Based on the information provided in this letter, we have determined that construction of the proposed Wastewater System Modification and Upgrade at MCBCCL will not adversely affect any historic properties. A short term and reversible impact to the landscaping and sidewalks within the Naval Hospital/Surgeons Row Historic District would occur as a result of sewer line construction within the historic district's NRHP boundary. No NRHP eligible terrestrial or submerged archaeological sites would be impacted by the proposed project. Measures would be taken to ensure that construction related activities in the vicinity of NRHP eligible archaeological site 31ON387 and unassessed site 31ON1558 will avoid any impacts to these sites. The boundaries of these sites adjacent to construction activity will be clearly marked to ensure no impacts occur.

The enclosed are provided for your review and comments in accordance with Section 106 of the National Historic Preservation Act and 36 CFR 800, Protection of Historic and Cultural Properties. If you have any questions on this matter, please contact Rick Richardson, Base Archaeologist, Environmental Conservation Branch, Environmental Management Division, Installations and Environment Department, at (910) 451-7230, or email at rick.richardson@usmc.mil.

Sincerely,

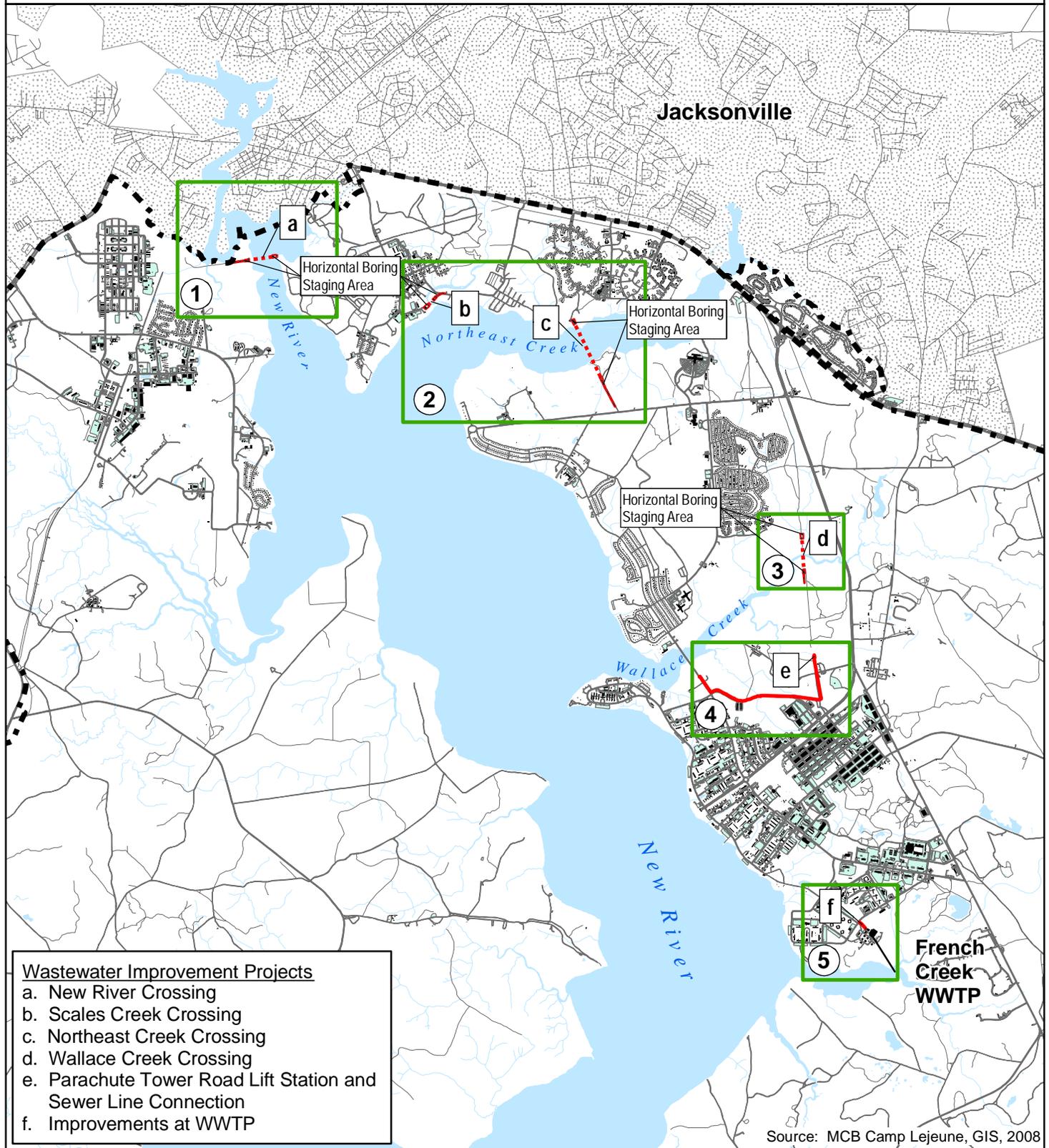


JOHN R. TOWNSON
Director, Environmental Management
By direction of
the Commanding Officer

Enclosures:

1. Overview of Proposed Wastewater System Improvements.
2. Proposed MARSOC Sewer Line and Pump Stations.
3. Archaeological and Historic Architectural Properties.
4. Detail of Proposed Wastewater System Improvements.
5. Detail of Proposed MARSOC Sewer Line and Pump Stations.
6. Naval Hospital/Surgeons Row Historic District.

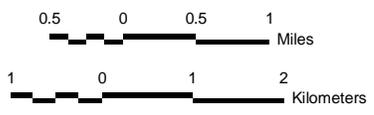
Overview of Proposed Wastewater System Improvements



- Wastewater Improvement Projects**
- a. New River Crossing
 - b. Scales Creek Crossing
 - c. Northeast Creek Crossing
 - d. Wallace Creek Crossing
 - e. Parachute Tower Road Lift Station and Sewer Line Connection
 - f. Improvements at WWTP

Source: MCB Camp Lejeune, GIS, 2008

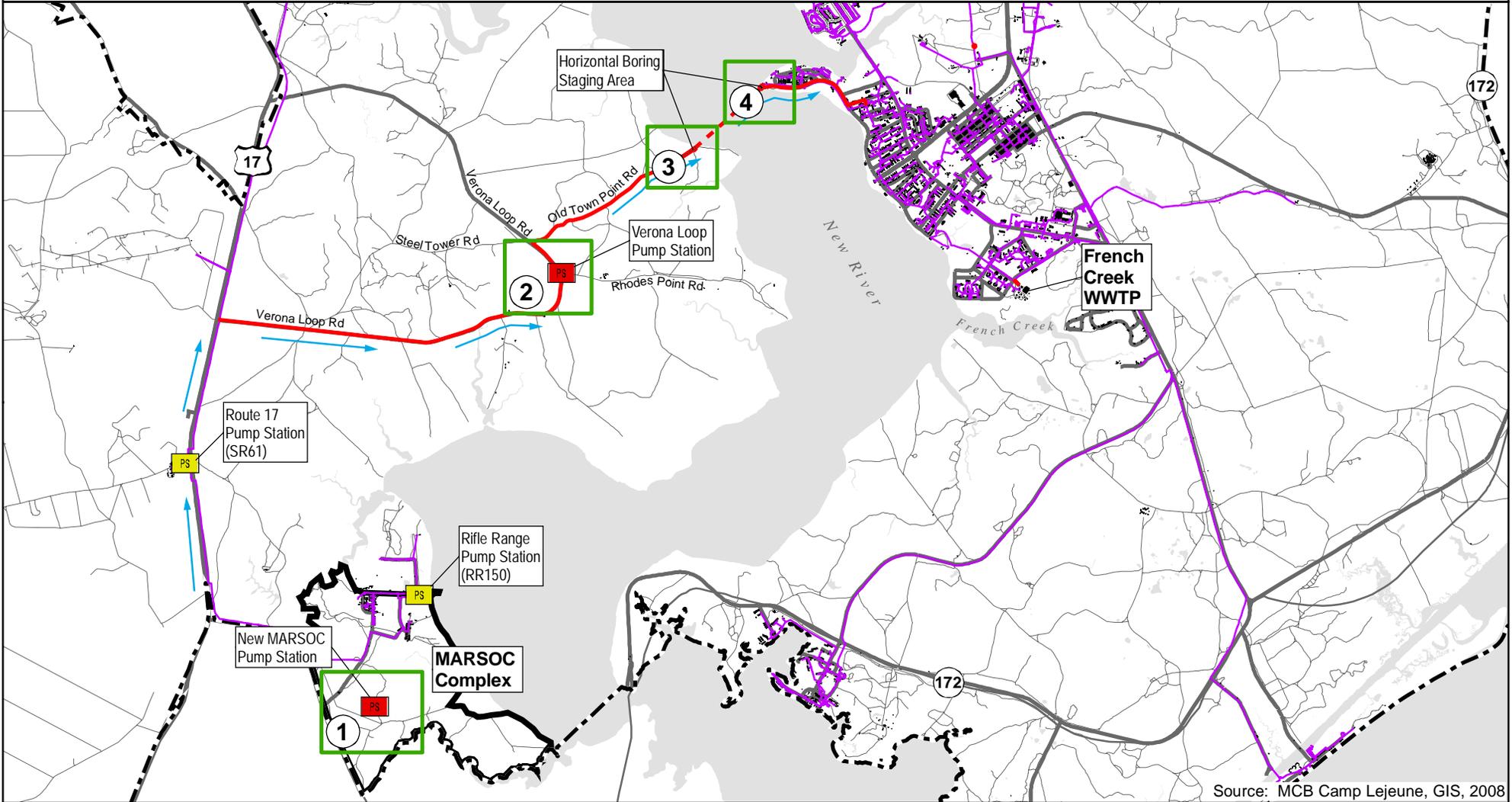
- Extents for Detailed Views on Figure 2-2a
- Sewer Line (Buried)
- Sewer Line (Horizontal Boring)
- Proposed Wastewater System Improvements (Staging Area)



- MCB Camp Lejeune
- Urban Areas



Proposed MARSOC Sewer Line and Pump Stations



Source: MCB Camp Lejeune, GIS, 2008

 Future Pump Station	 	 Direction of Wastewater Flow	
 Existing Pump Station		 Existing Sewer Line	
 MARSOC Sewer Line (Buried)		 MCB Camp Lejeune	
 MARSOC Sewer Line (Horizontal Boring)		 MARSOC Complex	
 Proposed Wastewater System Improvements (Staging Area)		 Extents for Detailed Views on Figure 2-2b	

Enclosure 3
Archaeological and Historic Architectural Resources

Terrestrial and Submerged Archaeological Resources

The existing sewer line corridor that is part of the Base's wastewater system was surveyed for both terrestrial and underwater resources in 1993 in support of wastewater treatment upgrades at that time (Outlaw et al. 1993). No submerged archaeological resources were located during the underwater surveys conducted during the initial wastewater system upgrade. Archaeological surveys of the existing sewer corridor and for all high probability soils within the current proposed action's Area of Potential Effect (APE) have been undertaken.

As a result of previous terrestrial archaeological surveys, two sites (31ON536 and 31ON631) were identified as occurring within the current proposed project's APE. Site 31ON536, an Early-to-Late Woodland Period site was first identified during a Phase I archaeological survey for wastewater treatment upgrades (Outlaw et al. 1993). The site was subsequently evaluated and recommended eligible for National Register of Historic Places (NRHP) listing (Polglase et al. 1994). Prior to construction of the wastewater treatment upgrade, archaeological data recovery excavations were conducted on the site within the area to be affected (Davis et al. 1996). For the current wastewater system upgrade project, a staging area will be situated adjacent to the current boundary of the site within the area where data recovery excavations were conducted (enclosure 4). The location of the staging area is where considerable fill material was placed for construction of a wastewater pumping station following the previous data recovery, and no new impacts would occur as a result of the current project staging area.

Site 31ON631, an Early-to-Late Woodland Period site, is also located within the proposed project's APE (see enclosure 4), and was first identified during a cultural resource survey for a natural gas pipeline corridor (Ashley and Rolland 1997). In 2002, TRC Garrow conducted an archaeological survey for silvicultural prescription purposes and expanded the site area beyond the original recorded boundary (Millis 2006). More recently, SEARCH, Inc., conducted Phase II National Register of Historic

Places (NRHP) evaluation of site 31ON631 (Harrell 2008), and recommended the site ineligible for inclusion in the NRHP. By letter of April 28, 2008, your office concurred with the recommendation made during this recent evaluation. A construction staging area for directional boring beneath the substrate of Wallace Creek will impact this site; however, based on your concurrence that this site is not eligible for listing in the NRHP, no further work is required.

Two previously identified sites, 31ON387 and 31ON1558, have been identified as occurring within the vicinity of the project area for the proposed new MARSOC sewer line (enclosure 5). Site 31ON387 has been determined eligible for listing in the NRHP, but is situated approximately 110 meters (361 feet) north of a segment of the proposed MARSOC sewer line and will not be impacted by construction of this new segment. Site 31ON1558 lies approximately 30 meters (98 feet) south of a segment of the proposed MARSOC sewer line. This site is currently under contract for Phase II NRHP evaluation, but no work has been conducted to date. By letter dated March 28, 2007 (ER 06-2352), MCBCL consulted with your office regarding proposed construction of the MARSOC Waste Water Collection System plan. Since that time, a segment of the original proposed MARSOC sewer line has changed. The corridor change is reflected in the current proposed action, and would not affect any archaeological sites (see enclosure 5).

As discussed previously, the proposed action includes the installation of four force sewer mains parallel to existing lines by boring under the New River, Scales Creek, Northeast Creek, and Wallace Creek. An underwater survey was conducted only for the Northeast Creek crossing and a New River crossing during the 1993 wastewater treatment upgrade project (Outlaw et al.1993). Scales Creek and Wallace Creek were not surveyed due to the narrow and shallow nature of those crossings. No submerged resources were located at the Northeast Creek crossing or the New River crossing. For the current proposed action, the force mains at each crossing would be installed using horizontal drilling technology, and would be placed approximately 11 to 12 meters (35-40 feet) below the creek or river substrate. Where existing pipes occur, these would remain in place to serve as a backup system. Horizontal drilling is a common technique for installing underground pipeline along a prescribed bore path from the surface, with minimal

environmental disturbance. As such, no impacts to submerged cultural resources are expected. Each crossing location would require temporary staging areas for construction and drilling equipment, including an area for laying down segments of force main in preparation for horizontal boring. No NRHP eligible archaeological sites are located within any of the staging areas.

Historic Architectural Properties

One historic district is located within the proposed action's APE. In consultation with your office, The Naval Hospital/Surgeons Row Historic District was determined eligible for listing in the NRHP. Building H-1, former Naval Hospital and current administrative headquarters for the II Marine Expeditionary Force and 2nd Marine Division, is an individually eligible and a contributing building to the historic district. A short segment of the MARSOC waste water upgrade corridor would be constructed within the southeast corner of the historic district's NRHP boundary (enclosure 6). Construction would require the excavation of a sewer line trench within the grassy lawn of Building H-1, and upon completion, the new sewer line location would be back-filled and re-seeded. Any sidewalks disturbed by proposed construction would be repaired. No alterations to the contributing historic building would occur as a result of the construction. Impacts to the NRHP eligible district would be temporary, and reversible. As such, no adverse effects to the Naval Hospital/Surgeons Row Historic District would result from proposed project implementation.

(Enclosures 4 and 5 are not included in this EA)

Naval Hospital/Surgeon's Row Historic District



- Sewer Line (Buried)
- Historic Building
- Historic District

Enclosure 6

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Appendix F Threatened and Endangered Species Coordination
[Pending]

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United States Department of the Interior

FISH AND WILDLIFE SERVICE

Raleigh Field Office

Post Office Box 33726

Raleigh, North Carolina 27636-3726

September 5, 2008

Mr. John R. Townson
Director, Environmental Management Division
Marine Corps Base
PSC 20004
Camp Lejeune, North Carolina 28542-0004

Dear Mr. Townson:

The Fish and Wildlife Service (Service) has reviewed your August 4, 2008, letter regarding the proposed upgrade and modification of the existing wastewater collection and processing system needed to operate the newly constructed Marine Special Operations Command (MARSOC) complex, on Marine Corps Base, Camp Lejeune, Onslow County, North Carolina. In our January 18, 2007, letter the Service concurred with Camp Lejeune's December 4, 2006 determination that the then-proposed MARSOC complex was not likely to adversely affect the federally listed endangered red-cockaded woodpecker (*Picoides borealis*; RCW) or rough-leaved loosestrife (*Lysimachia asperulaefolia*). Your August 4, 2008 letter describes modifications to the route for the MARSOC sewer line, which has yet to be installed. Our comments are provided in accordance with section 7 of the Endangered Species Act (Act) of 1973, as amended (16 USC 1531 et seq.).

According to your August 4, 2008, letter, the proposed modification would involve the installation of a 16-inch force main from the existing pump station near the intersection of CC Road and U.S. Highway 17 running parallel to Verona Loop Road to the intersection of Rhodes Point Road. From Rhodes Point Road, the force main would continue north of the K-range training area and under the New River, where the new sewer line would tie in to an existing force main at Hospital Point that connects to the Waste Water Treatment Plant located in the French Creek area of the Base. As part of the proposed action, one pump station would be constructed at the MARSOC complex and another pump station would be constructed near Verona Loop Road. The discrete location for the MARSOC pump station hasn't yet been determined. The other would be built on the northeast corner of the intersection of Verona Loop Road and Rhodes Point Road. The on-land portion of the force main would be installed by trenching, while the underwater portion (under the New River) would be installed by horizontal boring, at a depth of approximately 15 to 40 feet below the river bottom.

The route of the proposed MARSOC sewer line crosses five established red-cockaded woodpecker foraging partitions. These support clusters 34, 82, 45, 54, and 31. Clusters 34, 82, and 45 occur next to the project area along the southern end of Verona Loop Road. The proposed action would not impact these nesting areas because the proposed force main from US

17 to the proposed Verona Loop pump station would be buried within an existing grass-covered right-of-way along Verona Loop Road. The sewer line will follow Old Town Point Road to the New River from the intersection of Verona Loop Road and Old Town Point Road. Except for a stretch of approximately 1,312 feet (400 meters), the sewer line will be buried under Old Town Point Road. For that 1,312-foot stretch, a 40-foot right of way will be cut through mostly loblolly pine forest, resulting in a loss of approximately 3.5 acres of potential future RCW habitat.

In addition to the right of way described above, the construction of a pump station at the intersection of Verona Loop Road and Rhodes Point Road would result in the loss of about 0.7 acres of foraging habitat within the 0.5-mile radius foraging partition of active RCW cluster 31. After construction, cluster 31 will retain 250 acres of suitable foraging habitat, and an additional 164 acres of potential (i.e. less than 30 years old, or hardwood on longleaf soil). Your August 4, 2008, letter points out that cluster 31 would retain 150 acres of currently suitable woodpecker habitat and 88 acres of potentially suitable woodpecker habitat post project when planned recruitment clusters are considered. The affected cluster will retain more than enough foraging habitat to support it.

Your August 4, 2008 letter indicates that the proposed tree removal along Old Town Road would not prevent future partitions from containing enough foraging habitat to support a woodpecker group. Camp Lejeune's currently active, 2006 Integrated Natural Resource Management Plan (INRMP), states: "Camp Lejeune will reserve up to 10 percent of the suitable habitat within each RCW management area for locating future facilities development projects." A review of Camp Lejeune's INRMP shows that at least two new recruitment clusters may be added as neighbors to cluster 31. Tree removal associated with establishment of the right of way on Old Town Point Road would occur in at least one recruitment territory. We recommend tracking of project-related timber removal within portions of the landscape the installation has indicated would be managed for RCW habitat, especially in areas identified for management as recruitment partitions. For recruitment territories, it would be appropriate to calculate the combined amount of currently suitable habitat and habitat that can be managed to support a group of woodpeckers in cases where projects would reduce the acreage of habitat that can be managed for them.

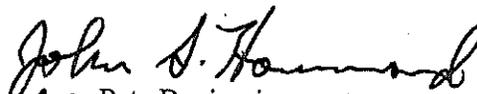
Sections of the proposed MARSOC sewer line would be installed in the vicinity of areas of high probability habitat for the federally listed rough-leaved loosestrife. However, the sewer line would be buried within the existing right of way along Verona Loop Road and 1,312-foot right-of-way is forested in 24- to 45-year old loblolly pine and does not contain suitable habitat for the rough-leaved loosestrife. Impacts to rough-leaved loosestrife are not expected from implementing the proposed action.

Based on the information contained in your August 4, 2008 letter, we concur with your determination that the proposed construction of the MARSOC sewer line is not likely to adversely affect the red-cockaded woodpecker, rough-leaved loosestrife or any other federally listed endangered or threatened species or species currently proposed for federal listing under the Endangered Species Act, as amended. We believe that the requirements of section 7(a) (2) of the Act have been satisfied. We remind you that obligations under section 7 consultation must

be reconsidered if: (1) new information reveals impacts of this identified action that may affect listed species or critical habitat in a manner not previously considered; (2) this action is subsequently modified in a manner that was not considered in this review; or, (3) a new species is listed or critical habitat determined that may be affected by the identified action.

The Service recognizes the substantial roles Camp Lejeune performs both in providing the environment for military training essential for the combat readiness of operating forces, and as a steward of high-quality natural resources for the benefit of the American people. If you have any questions regarding this matter, please contact Mr. John Hammond at (919) 856-4520 (ext. 28). Thank you for your continued cooperation with our agency.

Sincerely,


for Pete Benjamin
Field Supervisor

Cc: Will McDearman, U. S. Fish and Wildlife Service